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Table 9-1**Lower/Single Tier Municipalities located in Highly Vulnerable Aquifers and Significant Groundwater Recharge Areas**

Mississippi - Rideau Source Protection Region

Municipality	Highly Vulnerable Aquifer (HVA)	Significant Groundwater Recharge Area (SGRA)
Addington Highlands	X	X
Athens	X	X
Augusta	X	X
Beckwith	X	X
Carleton Place	X	X
Central Frontenac	X	X
Clarence – Rockland	X	X
Drummond/North Elmsley	X	X
Elizabethtown – Kitley	X	X
Greater Madawaska	X	X
Lanark Highlands	X	X
Merrickville – Wolford	X	X
Mississippi Mills	X	X
Montague	X	X
North Dundas	X	X
North Frontenac	X	X
North Grenville	X	X
Ottawa	X	X
Perth	X	X
Rideau Lakes	X	X
Smiths Falls	X	X
Tay Valley	X	X
Westport	X	X

Compiled from: MRSPR Groundwater Technical Reports (see Appendix A-1)

Table 9-2**Summary of Key Findings for HVA, SGRA, WHPAs - RVSPA**

Mississippi-Rideau Source Protection Region

HVA, SGRA, or WHPA	Number of Wells	Size of HVA, SGRA, or WHPA (km ²)	Area of WHPA where Potential Significant Threats (not including DNAPL zone) may be present (km ²)	Area of WHPA where Potential Significant Threats (including DNAPL zone) may be present (km ²)	Number of Potential Significant Threats	Number of Issues	Number of Conditions
Highly Vulnerable Aquifers (HVA)	Not Applicable	3631	0	0	0	1	0
Significant Groundwater Recharge Areas (SGRA)	Not Applicable	721	0	0	0		0
Kemptville WHPA*	3	513.7	0.1	80.8	105	0	0
Merrickville WHPA	3	142.1	0.04	53.9	24	0	0
Munster WHPA**	2	25.7	1.6	23.3	256	0	0
Richmond - King's Park WHPA	2	42.9	0.2	21.6	132	0	0
Westport WHPA***	2	3	0.6	0.9	51	0	0
TOTALS	12		5.9	181	568	1	0

* Approx. 0.8 km² of the Kemptville WHPA extends into the South Nation Source Protection Area

** Approx. 1.5 km² of the Munster WHPA extends into the Mississippi Valley Source Protection Area

*** Approx. 0.3 km² of the Westport WHPA extends into the Cataraqui Source Protection Area

Total WHPA area for all WHPA in Rideau Valley Source Protection Area (km²) - 724.8

Compiled from: MRSPR Groundwater Technical Reports (see Appendix A-1)

Table 9-3**Lower/Single Tier Municipalities located in Wellhead Protection Areas - RVSPA**

Mississippi - Rideau Source Protection Region

Municipality	Kemptville WHPA	Merrickville WHPA	Munster WHPA	King's Park - Richmond WHPA	Westport WHPA
Drummond/North Elmsley		X			
Merrickville – Wolford	X	X			
Montague	X	X			
North Grenville	X				
Ottawa	X		X	X	
Rideau Lakes					X
Smiths Falls		X			
Westport					X

Compiled from: MRSPR Groundwater Technical Reports (see Appendix A-1)

Table 9-4**Summary of Potentially Significant Threats by Prescribed Drinking Water Threat Category for Groundwater Based Municipal Drinking Water Systems - RVSPA**

Mississippi - Rideau Source Protection Region

Prescribed Drinking Water Threat Category		Total Significant Threats Count for each Prescribed Drinking Water Threats With adjustments for Septic Systems and Heating Oil Tanks
		Rideau Valley Source Protection Area
1	The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act .	0
2	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	50
3	The application of agricultural source material to land.	3
4	The storage of agricultural source material.	0
5	The management of agricultural source material.	0
6	The application of non-agricultural source material to land.	0
7	The handling and storage of non-agricultural source material.	0
8	The application of commercial fertilizer to land.	0
9	The handling and storage of commercial fertilizer.	1
10	The application of pesticide to land.	3
11	The handling and storage of pesticide.	1
12	The application of road salt.	8
13	The handling and storage of road salt.	0
14	The storage of snow.	0
15	The handling and storage of fuel.	478
16	The handling and storage of a dense non-aqueous phase liquid (DNAPLS).	12
17	The handling and storage of an organic solvent.	12
18	The management of runoff that contains chemicals used in the de-icing of aircraft.	0
19	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.	0
20	An activity that reduces the recharge of an aquifer.	0
21	The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.	0
Totals		568

