



May 9, 2011

Via: Email

Mr. Kerry Mulchansingh
Project Manager – Source Water Protection
Credit Valley Conservation
1255 Old Derry Road
Mississauga ON L5N 6R4

Re: Town of Orangeville Issue Contributing Areas
File No.: MSA123590.0001

Introduction

In July 2010, Burnside submitted the report “Issues Evaluation and Threats Assessment, Town of Orangeville” to the Town of Orangeville and CTC Source Water Protection Committee (SPC). The report was completed according to guidance provided in the Technical Rules: Assessment Report (Clean Water Act, 2006). The report included identification of water quality issues for the Town of Orangeville wells and a threats inventory within the Orangeville wellhead protection areas.

In the report, sodium and chloride were identified as issues for Orangeville Municipal supply Wells 2A, 5/5A, 6, 9A/9B, 10 and 11. Based on the conclusion that winter road maintenance (application of road salt) was the main cause of the issue, an issue contributing area (ICA) was created by applying a buffer around all areas that might receive road salt within the wellhead protection area. This approach was specific to the study and was approved by the SPC.

The CTC SPC has the task of combining several Threats Assessment reports completed by different consultants into one Assessment Report for the entire watershed. In reviewing reports from other consultants the SPC found that there were different approaches in delineating issue contributing areas for similar issues. In order to retain consistency in approach across the Source Protection Area (SPA), the SPC requested Burnside to modify the Town of Orangeville Issue Contributing Areas to include the entire wellhead protection area for wells identified as having issues. The SPC has also requested a change in methodology for identifying threats related to the application of road salt that is consistent with other reports within their SPA.

This memo documents the change in ICAs for Orangeville and the revised methods for identifying road salt application threats. Updated figures and threats enumeration tables are attached. Tables and Figure numbers used to correspond to the original report (Burnside, 2010).

Delineation of Issue Contributing Area

An issue contributing area is defined as the area within a vulnerable area where the cause of an issue at a drinking water source is thought or shown to originate. For the issue noted for Wells 2A, 5/5A, 6, 9A/9B, 10 and 11 in Orangeville the entire WHPA has been designated as the issue contributing area. Maps showing the issue contributing areas are provided in Figures 4.1 and 4.2.

Identification of Threats Contributing to Issues

According to the Technical Rules: Assessment Report, (Clean Water Act, 2006) all activities that may contribute to an identified issue located within the defined issue contributing area, are to be regarded as significant drinking water threats. These threats include sewage disposal, application of road salt, handling and storage of road salt and the storage of snow.

To identify parcels where threats related to road salt should be assigned the following methods were used. These methods were established to match the assumptions used by Genivar in their work on the prioritization of issue related threats for the Orangeville issue contributing areas. All commercial, industrial, institutional and residential lands were identified as potentially having paved surfaces that would receive road salt during the winter months. Parcels were then verified by air photography to ensure that they included paved surfaces and that the surfaces occurred within the ICA. All parcels with paved areas that may receive road salt within the ICAs were assigned a threat related to the application of road salt and a threat for the handling and storage of road salt. All roadways within each Issue Contributing Area were counted as one threat activity and one parcel.

Sewage disposal threats that may discharge sodium and chloride include private septic systems, storm water management ponds and sewage treatment plant discharge effluent. Private septic systems are assumed to contain sodium and chloride arising from the use of salts in water softeners. Storm water management ponds are assumed to contain sodium and chlorides based on run off from paved areas. In areas that are serviced by waste water treatment plants it is assumed that softeners will discharge to these systems.

