



Source Water Protection

2016 Annual Report



a) INTRODUCTION

This annual report is provided in accordance with s. 81 of the *Clean Water Act, 2006*. It outlines the activities undertaken by the City of Barrie in 2016 that were required by legislation (staff appointments and training), as well as a summary of progress to date in implementing the Source Protection Plan.

b) RISK MANAGEMENT OFFICIAL AND INSPECTORS

Please only complete this section if the requested information has been updated since last year, or if you have new information to add that has not previously been submitted to the SPA.

1) Provide name (s) and contact information of appointed RMOs and RMIs.

<i>Staff Name</i>	<i>Title/ Role</i>	<i>Contact Email</i>
Katie Thompson	Risk Management Official	Katie.Thompson@barrie.ca
*Tyler Adamson	Risk Management Inspector	Tyler.Adamson@barrie.ca
Sherry Diemert	Alternate Risk Management Official	Sherry.Diemert@barrie.ca

***Comment:** In the winter of 2016, the City began and successfully completed recruitment of a new Risk Management Inspector. On April 11th, 2016, the City passed by-law 2016-036 to formally appoint the new staff member as the Risk Management Inspector. A copy of the by-law has been forwarded to the Source Protection Authorities.

c) ONTARIO REGULATION 287/07 REQUIRED TRAINING

Please only complete this section if the requested information has been updated since last year, or if you have new information to add that has not previously been submitted to the SPA.

1) Provide name (s) of RMOs and RMIs who have completed the Part IV and S. 88 training courses.

The Risk Management Officials and Risk Management Inspectors have completed Director-approved training courses as per Ontario Regulation 287/07 under the *Clean Water Act, 2006*; as shown below:

<i>Staff Name</i>	<i>RMO/RMI Training Date Year/ month</i>	<i>Property Entry Training Date Year/ month</i>
Tyler Adamson	April, 2016	March, 2016

d) RISK MANAGEMENT OFFICE

Given that the overwhelming majority of RMOs are just beginning to undertake the development of the Risk Management Plans with the person engaged in the threat activity, and as a result, the majority of the values presented in section 81 and 46 will be zero. Please provide a high level overview of the work the Risk Management Office undertook in 2016 by answering the following questions.

1) Provide a summary of the RMO and program actions undertaken/ completed in 2016.

In 2016, the Risk Management Office undertook a number of activities to prepare for and implement the source protection plan. Highlights of the work accomplished in 2016 are noted below:

- The Risk Management Office has been actively reviewing building and planning applications for Part IV policy compliance. In 2016, the Risk Management Office issued 45 s.59(2)(a) Notices to Proceed related to building applications, and reviewed 91 Planning Services Department Memorandums pertaining to pre-consultation inquiries.
- The Risk Management Office actively participated in a number of Source Water Protection working groups and committees. The Risk Management Official was appointed to the Source Protection Committee in the fall of 2016, continues to be chair of the local Risk Management Official/Inspector working group, and a member of the Provincial Risk Management Official working group. The Risk Management Office participates in the Part IV working group led by Conservation Ontario.
- The Risk Management Office field tested, revised and finalized its Risk Management Plan screening form templates as well as the Risk Management Plan template itself. Several templates for Notices and Orders that may be issued under the Clean Water Act, 2006 were finalized. A workshop was held for City Departments requiring a Risk Management Plan to outline the process, and test the approach.
- The Risk Management Office negotiated Risk Management Plans with the City's Water Operations Branch to address the drinking water threat activities occurring at the stations maintained by Ground Water Supply, as well as the Surface Water Treatment Plant and Low Lift Pumping Station. The Risk Management Office has begun negotiating Risk Management Plans for the City Marina, Environmental Operations Center, Operations Center as well as the Wastewater Treatment Facility and its associated pumping stations; to address the drinking water threat activities, not governed by prescribed instruments, occurring at these locations. Worked also began on negotiating Risk Management Plans with local businesses.
- The Risk Management Office participated in a front desk education and outreach material refresher exercise with the South Georgian Bay Lake Simcoe Source Protection Region. The Source Water Protection webpage was maintained to continue to educate residents and business owners of the program, and to answer frequently asked questions. The website can be accessed by following the link
below: <http://www.barrie.ca/Living/Environment/Pages/SourceWaterProtection.aspx>