Table 9-5**Summary of Non-Municipal Drinking Water Issues - MRSPR**

Mississippi - Rideau Source Protection Region

NON-MUNICIPAL Drinking Water Issue	Contaminants	Activity	Reference Number	Circumstance
		From Provincial Threats Tables		
Beckwith Groundwater Contamination (MVSPA and RVSPA)	trichloroethylene, vinyl chloride and 1,1 dichloroethene	The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	1660	The land disposal of municipal waste within the meaning of clauses (a) and (b) of the definition of land disposal in Section 1 of Regulation 347 (General – Waste Management) made under the Environmental Protection Act, is undertaken at the site. The fill area is at least 1 but not more than 10 hectares. A discharge from the area where the waste is disposed may result in the presence of Trichloroethylene or another DNAPL that could degrade to Trichloroethylene in groundwater or surface water.
		The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	1661	The land disposal of municipal waste within the meaning of clauses (a) and (b) of the definition of land disposal in Section 1 of Regulation 347 (General – Waste Management) made under the Environmental Protection Act, is undertaken at the site. The fill area is at least 1 but not more than 10 hectares. A discharge from the area where the waste is disposed may result in the presence of vinyl chloride or another DNAPL that could degrade to vinyl chloride in groundwater or surface water.
Crotch Lake Elevated Uranium (MVSPA)	uranium	Not Applicable because naturally occurring		
Village of Constance Groundwater Contamination (MVSPA)	nitrate	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	698	The system is an earth pit privy, privy vault, greywater system, cesspool, or a leaching bed system and its associated treatment unit. The system is subject to the Ontario Building Code Act, 1992. The discharge from the system may result in the presence of Nitrogen in groundwater or surface water.
Village of Lanark Groundwater Contamination (MVSPA)	nitrate and bacteriological parameters	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	698	The system is an earth pit privy, privy vault, greywater system, cesspool, or a leaching bed system and its associated treatment unit. The system is subject to the Ontario Building Code Act, 1992. The discharge from the system may result in the presence of Nitrogen in groundwater or surface water.

NON-MUNICIPAL Drinking Water Issue	Contaminants	Activity	Reference Number	Circumstance
		From Provincial Threats Tables		
		The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	1956	The system is an earth pit privy, privy vault, greywater system, cesspool, or a leaching bed system and its associated treatment unit and is a sewage system as defined in section 1 of O.Reg. 350/06 (Building Code) made under the Building Code Act, 1992 or a sewage works as defined in Section 1 of the Ontario Water Resources Act. A discharge from the system may result in the presence of one or more pathogens in groundwater or surface water
Cranberry Estates Groundwater Contamination (RVSPA)	nitrate and bacteriological parameters	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	698	The system is an earth pit privy, privy vault, greywater system, cesspool, or a leaching bed system and its associated treatment unit. The system is subject to the Ontario Building Code Act, 1992. The discharge from the system may result in the presence of Nitrogen in groundwater or surface water.
		The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	1956	The system is an earth pit privy, privy vault, greywater system, cesspool, or a leaching bed system and its associated treatment unit and is a sewage system as defined in section 1 of O.Reg. 350/06 (Building Code) made under the Building Code Act, 1992 or a sewage works as defined in Section 1 of the Ontario Water Resources Act. A discharge from the system may result in the presence of one or more pathogens in groundwater or surface water

Compiled from: MRSPR Groundwater Technical Reports (see Appendix A-1)

Table 9-6**Summary of Key Findings for Intake Protection Zones - RVSPA****Mississippi-Rideau Source Protection Region**