The Orangeville Water Pollution Control Plant is located within the WHPA-E of Orangeville Well 10. The Water Pollution Control Plant is classified as a threat in the Table of Drinking Water Threats under Sewage System or Sewage Works – Sewage Treatment Plant Effluent Discharges (Reference Number 784 to 904). Based on the Table of Drinking Water Threats, sodium and chloride are not listed in the circumstances as chemicals of concern. However, based on the above assumptions and on review of water quality data (Genivar, 2011) we know that sewage effluent does contain high amounts of sodium and chloride. In order to identify the Water Pollution Control Plant as

a significant threat due to an issue, we recommend that the SWP committee apply for permission to add sodium and chloride as chemicals of concern for this specific threat.

Tables 1 to 3 provide a summary of threats associated with sodium and chloride identified within each of the Issue Contributing Areas.

Table 1 Threats within Well 2, 5/5A, 7, 9A/9B Issue Contributing Area

Threat Type	Number of Threats
Sewage or Sewage Works – (58 Private, 5 SWM Ponds)	63
Application of Road Salt – (1 Municipal Roads, 25 Commercial/Industrial/Institutional, 986 Residential)	1012
Handling and Storage of Road Salt - (25 Commercial/Industrial/Institutional, 986 Residential)	1011
Storage of Snow	0
Total Number of Activities	2086

Table 2 Threats within Wells 6 & 11 Issue Contributing Area

Threat Type	Number of Threats
Sewage or Sewage Works – (205 Private, 5 SWM Ponds)	210
Application of Road Salt – (1 Municipal Roads, 41 Commercial/Industrial/Institutional, 999 Residential)	1041
Handling and Storage of Road Salt - (42 Commercial/Industrial/Institutional, 999 Residential)	1041
Storage of Snow	1
Total Number of Activities	2293

Table 3 Threats within Well 10 Issue Contributing Area

Threat Type	Number of Threats
Sewage or Sewage Works – (78 Private, 1 SWM Pond, 1 Waste Treatment Plant)	80
Application of Road Salt – (1 Municipal Roads, 17 Commercial/Industrial/Institutional, 203 Residential)	221
Handling and Storage of Road Salt - (17 Commercial/Industrial/Institutional, 203 Residential)	220
Storage of Snow	0
Total Number of Activities	521

1.1 Significant Drinking Water Threats

As per the Technical Rules, the enumeration of significant threats is required for the completion of the Assessment Report. Table 4 summarizes the significant threats identified within the WHPAs in the Town of Orangeville. A more detailed summary of the threats based on each WHPA is provided in Appendix A.

Table 4 Significant Drinking Water Threats – Town of Orangeville

Threat Type	Number of Threats	Total Parcels
The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	357	357
The handling and storage of commercial fertilizer.	1	1
The handling and storage of pesticide.	1	1
The handling and storage of road salt.	2272	2272
The storage of snow.	1	1
The handling and storage of fuel.	3	3
The handling and storage of dense non-aqueous phase liquid.	40	20
The use of land as livestock grazing or pasturing land, an outdoor confinement area, or a farm-animal yard.	1	1
The application of agricultural source material to land.	2	2
The storage of agricultural source material.	1	1
The application of non-agricultural source material to land.	2	2
The application of pesticide to land.	2	2
The application of road salt.	2274	2274
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	1	1
Total	4958	2316

*Note total number of parcels is less than total number of threats as more than one threat may occur on a parcel.

A total of 4,958 threat activities have been classified as significant. Any list of priorities that is developed should itemize these threats as the highest cause for concern. For all threats that were categorized there were certain assumptions that were made in order to complete the evaluation. These assumptions have been included in the report "Issues Evaluation and Threats Assessment, Town of Orangeville" (Burnside, 2010). In order to reduce the level of uncertainty associated with the current study it is recommended that steps be taken to validate the assumptions and that a re-evaluation of risk be done using the updated information. The re-evaluated threats should serve as the list of priorities for action to be taken by the SPC.

Respectfully submitted,

R.J. Burnside & Associates Limited

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Enc.