- Drinking Water Protection Zone road signs were installed at 22 locations across the City to create public awareness that certain activities in these areas can have an impact on our water supplies.
- Annual Source Water Protection refresher training was held by the Risk Management Office for Development Services and Building Services; Source Water Protection orientation training was held by the Risk Management Office for Environmental Compliance. An annual liaison meeting was held with the local Ministry of Environment and Climate Change district office.
- The Risk Management Office worked with Roads, Parks and Fleet to develop a Salt Optimization Strategy for the City. Source Water Protection and the Strategy objectives were presented at the 2016/2017 Snow School event.
- The City's first Source Water Protection co-op student was hired and employed by the Risk Management Office. The Risk Management Office continued to provide Risk Management Official and Inspector services for the Township of Springwater.

2) Provide a summary of the number of inspections/field visits completed in 2016.

The Risk Management Office completed 4 (four) Risk Management Plan Screening Inspections of private business based upon the Threat Verification work that has been completed to date. The Risk Management Office also performed Risk Management Plan Screening Inspections of the City Marina, Environmental Operations Center, Operations Center, Wastewater Treatment Facility and its associated pumping stations, Surface Water Treatment Plant and Low lift Pumping Station, as well as the stations maintained by Ground Water Supply.

3) Provide an update on the threat verification process, and highlight the number of parcels that require a risk management plan to be negotiated.

Based upon the Threat Verification work that has been completed to date, the maximum number of parcels that currently require Risk Management Plan negotiations is 168. No further Threat verification work was completed in 2016, with the exception of re-confirming the presence of the significant drinking water threats at the 4 (four) private businesses where the Risk Management Office performed Risk Management Plan Screening Inspections.

4) Provide a summary of the work planned for 2017.

The 2017 work plan includes the following activities to continue with Source Protection Plan implementation:

- The Risk Management Office will continue to review planning and building applications for s.59 and Part IV compliance.
- Risk Management Plan negotiations that were started in 2016 for City facilities and private businesses will be finalized.

- Continue negotiating Risk Management Plan’s for parcels that were identified as requiring a Risk Management Plan as per the Threat Verification work that has been completed to date.
- Continue making the necessary updates to the Official Plan and Zoning to comply with the Source Protection Plan.
- Provide annual Source Water Protection re-fresher training sessions for Development Services, Building Services, Planning Services and Environmental Compliance.
- Provide Source Water Protection orientation training sessions for Barrie Fire & Emergency Services as well as Building & By-Law Services.
- Work will begin on developing a Source Water Protection by-law.
- Update the education and outreach communications strategy.
- Risk Management Inspector recruitment.

5. S.81- LEGISLATED ANNUAL REPORTING REQUIREMENTS

Under S.65 (1) of O.Reg 287/07, all RMOs must provide the following information annually under S.81 of the Clean Water Act. This content is mandatory.

1) How many Risk Management Plans have been agreed to under s. 58 (5) of the CWA?

Answer: State total number: 2

For each RMP that has been agreed to provide:

The location of the property to which the Risk Management Plan relates

The drinking water system name in which the property is located

The threat activity to which the RMP relates

<i>Location of property to which the RMP relates</i>	<i>Drinking Water System Name</i>	<i>Threat activity to which the RMP relates</i>
Various locales, Barrie, Ontario	Barrie Well Supply, Central Well Field	Threat #12 - The application of road salt Threat #13 - The handling and storage of road salt Threat #14 - The storage of snow Threat #15 - The handling and storage of fuel
Royal Parkside Drive, Barrie, Ontario & Camelot Square, Barrie, Ontario	Barrie Water Treatment Plant	Threat #15 - The handling and storage of fuel Threat #16 - The handling and storage of a dense non-aqueous phase liquid (DNAPL) Threat #17 - The handling and storage of organic solvents

2) How many Risk Management Plans have been established by Order under s.58 (10) of the CWA?

Answer: State total number: 0

For each RMP established by Order provide:
The location of the property to which the Risk Management Plan relates
The WHPA or IPZ in which the property is located
The threat activity to which the RMP relates

0 (zero) Risk Management Plans were established by Order under s.58(10) of the CWA in 2016.

- 3) How many Risk management Plans has the RMO established by Order under s.58 (12) of the CWA, as a result of an application for a Risk Management Plan made by a person engaged under s.58 (11) of the CWA?