Municipal Drinking Water System (Source Protection Area)	Number of Intakes	Size of IPZ (km ²)		Vulnerability Scores	Area of IPZ where Potential Significant Threats may be present (km ²)	Number of Potential Significant Threats (line, polygon or point)	Number of Issues	Number of Conditions
		IPZ-1	IPZ-2					
Perth (RVSPA)	1	IPZ-1	0.07	10	10.21	88	0	0
		IPZ-2	2.42	9				
		IPZ-3	378	4 to 8				
		Total IPZ	380					
Smiths Falls (RVSPA)	2	IPZ-1 (Main)	0.10	10	15.69	90	0	0
		IPZ-1 (Aux)	0.06	10				
		IPZ-1 (Total)	0.14	10				
		IPZ-2	3.14	8				
		IPZ-3	899	4 to 8				
		Total IPZ	902					
Britannia (Ottawa) (RVSPA)	1	IPZ-1	0.13	9	31.45	36	0	0
		IPZ-2	31.32	8.1				
		IPZ-3	36	6.3 to 7.2				
		Total IPZ	67					
Lemieux Island (Ottawa) (RVSPA)	1	IPZ-1	0.07	9	13.02	0	0	0
		IPZ-2	12.95	8.1				
		IPZ-3	76	5.4 to 7.2				
		Total IPZ	89					
Total					70	214	0	0

Total IPZ area for Perth and Smiths Falls (km ²)	903
Total IPZ area for Britannia and Lemieux Island (km ²)	89
Total IPZ area for Rideau Valley Source Protection Area (km ²)	992

Notes: MVSPA - Mississippi Valley Source Protection Area
RVSPA - Rideau Valley Source Protection Area

Compiled from: MRSPR Surface Water Technical Reports (see Appendix A-1)

Table 9-7
Lower/Single Tier Municipalities located in Intake Protection Zones -
RVSPA
Mississippi - Rideau Source Protection Region

Municipality			
	Perth	Smith Falls	Britannia and Lemieux Island (Ottawa)
Addington Highlands			✘
Beckwith		✘	✘
Carleton Place			✘
Central Frontenac	✘	✘	✘
Drummond/North Elmsley	✘	✘	✘
Greater Madawaska			✘
Lanark Highland			✘
Mississippi Mills			✘
Montague		✘	
North Frontenac			✘
Ottawa			✘
Perth	✘	✘	
Rideau Lakes	✘	✘	
Smiths Falls		✘	
South Frontenac	✘	✘	
Tay Valley	✘	✘	✘
Westport		✘	

Compiled from: MRSPR Surface Water Technical Reports (see Appendix A-1)

Table 9-8
Summary of Vulnerability Scores for Municipal Surface Water Intakes - RVSPA
Mississippi-Rideau Source Protection Region

Zone	Area Vulnerability Factor (B) <i>Expressed as a whole number</i>			Source Vulnerability Factor (C)	Vulnerability Score (V) <i>Expressed to one decimal point or as whole number depending on the value of C</i>		
	IPZ-1	IPZ-2	IPZ-3		IPZ-1	IPZ-2	IPZ-3
<i>Possible Values</i>	10	7 to 9	1 to 9	0.9 or 1	9 or 10	6.3 to 9	0.9 to 9
Perth	10	9	4 to 8	1	10	9	4 to 8
Smiths Falls	10	8	4 to 8	1	10	8	4 to 8
Britannia	10	9	4 to 8	0.9	9	8.1	3.6 to 7.2
Lemieux Island	10	9	4 to 8	0.9	9	8.1	3.6 to 7.2

Compiled from: MRSPR Surface Water Technical Reports (see Appendix A-1)

Table 9-9

**Summary of Potentially Significant Threats by Prescribed Drinking Water Threat Category for Surface Water Based Municipal Drinking Water Systems - RVSPA
Mississippi - Rideau Source Protection Region**