CC: Jack Tupling, Town of Orangeville
Lloyd Lemon, Genivar

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Figures

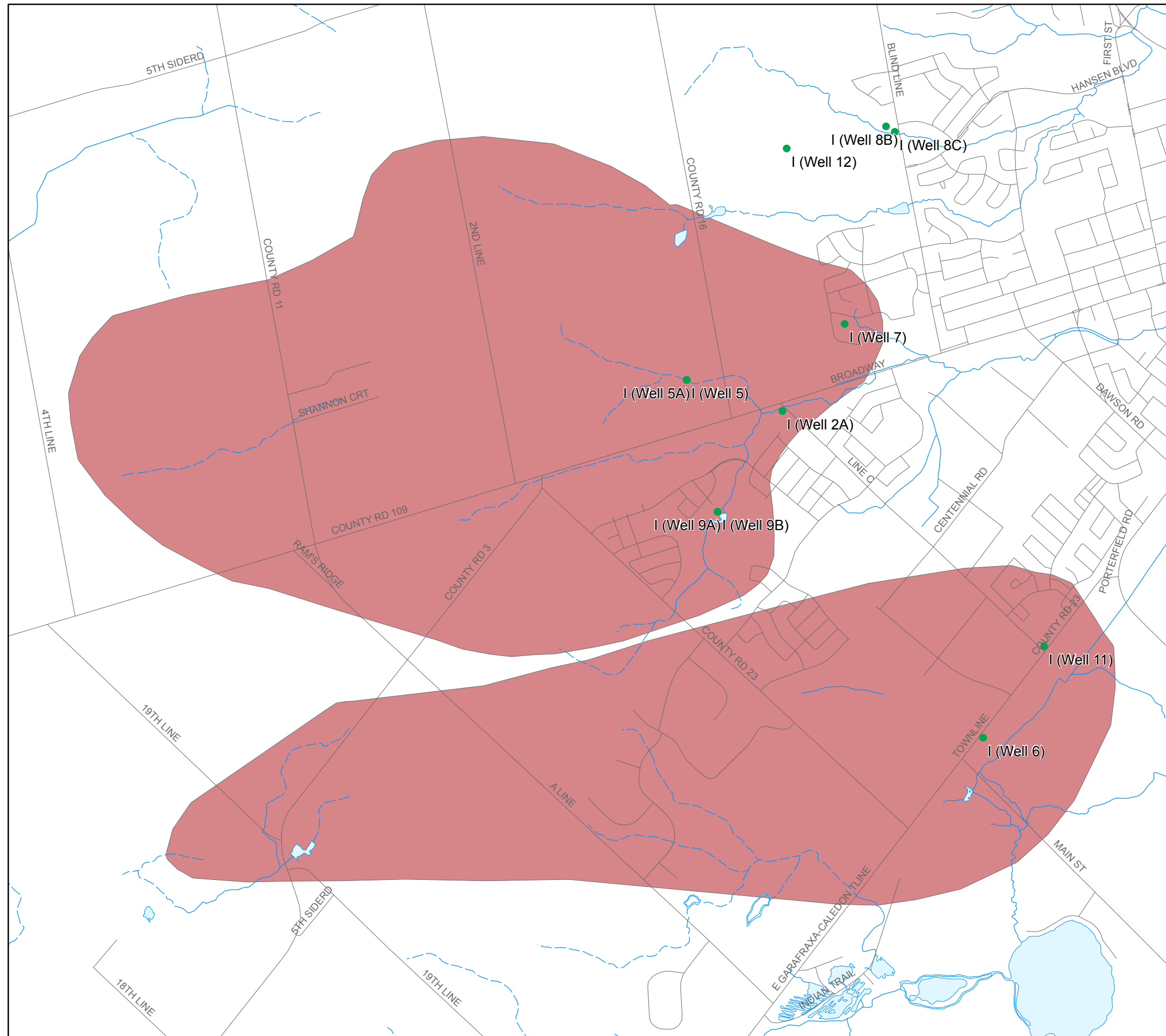


FIGURE 4.1
TOWN OF ORANGEVILLE
ISSUES EVALUATION AND
THREATS ASSESSMENT
ISSUES CONTRIBUTING
AREAS - WELLS 2A, 5,
5A, 7, 9A & 9B
AND WELLS 6 & 11