Answer: State total number: 0

For each RMP established under s. 58(12) Order provide:
The location of the property to which the Risk Management Plan relates
The WHPA or IPZ in which the property is located
The threat activity to which the RMP relates

0 (zero) Risk Management Plans were established by the RMO using an Order under s.58(12) of the CWA in 2016, as a result of an application for a Risk Management Plan made by a person engaged under s.58(11) of the CWA.

- 4) How many Risk Management Plans has the RMO refused to agree to or establish under s. 58(16) or 58(15) of the CWA?

Answer: State total number: 0

For each RMP that has been refused under ss 58(16) list:
A brief description of the reasons for refusal
Location of the property to which the refusal relates
WHPA or IPZ where the property is located
Activity to which the RMP relates

The RMO refused to agree to, or establish 0 (zero) Risk Management Plans, in 2016, under s.58(16) and s.58(15) of the CWA.

- 5) How many Orders has the RMO issued under Part IV of the CWA?

Answer: State total number: 0

For each Order that has been issued provide:
A brief description of the circumstances related to the Order
The location of the property to which the Order relates
The WHPA or IPZ where the property is located
The activity to which the Order relates

0 (zero) Orders were issued by the RMO under Part IV of the CWA in 2016.

- 6) How many notices have been received from a person engaged in an activity, notifying the RMO of their possession/intent to obtain a prescribed instrument under ss.61 (2) & (7) of the CWA.

Answer: State total number: 0

For each notice received provide:

The location of the property to which the notice relates

The WHPA or IPZ where the property is located

The activity to which the notice relates

The type of prescribed instrument if any, referred to in the notice and any information needed to identify the prescribed instrument

0 (zero) notices were received, in 2016, from a person engaged in an activity, notifying the RMO of their possession/intent to obtain a prescribed instrument under ss.61(2) & (7) of the CWA.

- 7) How many notices has the RMO issued under s. 61(6) & (8) of the CWA, notifying a person engaged in a threat activity of the **termination of an exemption** provided under s.61 (1).

Answer: State total number: 0

The location of the property to which the notice relates

The WHPA or IPZ where the property is located

The activity to which the notice relates

The type of prescribed instrument if any, referred to in the notice and reason for termination (e.g. timeline passed, not eligible for PI etc.,)

0 (zero) notices were issued by the RMO in 2016, under s.61(6) & (8) of the CWA, notifying a person engaged in a threat activity of the termination of an exemption provided under s.61(1)

- 8) How many times was a s.61 (1) exemption granted?

Answer: State total number: 0

The location of the property to which the notice relates

The WHPA or IPZ where the property is located

The activity to which the notice relates

The type of prescribed instrument for which the s. 61(1) exemption was granted

A s.61(1) exemption was granted 0 (zero) times in 2016.

- 9) What is the total number of inspections that were carried out for activities that require a Risk Management Plan under s.58 of the CWA?

Answer: State total number: 10

10 (ten) inspections were carried out, in 2016, for activities that require a Risk Management Plan under s.58 of the CWA. The purpose of the inspections was to start the Risk Management Plan development process.

- 10) Of the inspections carried out for activities requiring a RMP, how many were found to be in non-compliance with the specific contents of the RMP?

Answer: State total number: Not applicable

Indicate the threat activity to which each s.58 non-compliance pertains to

No Risk Management Plan compliance inspections were performed in 2016.

11) What is the total number of inspections carried out for activities that were prohibited?

Answer: State total number: 0

Indicate the threat activity: _____

0 (zero) inspections were carried out, in 2016, for activities that were prohibited.

12) Of the number of inspections undertaken in respect to an activity to which s.57 of the Act applied, in how many cases was the person engaged in contravention with s. 57 of the Act?

Answer: List number of contraventions with s.57: 0

Provide a description of the circumstances surrounding the contravention: _____

No inspections were performed, in 2016, with respect to an activity to which s.57 of the Act applied.

13) How many Risk Assessments have been **submitted, accepted, and not accepted** under s.60 of the CWA.

Answer: State total number for each category (submitted/accepted/not accepted): 0

For each Risk Assessment that has been submitted provide:

The location of the property to which the Risk Assessment relates

The WHPA or IPZ where the property is located

The activity to which the Risk Assessment relates

0 (zero) Risk Assessments were submitted, in 2016, under s.60 of the CWA; therefore no Risk Assessments were accepted/not accepted.