Prescribed Drinking Water Threat Category		Total Significant Threats Count for each Prescribed Drinking Water Threats
		Rideau Valley Source Protection Area
1	The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the <i>Environmental Protection Act</i> .	0
2	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	5
3	The application of agricultural source material to land.	67
4	The storage of agricultural source material.	32
5	The management of agricultural source material.	0
6	The application of non-agricultural source material to land.	0
7	The handling and storage of non-agricultural source material.	0
8	The application of commercial fertilizer to land.	0
9	The handling and storage of commercial fertilizer.	2
10	The application of pesticide to land.	24
11	The handling and storage of pesticide.	0
12	The application of road salt.	25
13	The handling and storage of road salt.	0
14	The storage of snow.	16
15	The handling and storage of fuel.	0
16	The handling and storage of a dense non-aqueous phase liquid (DNAPLS).	0
17	The handling and storage of an organic solvent.	2
18	The management of runoff that contains chemicals used in the de-icing of aircraft.	0
19	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.	0
20	An activity that reduces the recharge of an aquifer.	0
21	The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.	41
Totals		214

Table 9-10
Summary of Potentially Significant Threats for
Groundwater and Surface Water Based Municipal Drinking Water Systems - RVSPA
Mississippi - Rideau Source Protection Region

Prescribed Drinking Water Threat		Threat Sub Category	Total Significant Threats Count for each Threat Subcategory
1	The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	Application Of Untreated Septage To Land	0
		Storage, Treatment And Discharge Of Tailings From Mines	0
		Waste Disposal Site - Landfarming Of Petroleum Refining Waste	0
		Waste Disposal Site - Landfilling (Hazardous Waste)	0
		Waste Disposal Site - Landfilling (Municipal Waste)	0
		Waste Disposal Site - Landfilling (Solid Non Hazardous Industrial or Commercial)	0
		Waste Disposal Site - Liquid Industrial Waste Injection into a well	0
		Waste Disposal Site - PCB Waste Storage	0
		Waste Disposal Site - Storage Of Hazardous Waste At Disposal Sites	0
		Waste Disposal Site - Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste	0
2	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	Sewage System Or Sewage Works - Combined Sewer discharge from a stormwater outlet to surface water	0
		Sewage System Or Sewage Works - Discharge Of Untreated Stormwater From A Stormwater Retention Pond	0
		Sewage System Or Sewage Works - Industrial Effluent Discharges	0
		Sewage System Or Sewage Works - Sanitary Sewers and related pipes	54
		Sewage System Or Sewage Works - Septic System	0
		Sewage System Or Sewage Works - Septic System Holding Tank	0
		Sewage System Or Sewage Works - Sewage treatment plant bypass discharge to surface water	0
		Sewage System Or Sewage Works - Sewage Treatment Plant Effluent Discharges (Includes Lagoons)	0
		Sewage System Or Sewage Works - Storage Of Sewage (E.G. Treatment Plant Tanks)	1
3	The application of agricultural source material to land.	Application Of Agricultural Source Material (ASM) To Land	70
4	The storage of agricultural source material.	Storage Of Agricultural Source Material (ASM)	32
5	The management of agricultural source material.	Management Of Agricultural Source Material - Aquaculture	0
6	The application of non-agricultural source material to land.	Application Of Non-Agricultural Source Material (NASM) To Land (Including Treated Septage)	0
7	The handling and storage of non-agricultural source material.	Storage Of Non-Agricultural Source Material (NASM)	0
8	The application of commercial fertilizer to land.	Application Of Commercial Fertilizer To Land	0
9	The handling and storage of commercial fertilizer.	Storage Of Commercial Fertilizer	3
10	The application of pesticide to land.	Application Of Pesticide To Land	27
11	The handling and storage of pesticide.	Storage Of A Pesticide	1
12	The application of road salt.	Application Of Road Salt	33
13	The handling and storage of road salt.	Storage Of Road Salt	0
14	The storage of snow.	Storage Of Snow	16
15	The handling and storage of fuel.	Handling Of Fuel	3
		Storage Of Fuel	475
16	The handling and storage of a dense non-aqueous phase liquid.	Handling Of A Dense Non Aqueous Phase Liquid (DNAPL)	12
		Storage Of A Dense Non Aqueous Phase Liquid (DNAPL)	12
17	The handling and storage of an organic solvent.	Storage Of An Organic Solvent	2
18	The management of runoff that contains chemicals used in the de-icing of aircraft.	Management Of Runoff Containing Chemicals Used In The De-icing Of Aircrafts	0
19	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.		0
20	An activity that reduces the recharge of an aquifer.		0
21	The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation	33
		Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Grazing and pasturing)	8
		Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Yards or confinement)	0
Totals			782