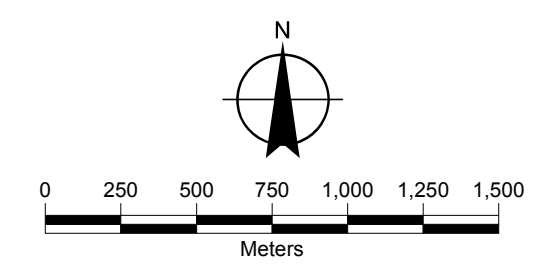
LEGEND

- Production Well Location (Type - I)
- Issues Contributing Area

Data Sources:
 Ministry of Natural Resources: Produced using information provided by the Ministry of Natural Resources, Copyright © Queen's Printer, 2009

National Topographic Data Base (NTDB), Canada
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R.J. Burnside & Associates Limited



Scale: 1:25,000
 May, 2011
 Project Number: MSA12359

Projection: UTM Zone 17
 Datum: NAD 83

Prepared By: P. Stubbert
 Verified By: D. Smikle



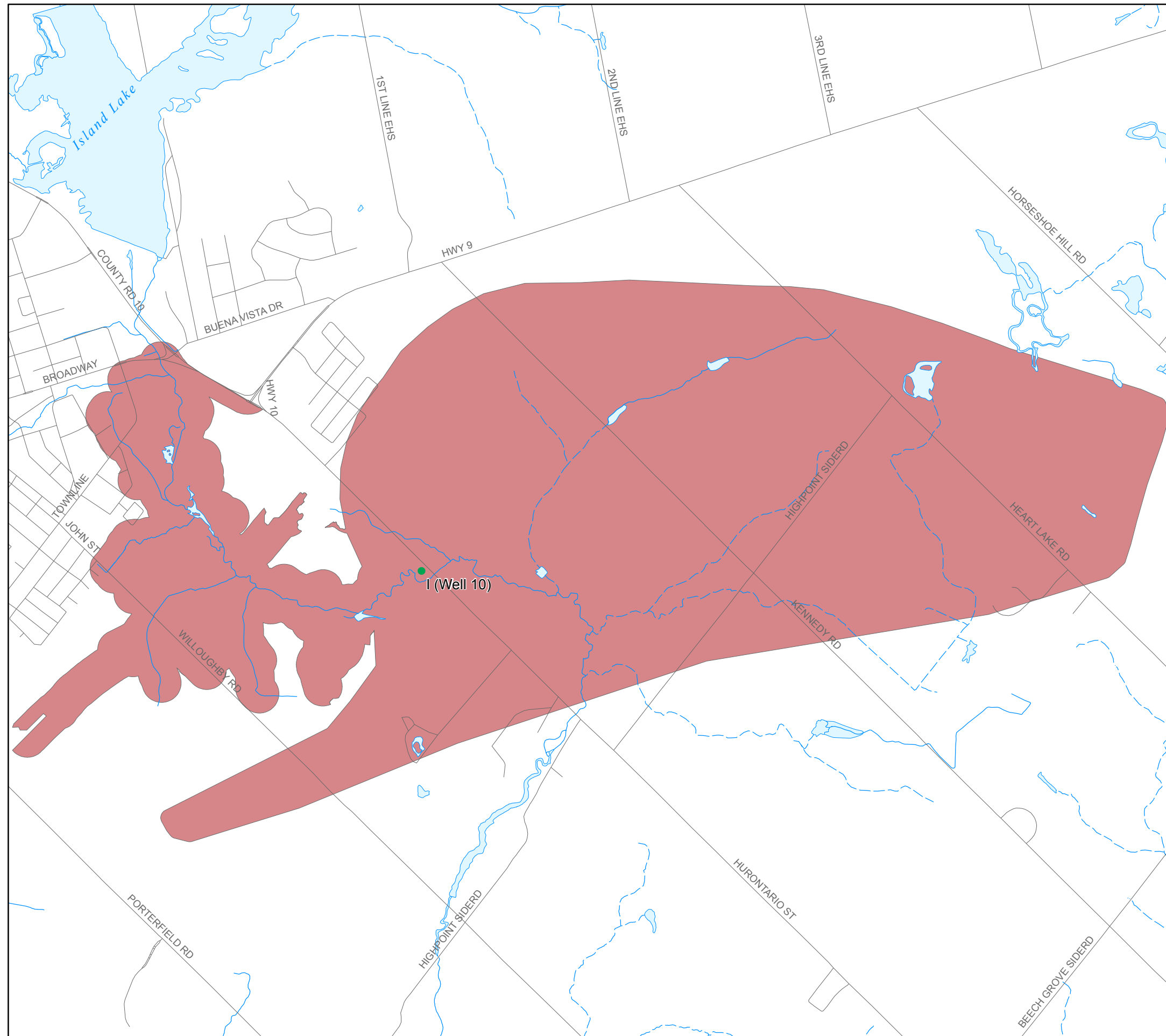


FIGURE 4.2
TOWN OF ORANGEVILLE
ISSUES EVALUATION AND
THREATS ASSESSMENT
ISSUES CONTRIBUTING
AREAS - WELL 10

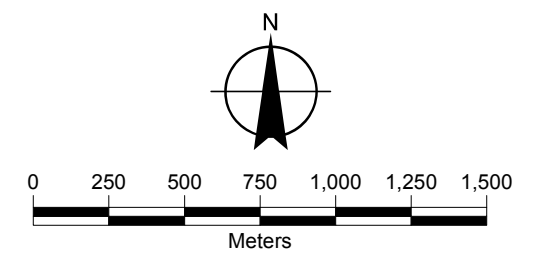
LEGEND

- Production Well Location (Type - I)
- Issues Contributing Area

Data Sources:
 Ministry of Natural Resources: Produced using information provided by the Ministry of Natural Resources, Copyright © Queen's Printer, 2009

National Topographic Data Base (NTDB), Canada
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Scale: 1:25,000
 May, 2011
 Project Number: MSA12359