14) How many times has the RMO caused a thing to be done under s. 64 of the CWA?

Answer: State total number: 0

For each instance that the RMO caused a thing to be done provide:

The location of the property to which the notice under s.64 relates

The WHPA and IPZ where the property is located

The activity to which the notice under s. 64 of the CWA relates

The RMO has caused a thing to be done 0 (zero) times, in 2016, under s.64 of the CWA.

15) How many prosecutions have been made under s. 106 of CWA?

Answer: State total number: 0

For each prosecution, please provide a brief description of the related offence.

0 (zero) prosecutions were made, in 2016, under s.106 of the CWA.

16) How many prosecutions made under s.106 of the CWA have resulted in a conviction?

Answer: State total number: 0

For each conviction provide a brief description of the related offence: _____

0 (zero) prosecutions were made, in 2016, under s.106 of the CWA that have resulted in a conviction.

6. SECTION 46 ANNUAL REPORTING REQUIREMENTS

The following questions are being asked by the SPC in support of the Section 46 Annual Reporting Requirements. Please note some of the questions below have been requested by the MOECC. If you have not been recording this information as of yet, please make a note below, and provide us with feedback as to whether or not you will be able to track this information going forward.

1) During inspections, where the RMI found a **significant non-compliance** with the contents of a RMP, indicate the length of time it took to bring the activity back into compliance with the terms of the RMP. An approximation is acceptable.

Answer: Not applicable, as no RMP compliance inspections were performed in 2016.

2) During inspections, where the RMI found a major non-compliance with a **section 57 prohibition**, indicate the length of time it took to bring the activity back into compliance with the SPP.

Answer: Not applicable, as no inspections were completed in 2016 for the purposes of ensuring compliance with s.57 of the CWA.

3) During inspections, how many times did the RMI come across **new** significant threat activities on site that were previously not addressed through the implementation process? For each newly identified threat, list the threat activity and provide a brief explanation outlining why the new threat had been established (e.g. expanded operations, change in circumstances surrounding threat – now more being stored etc...). Did you take action to respond to the threat, if yes, please provide a brief explanation of the actions that you took.

Answer: Not applicable, as no new significant threat activities were identified in 2016 that had not previously been addressed through the implementation process.

4) For persons without existing PIs, applying for an exemption under s.61 (1), how much time overall (from notice of RMP requirement to receipt of statement of conformity) did it take to obtain a confirmation of exemption? Please circle your answer.

Answer: Not applicable, as 0 (zero) persons without existing PI's, applied for an exemption under s.61(1) of the CWA in 2016.

5) For each RMP that has been agreed to or established, was the person engaged undertaking any risk management measures to address the threat activity **prior** to receiving the notice of RMP requirement? Please circle your response.

Answer: Yes

6) How many times was the RMO unable to issue a s.59 Notice to Proceed? Generally, in those situations where a s. 59 Notice to Proceed could not be issued, provide a brief explanation of the reasons why (i.e. nature of the operation did not allow application to be altered to meet requirements, applicant unwilling to alter etc.)

Answer: Not applicable

7. OPTIONAL OPEN ENDED QUESTIONS TO AID IN A QUALITATIVE ASSESSMENT OF POLICY EFFECTIVENESS

These questions are being asked to support a qualitative assessment of policy effectiveness. Responses to these questions will be collected over a five year period, and incorporated into the five year implementation review. Please respond where applicable to your implementation experiences. We acknowledge that many of the questions will be marked as not applicable for this year, as policy implementation has just begun.

This space has been provided for you to share any implementation successes, failures, frustrations, gaps, or other comments with the Source Protection Committee & Source Protection Authority (ies).

- 1) Generally, in circumstances where a prohibited activity was proposed, how readily available were alternatives to the prohibited activity? How willing was the applicant to alter their application to meet SW requirements.

Not applicable, as no circumstances occurred, in 2016, where a prohibited activity was proposed.

- 2) Does enforcing a prohibition require more or less work than anticipated? (I.e. would negotiating a RMP have been simpler/ achieved the same result in the end as prohibition?)