Table 9-11
Summary of Potentially Significant Threats for
Groundwater and Surface Water Based Municipal Drinking Water Systems - MRSPR
Mississippi - Rideau Source Protection Region

Prescribed Drinking Water Threat		Threat Sub Category	Total Significant Threats Count for each Threat Subcategory ¹
1	The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	Application Of Untreated Septage To Land	0
		Storage, Treatment And Discharge Of Tailings From Mines	0
		Waste Disposal Site - Landfarming Of Petroleum Refining Waste	0
		Waste Disposal Site - Landfilling (Hazardous Waste)	0
		Waste Disposal Site - Landfilling (Municipal Waste)	0
		Waste Disposal Site - Landfilling (Solid Non Hazardous Industrial or Commercial)	0
		Waste Disposal Site - Liquid Industrial Waste Injection into a well	0
		Waste Disposal Site - PCB Waste Storage	0
		Waste Disposal Site - Storage Of Hazardous Waste At Disposal Sites	0
		Waste Disposal Site - Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste	0
2	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	Sewage System Or Sewage Works - Combined Sewer discharge from a stormwater outlet to surface water	0
		Sewage System Or Sewage Works - Discharge Of Untreated Stormwater From A Stormwater Retention Pond	0
		Sewage System Or Sewage Works - Industrial Effluent Discharges	0
		Sewage System Or Sewage Works - Sanitary Sewers and related pipes	121
		Sewage System Or Sewage Works - Septic System	8
		Sewage System Or Sewage Works - Septic System Holding Tank	0
		Sewage System Or Sewage Works - Sewage treatment plant bypass discharge to surface water	0
		Sewage System Or Sewage Works - Sewage Treatment Plant Effluent Discharges (Includes Lagoons)	0
		Sewage System Or Sewage Works - Storage Of Sewage (E.G. Treatment Plant Tanks)	1
3	The application of agricultural source material to land.	Application Of Agricultural Source Material (ASM) To Land	76
4	The storage of agricultural source material.	Storage Of Agricultural Source Material (ASM)	35
5	The management of agricultural source material.	Management Of Agricultural Source Material - Aquaculture	0
6	The application of non-agricultural source material to land.	Application Of Non-Agricultural Source Material (NASM) To Land (Including Treated Septage)	0
7	The handling and storage of non-agricultural source material.	Storage Of Non-Agricultural Source Material (NASM)	0
8	The application of commercial fertilizer to land.	Application Of Commercial Fertilizer To Land	0
9	The handling and storage of commercial fertilizer.	Storage Of Commercial Fertilizer	6
10	The application of pesticide to land.	Application Of Pesticide To Land	33
11	The handling and storage of pesticide.	Storage Of A Pesticide	5
12	The application of road salt.	Application Of Road Salt	37
13	The handling and storage of road salt.	Storage Of Road Salt	0
14	The storage of snow.	Storage Of Snow	18
15	The handling and storage of fuel.	Handling Of Fuel	10
		Storage Of Fuel	642
16	The handling and storage of a dense non-aqueous phase liquid.	Handling Of A Dense Non Aqueous Phase Liquid (DNAPL)	13
		Storage Of A Dense Non Aqueous Phase Liquid (DNAPL)	13
17	The handling and storage of an organic solvent.	Storage Of An Organic Solvent	2
18	The management of runoff that contains chemicals used in the de-icing of aircraft.	Management Of Runoff Containing Chemicals Used In The De-Icing Of Aircrafts	0
19	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.		0
20	An activity that reduces the recharge of an aquifer.		0
21	The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation	46
		Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Grazing and pasturing)	8
		Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Yards or confinement)	0
Totals			1074

Note¹ Significant threat count last updated June 2011