Projection: UTM Zone 17
 Datum: NAD 83

Prepared By: P. Stubbart

Verified By: D. Smikle





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Appendix A

Summary Tables of Significant Threats

- Town of Orangeville

Appendix A
Summary Tables of Significant Threats - Town of Orangeville

	Wells 2A, 5/5A, 7, 9A/9B											
	Significant Threat Counts by Vulnerability Score										Total Significant Threats	
	VS = 10		VS = 8		VS = 6		VS = 4		VS = 2			
	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels
Managed Lands Threats												
The use of land as livestock grazing or pasturing land, an outdoor confinement area, or a farm-animal yard.	0	0	0	0	0	0	0	0	0	0	0	0
The application of agricultural source material to land.	0	0	0	0	0	0	0	0	0	0	0	0
The storage of agricultural source material.	0	0	0	0	0	0	0	0	0	0	0	0
The application of non-agricultural source material to land.	0	0	0	0	0	0	0	0	0	0	0	0
The handling and storage of non-agricultural source material.	0	0	0	0	0	0	0	0	0	0	0	0
The application of commercial fertilizer to land.	0	0	0	0	0	0	0	0	0	0	0	0
The application of pesticide to land.	0	0	0	0	0	0	0	0	0	0	0	0
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	0	0	0	0	0	0	0	0	0	0	0	0
Non-Managed Lands Threats												
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	0	0	0	0	0	0	0	0	0	0	0	0
The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	3	3	12	12	22	22	12	12	15	15	64	64
The handling and storage of commercial fertilizer.	0	0	0	0	0	0	0	0	0	0	0	0
The handling and storage of pesticide.	0	0	0	0	0	0	0	0	0	0	0	0
The application of road salt.	44	44	257	257	689	689	14	14	8	8	1012	1012
The handling and storage of road salt.	43	43	257	257	689	689	14	14	8	8	1011	1011
The storage of snow.	0	0	0	0	0	0	0	0	0	0	0	0
The handling and storage of fuel.	1	1	0	0	0	0	0	0	0	0	1	1
The handling and storage of dense non-aqueous phase liquid.	0	0	8	4	8	4	0	0	0	0	16	8
The handling and storage of an organic solvent.	0	0	0	0	0	0	0	0	0	0	0	0
The management of runoff that contains chemicals used in the de-icing of aircraft.	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL MANAGED LANDS SIGNIFICANT THREATS	0		0				0		0		0	
TOTAL NON-MANAGED LANDS SIGNIFICANT THREATS	91		534		1408		40		31		2104	
TOTAL NUMBER OF SIGNIFICANT THREATS:	91		534		1408		40		31		2104	
TOTAL PARCELS WITH SIGNIFICANT THREATS:		46		258		697		17		14		1030

Appendix A
Summary Tables of Significant Threats - Town of Orangeville

	Wells 6 & 11											
	Significant Threat Counts by Vulnerability Score										Total Significant Threats	
	VS = 10		VS = 8		VS = 6		VS = 4		VS = 2			
	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels
Managed Lands Threats												
The use of land as livestock grazing or pasturing land, an outdoor confinement area, or a farm-animal yard.	0	0	0	0	0	0	0	0	0	0	0	0
The application of agricultural source material to land.	0	0	0	0	0	0	0	0	0	0	0	0
The storage of agricultural source material.	0	0	0	0	0	0	0	0	0	0	0	0
The application of non-agricultural source material to land.	0	0	0	0	0	0	0	0	0	0	0	0
The handling and storage of non-agricultural source material.	0	0	0	0	0	0	0	0	0	0	0	0
The application of commercial fertilizer to land.	0	0	0	0	0	0	0	0	0	0	0	0
The application of pesticide to land.	0	0	0	0	0	0	0	0	0	0	0	0
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	0	0	0	0	0	0	0	0	0	0	0	0
Non-Managed Lands Threats												
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	0	0	0	0	0	0	0	0	0	0	0	0
The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	1	1	24	24	169	169	11	11	6	6	211	211
The handling and storage of commercial fertilizer.	0	0	0	0	0	0	0	0	0	0	0	0
The handling and storage of pesticide.	0	0	0	0	0	0	0	0	0	0	0	0
The application of road salt.	1	1	621	621	407	407	9	9	3	3	1041	1041
The handling and storage of road salt.	1	1	621	621	407	407	9	9	3	3	1041	1041
The storage of snow.	1	1	0	0	0	0	0	0	0	0	1	1
The handling and storage of fuel.	0	0	0	0	0	0	0	0	0	0	0	0
The handling and storage of dense non-aqueous phase liquid.	0	0	18	9	2	1	0	0	0	0	20	10
The handling and storage of an organic solvent.	0	0	0	0	0	0	0	0	0	0	0	0
The management of runoff that contains chemicals used in the de-icing of aircraft.	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL MANAGED LANDS SIGNIFICANT THREATS	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL NON-MANAGED LANDS SIGNIFICANT THREATS	4	3	1284	624	985	408	29	11	12	6	2314	1052
TOTAL NUMBER OF SIGNIFICANT THREATS:	4	3	1284	624	985	408	29	11	12	6	2314	1052
TOTAL PARCELS WITH SIGNIFICANT THREATS:	4	3	1284	624	985	408	29	11	12	6	2314	1052