Not applicable, as no circumstances occurred, in 2016, where it was necessary to enforce a prohibition policy.

- 3) How accepting were people with the requirement to cease a prohibited activity? Were applicants generally open to implementing alternatives or altering their application to satisfy prohibition policy requirements?

Not Applicable, as there have been no confirmed significant drinking water threats within the City that are subject to a prohibition policy, as of yet.

- 4) In circumstances where applicants were required to alter their application in order to get a s.59 Notice to Proceed, how many application submissions, on average, were required before a notice could be issued?

Not applicable, as there have been no circumstances where an applicant has had to alter their application in order to get a s.59 Notice to Proceed, as of yet.

- 5) Generally, how often were potential significant threat issues resolved through pre-consultation?

Not applicable, more often than not significant drinking water threat activities are not being proposed to which a Part IV policy applies.

- 6) Generally, how many days on average did it take to negotiate and complete a Risk Management Plan for each of the following sectors: agricultural, industrial, commercial/institutional, municipal (include time spent in meetings, conversations with client, review/sign-off, etc.,) An approximation is acceptable. Suggested Answer format for each sector: <1day, 1-3 days, 3-6 day, 6-10days, >10days. If greater than 10 days, please note the reason why.

The 2 (two) Risk Management Plans that were negotiated and completed in 2016 both pertained to internal municipal facilities. The negotiations for these 2 (two) RMP's exceeded 10 days; this is likely due to the fact that detailed review and comments were required from multiple municipal representatives prior to finalizing the RMP's.

- 7) Generally, how much time overall (from the time you first approached the person engaged, to RMP agreement/establishment) did it take to complete the RMP process? Suggested Answer format: <2months, 2-4months, 4-6 months, 6-8months, 8-10months, 10-12months, >1year. If greater than 1 year, please note the reasons why.

The 2 (two) Risk Management Plans that were negotiated and completed in 2016 both pertained to internal municipal facilities. From beginning to end the Risk Management Plan process took 2-4 months for these 2 (two) examples.

- 8) In general, with the inclusion of conditions in a s. 59 Notice, were potential moderate or low threat activities created? (i.e. conditions in the notice prevented creation of significant threat activity, but allowed for potential moderate or low threat activity to continue.)

Not applicable, as there have been no circumstances where the issuance of a s.59 notice has created a moderate or low threat activity.

- 9) In general, can you identify any loopholes or gaps (either in the tables of circumstances, source protection legislation, source protection plan, or other) that applicants are using to get around the requirements posed by the source protection plan policies?

No loopholes have been identified that applicants are using to get around requirements posed by the Source Protection Plan policies.

- 10) For s.59 applications where it was determined that neither s. 57 nor s.58 apply, indicate the most common reasons why (i.e. just a moderate threat, conditions included in Notice to Proceed that prevent threat from becoming significant, activity moved to boundaries outside WHPA –A etc., etc..)

Most commonly, no significant threat activities have been proposed in relation to applications to which a Part IV policy applies.

- 11) Have there been any occasions where processes set up to flag catch the potential creation of a significant drinking water threat have failed? Explain the circumstances of the situation and what you did to correct it.

No.

12) Have there been any occasions where the Spills Action Centre had to be notified of a substance being discharged into the raw water supply of an existing municipal drinking water system considered in the Assessment Report under s.89(1) of the Clean Water Act? If yes, please provide a brief description of the circumstances surrounding the incident. Did the party responsible for the drinking water health hazard have a RMP in place? If a RMP was in place, was the party responsible for the drinking water health hazard in compliance with the terms of the agreed upon RMP?

No.

13) Were any emerging threat activities observed that could not be addressed through the source water protection program because the activity could not be designated as a significant drinking water threat (e.g. activity wasn't one of the 21 prescribed threats, activity could only be designated as a moderate threat per the table of circumstances etc.,).

We have identified a few activities that would seem to pose some level of potential risk but are not considered significant threats due to prescribed threats and circumstances.

- There are several automotive end-of-life processing facilities yards within the WHPA-B where waste fluids are drained from vehicles. Due to the vulnerability score, the storage of hazardous or liquid industrial waste is not considered a significant threat.

