

DRINKING WATER SOURCE PROTECTION

Trent Conservation Coalition Source Protection Region



Revision for 9 Surface Water DWS: IPZ-2 Delineation, Vulnerability Assessment, and Significant Threats Enumeration

Source Protection Committee Meeting – May 14, 2010
Bridgenorth, ON



Expert People. Better Decisions.



Agenda



- Study Sites
- IPZ-2 Delineations
- Vulnerability Assessment
- Significant Threats Enumeration
- Closing

Study Sites



1. Lakefield (Township of Smith-Ennismore Lakefield)
2. Peterborough (City of Peterborough)
3. Hastings (Township of Trent Hills/Township of Otonabee-South Monaghan)
4. Campbellford (Township of Trent Hills)
5. Warkworth (Township of Trent Hills)
6. Marmora (Township of Marmora-Lake)
7. Frankford (City of Quinte West)
8. Batawa (City of Quinte West)
9. Trenton (City of Quinte West)

IPZ-2 Delineation Methodology



- Determine IPZ-2 based on 2 hr travel time
- Type C (Hastings, Campbellford, Warkworth, Marmora, Frankford, Batawa, Trenton)
 - Modelled with EFDC at 2 year flow
 - Dye studies for model calibration
- Type C (Lakefield)
 - Modelled with EFDC at 2 year flow
 - using average annual maxima winds (2 yr) and 2 yr flows
 - Dye studies for model calibration

IPZ-2 Delineation Methodology



- Type C (Peterborough)
 - Model based on HEC-RAS, interpretation of cross-section data and field data
 - Dye studies, orange study and turbidity spike analysis for model calibration

IPZ-2 Delineation



- Tributaries (All Sites)
 - EFDC model at bankfull conditions (2 yr flow) used to calculate time of travel to the mouth of each tributary
 - Ungauged tributaries – applied average velocity of 0.3 m/s from dye studies
 - Gauged tributaries (Cold Creek, Beaver Creek) – velocity estimated at bankfull discharge (2 yr flow) based on a USGS report

IPZ-2 Delineation

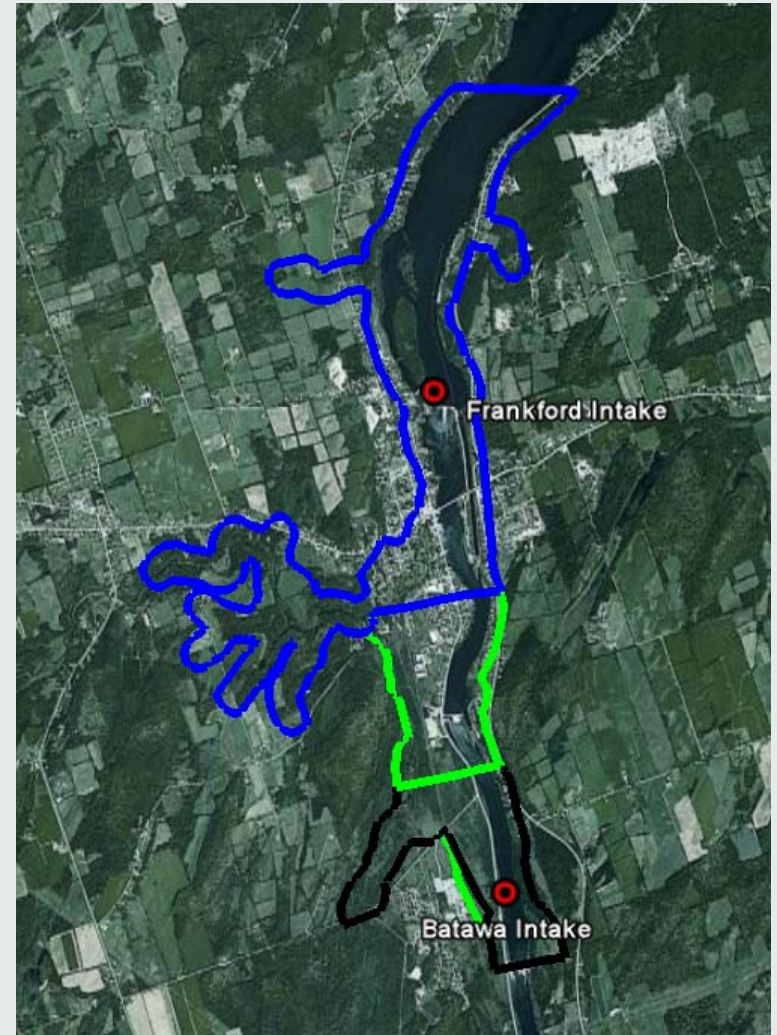


- Transport Pathway (anthropogenic) identification for IPZ-2 extensions (Lakefield, Peterborough, Campbellford, Frankford, Batawa, Trenton)
 - Tile drains from hard copy mapping provided by LTRCA (C,F,B,T)
 - Storm sewers from mapping provided by municipalities (P,L,C,B,T)

IPZ-2 Delineation



Intake	Percent Change in Area for Updated IPZ-2
Lakefield	- 30%
Peterborough	+ 433%
Hastings	0%
Marmora	+ 1239%
Campbellford	+ 81%
Warkworth	+ 247%
Frankford	+ 208%
Batawa	+ 461%
Trenton	+ 127%
Bayside	(no change)



Vulnerability Scores



Intake	IPZ-1	IPZ-2	Notes
Lakefield	10	8	IPZ-2 decreased, no longer includes a significant number of residential lots
Peterborough	10	9	
Hastings	10	8	
Marmora	10	7	
Campbellford	10	9	
Warkworth	10	9	
Frankford	9	8.1	IPZ-2 includes area that slopes steeply to Trent River
Batawa	9	8.1	IPZ-2 includes additional transport pathways and urban area
Trenton	10	9	
Bayside (no change)	8	6.4	

Summary of Significant Threats



- Major additional significant threats
 - Industrial effluent (Trenton – Sonoco plant)
 - Fuel storage and handling (Trenton – service station)
 - Frankford WWTP
- Other additional significant threats
 - Threats related to agricultural activities
 - Pesticide application to managed lands

Summary of Significant Threats



Prescribed Drinking Water Threat (Reference Number)	Lakefield	Peterborough	Hastings	Marmora	Campbellford	Warkworth	Frankford	Batawa	Trenton	Bayside
Storage of hazardous/liquid industrial waste : registered	2	3			2	1			6	
Storage of hazardous/liquid industrial waste : not registered	2				2				1	
Sewage treatment plant effluent discharge: >50,000 m ³ /year								1		
On-site septic systems	1	2	30	18		2				
On-site septic holding tank	1									
Sanitary sewer lines	1	1	1		1				1	
Industrial effluent: required to report to NPRI									1	
Application of ASM	16	14	10	1	14	22	10	19	3	
Storage of ASM	4	6	6		8	5	4	7	1	
Application of pesticides: 1-10 ha	1	10			7	17	1		6	
Application of pesticides : >10 ha		7			2		2	6		
Handling and storage of pesticides: >2500 L or >2500 kg		5			5	3				
Application of road salt	6	1	1	1	6				4	
Storage of snow					1					
Above grade storage of fuel									1	
Above grade fuel handling	2				5				1	
Storage of organic solvents :<2500 L	1									
Pasture /Confinement Yard	12	17	11	1	18	15	12	21	8	1
Total Number of Affected Parcels	31	32	44	20	39	30	12	26	22	1

Closing



- Questions
- Discussion