Appendix A
Summary Tables of Significant Threats - Town of Orangeville

	Well 10														
	Significant Threat Counts by Vulnerability Score												Total Significant Threats		
	VS = 10		VS = 8		VS = 7.2		VS = 6		VS = 4		VS = 2				
	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	# threats	# parcels	
Managed Lands Threats															
The use of land as livestock grazing or pasturing land, an outdoor confinement area, or a farm-animal yard.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
The application of agricultural source material to land.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
The storage of agricultural source material.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
The application of non-agricultural source material to land.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
The handling and storage of non-agricultural source material.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
The application of commercial fertilizer to land.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
The application of pesticide to land.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Non-Managed Lands Threats															
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	3	3	2	2	7	7	17	17	49	49	3	3	81	81	
The handling and storage of commercial fertilizer.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
The handling and storage of pesticide.	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
The application of road salt.	3	3	28	28	143	143	7	7	38	38	2	2	221	221	
The handling and storage of road salt.	2	2	28	28	143	143	7	7	38	38	2	2	220	220	
The storage of snow.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
The handling and storage of fuel.	2	2	0	0	0	0	0	0	0	0	0	0	0	2	2
The handling and storage of dense non-aqueous phase liquid.	0	0	0	0	0	0	2	1	0	0	0	0	0	2	1
The handling and storage of an organic solvent.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
The management of runoff that contains chemicals used in the de-icing of aircraft.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL MANAGED LANDS SIGNIFICANT THREATS	6	6	0	0	0	0	0	0	0	0	0	0	0	6	6
TOTAL NON-MANAGED LANDS SIGNIFICANT THREATS	12	12	58	58	293	293	33	33	125	125	7	7	528	528	
TOTAL NUMBER OF SIGNIFICANT THREATS:	18	18	58	58	293	293	33	33	125	125	7	7	534	534	
TOTAL PARCELS WITH SIGNIFICANT THREATS:	6	6	28	28	143	143	18	18	59	59	4	4	232	232	

Appendix A
Summary Tables of Significant Threats - Town of Orangeville

	Wells 8B,8C, 12					
	Significant Threat Counts by Vulnerability Score				Total Significant Threats	
	VS = 10		VS = 8			
	# threats	# parcels	# threats	# parcels	# threats	# parcels
Managed Lands Threats						
The use of land as livestock grazing or pasturing land, an outdoor confinement area, or a farm-animal yard.	0	0	0	0	0	0
The application of agricultural source material to land.	1	1	0	0	1	1
The storage of agricultural source material.	0	0	0	0	0	0
The application of non-agricultural source material to land.	1	1	0	0	1	1
The handling and storage of non-agricultural source material.	0	0	0	0	0	0
The application of commercial fertilizer to land.	0	0	0	0	0	0
The application of pesticide to land.	1	1	0	0	1	1
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	0	0	0	0	0	0
Non-Managed Lands Threats						
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	0	0	0	0	0	0
The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	1	1	0	0	1	1
The handling and storage of commercial fertilizer.	0	0	0	0	0	0
The handling and storage of pesticide.	0	0	0	0	0	0
The application of road salt.	0	0	0	0	0	0
The handling and storage of road salt.	0	0	0	0	0	0
The storage of snow.	0	0	0	0	0	0
The handling and storage of fuel.	0	0	0	0	0	0
The handling and storage of dense non-aqueous phase liquid.	0	0	2	1	2	1
The handling and storage of an organic solvent.	0	0	0	0	0	0
The management of runoff that contains chemicals used in the de-icing of aircraft.	0	0	0	0	0	0
TOTAL MANAGED LANDS SIGNIFICANT THREATS	3		0		3	
TOTAL NON-MANAGED LANDS SIGNIFICANT THREATS	1		2		3	
TOTAL NUMBER OF SIGNIFICANT THREATS:	4		2		6	
TOTAL PARCELS WITH SIGNIFICANT THREATS:		2		1		3