8. Official Plan Amendments

The table below lists a number of tasks that will need to be completed in order to ensure compliance with **the land use planning policies** in the source protection plan and s. 40 and s.42 of the Clean Water Act. Place a checkmark beneath the statement that currently best describes the **development status** of the task listed in the far left column. Use the comment section to add any relevant comments and information.

s. 46 Tasks	Yes	In progress	No	N/A
A Planning lead has been designated/hired as the key contact for the integration of SWP into the Official Plan (this may include hiring a consultant)	√			
Existing O.P and zoning by-laws have been reviewed		√		

and scoped for required changes				
Official Plan and Zoning By-law update discussions are underway		√		
Action Plan for O.P & zoning by-law updates has been developed (timing of rollout and key milestone identified)		√		
Template and/or draft O.P and Zoning by-laws have been drafted and circulated internally for comments			√	
Final draft of OP amendment complete			√	
All planners have been trained on SWP policies, and upcoming amendments		√		
OP amendment finalized and ready for inclusion upon next O.P update		√- See Comment		

Comments: Planning processes and application forms have been amended. Planners and frontline staff receive annual training for screening application processes. An official plan amendment with assessment report mapping and some initial policies were put in place prior to Source Protection Plan approval in 2014. The next layer of work will entail more detailed policy, more emphasis will be on zoning provisions, and developing design guidelines for salt management-mainly implemented through site plan control. At this time a determination has not been made as to whether this process will be a stand-alone official plan amendment or form part of a new/or updated Official Plan process.

9. Mandatory Septic Re-Inspection Program

1) Has the municipality determined how many (if any) septic inspections will need to be performed in source protection vulnerable areas?

Yes (√) In progress No

If **yes**, list the number of septic systems that will need to be re-inspected under the Building Code Act.

Five active septic systems have been identified for inspection under the building code act.

2) Has a lead authority or contact been designated or hired to coordinate and carry out the septic inspection program in your municipality?

Yes (√) In progress No

If **yes**, please list their contact information below:

Septic Re-inspection Program Lead	
Name	Chris Glanville
Title /Role	Acting Manager of Building Services

Email	Chris.glanville@barrie.ca
Telephone	705-739-4220 Ext 4501

3) Has the municipality developed an inspection protocol?

Yes (v) In progress No

If **yes**, please briefly describe the inspection protocol below:

- Notices mailed to affected property owners
- Property owner pays inspection fee
- City of Barrie building inspectors complete a visual inspection of the septic system
- Final City of Barrie report provided to property owner
- Documentation is recorded and stored by the Building Services branch
- 5-yr re-inspection cycle commences

4) Are septic inspections underway?

Yes (v) No

If **yes**, what percentage of systems have been inspected to date?

100% of Clean Water Act triggered inspections were completed in 2015. Five Lake Simcoe Protection Plan triggered septic inspections were completed in 2016.

5) Please place a checkmark beside the additional supporting documentation that has been developed as part of the septic inspection program :

- Inspection report templates (v)
- Database to manage inspection information (v)
- Notification materials for landowners subject to septic inspections (v)
- By-laws requiring collection of fees for septic inspection (v)

6) Septic inspections triggered under the Building Code will need to be completed by **January 19, 2017**. When do you anticipate having the septic inspections completed?

All septic inspections triggered by the Clean Water Act were completed in 2015.

10. New, Altered, or Decommissioned Drinking water Systems

1) Are there any new planned or potential drinking water systems (wells or intakes) within the next five years?

Yes No (v) Other

If **yes**, describe:

- 2) Has the necessary technical work for the new well/intake/system been completed (e.g. delineation of wellhead protection areas/ intake protection zones and identification of significant drinking water threats?)

Yes No Not Applicable (v)

If **no**, what is the expected completion date of technical work?

- 3) Is the municipality planning to decommission an existing well, intake, or system?

Yes No (v) Other

If **yes**, please list

- 4) Please describe any changes to existing levels of any contaminant in the raw water since approval of Assessment Report.

Existing Conditions

The City continues to implement a Voluntary Municipal Groundwater Monitoring Program to determine the potential for impact to the municipal water supply from groundwater impacted by volatile organic compounds, trichloroethylene (TCE) and vinyl chloride. This monitoring program has been on-going since 2003.

The 2015 report indicates that concentrations of TCE and its breakdown products are relatively stable or declining in the vicinity of Well 3A, 5, 12 and 15. Based on the results from the 2015 report, it is concluded that low concentrations of VOC are present in the municipal water supply aquifer, but have continued to remain fairly stable and well below the ODWS. It should be noted that TCE was not observed at any of the municipal wells.

The South Plume is observed to be continuously migrating slowly to the east toward the Wastewater Treatment Facility (WwTF). Observations made in 2015 indicate that the core of the South Plume remains at the base of the upper unconfined aquifer, west of Anne Street, in the vicinity of Tiffin Street and the ACDC railway. The overall extent of the plume is relatively stable and concentrations appear to be declining overall. The report states that this unconfined aquifer is susceptible to rapid infiltration from surface, which may be diluting and dispersing the plume in areas of higher infiltration.

The North Plume is said to be migrating to the southeast, toward the WwTF. The peak concentration of TCE within the plume is adjacent to the WwTF at Bradford Street. Concentrations within the WwTF property are expected to increase in the future; however it is noted that TCE is not detected in monitoring wells located in the eastern property boundary of the WwTF.”

Recommendations made in the report for 2016 were to continue the existing monitoring program. This includes the following:

- 1) Semi-annual sampling of the sentinel monitoring wells;
- 2) Monthly monitoring for VOC at the municipal supply wells;
- 3) Annual sampling for the remainder of the monitoring wells.

Issues Contributing Area

Based on the review of the data as part of the Assessment Report preparation, drinking water issues were identified for the City of Barrie. In the original study, wells 3A, 11, 12 and 14 have been identified as having increasing trends of chloride concentrations and wells 11 and 12 as having increasing trends of sodium that are projected to exceed Ontario Drinking Water Standards within the next 50 years.

The City continues to monitor sodium and chloride concentrations in the raw water at all municipal supply wells, and the surface treatment plant. To assess the status of the issues for the City of Barrie water system, the original regression analysis for the projected concentrations of sodium and chloride in the municipal supply wells was updated using recent data. The table below summarizes the results.

Well	Drinking Water Parameter	2010 Report Golder Projected Concentration	2016 Projected 50 year Concentration (to end of 2066)
3A	Chloride	245 mg/L	268.4 mg/L
	Sodium	90 mg/L	98.7 mg/L
4	Chloride	90 mg/L	77.9 mg/L
	Sodium	37 mg/L	30.8 mg/L
5	Chloride	135 mg/L	108.0 mg/L
	Sodium	45 mg/L	42.4 mg/L
7	Chloride	No reported concentration	39.4 mg/L
	Sodium	No reported concentration	8.2 mg/L
9	Chloride	160 mg/L	181.3 mg/L
	Sodium	65 mg/L	76.7 mg/L
11	Chloride	325 mg/L	364.9 mg/L
	Sodium	185 mg/L	147.6 mg/L
12	Chloride	375 mg/L	469.2 mg/L
	Sodium	250 mg/L	257.0 mg/L

Well	Drinking Water Parameter	2010 Report Golder Projected Concentration	2016 Projected 50 year Concentration (to end of 2066)
13	Chloride	220 mg/L	210.0 mg/L
	Sodium	105 mg/L	102.0 mg/L
14	Chloride	240 mg/L	454.3 mg/L
	Sodium	110 mg/L	164.7 mg/L
15	Chloride	120 mg/L	144.9 mg/L
	Sodium	47 mg/L	52.4 mg/L
16	Chloride	No reported concentration	73.4 mg/L
	Sodium	No reported concentration	No noticeable trend
17	Chloride	No reported concentration	68.7 mg/L
	Sodium	No reported concentration	No noticeable trend
18	Chloride	No reported concentration	increasing trend ~20
	Sodium	No reported concentration	No noticeable trend

The results of this analysis are very similar to the results obtained as part of the assessment report. Wells 3A, 11, 12 and 14 have been identified as having increasing trends of chloride concentrations and well 12 as having an increasing trend of sodium concentrations that are projected to exceed Ontario Drinking Water Standards within the next 50 years. However, the 50 year projected concentration of sodium for well 11 has lowered, suggesting further assessment is required to validate the trend results.

- 5) Describe the status of any revisions to the Municipal Water Servicing Master Plans and/ or Class EAs to establish new municipal water supplies

At this time, the City does not plan to establish any new municipal water supplies that were not included in the assessment report.

For further information regarding this report, please contact:

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