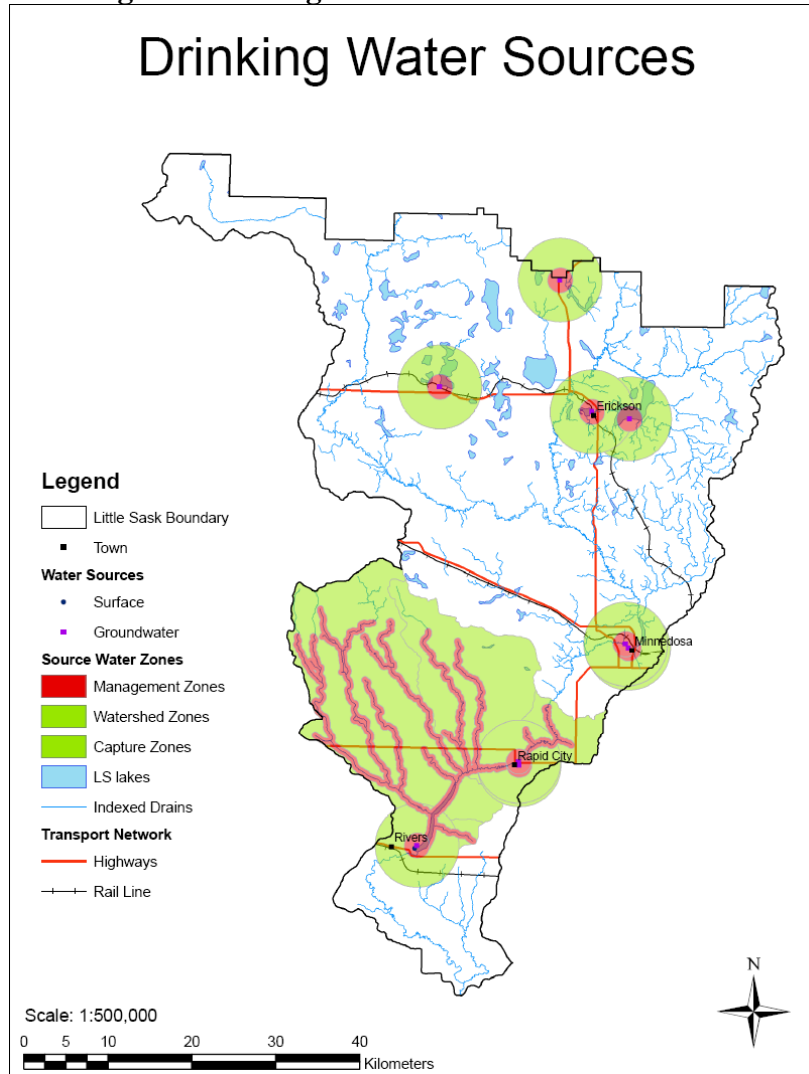


# Little Saskatchewan SOW Report

## 1. Community/Source Water Protection Assessment

### Drinking Water Background



Clean, potable drinking water is critical for human life and, therefore, a necessity for prosperous sustainable communities. Drinking water sources can be sorted into 3 types: public systems contain 15 or more service connections, semi-public systems contain less than 15 service connections but are not private systems (e.g. a school or hospital with it's own well), and private systems that supply water to only one private residence. The Little Saskatchewan River Watershed contains 9 public drinking water sources (**Table 1**). No semi-public sources were identified and private sources were not examined because comprehensive data is unavailable.

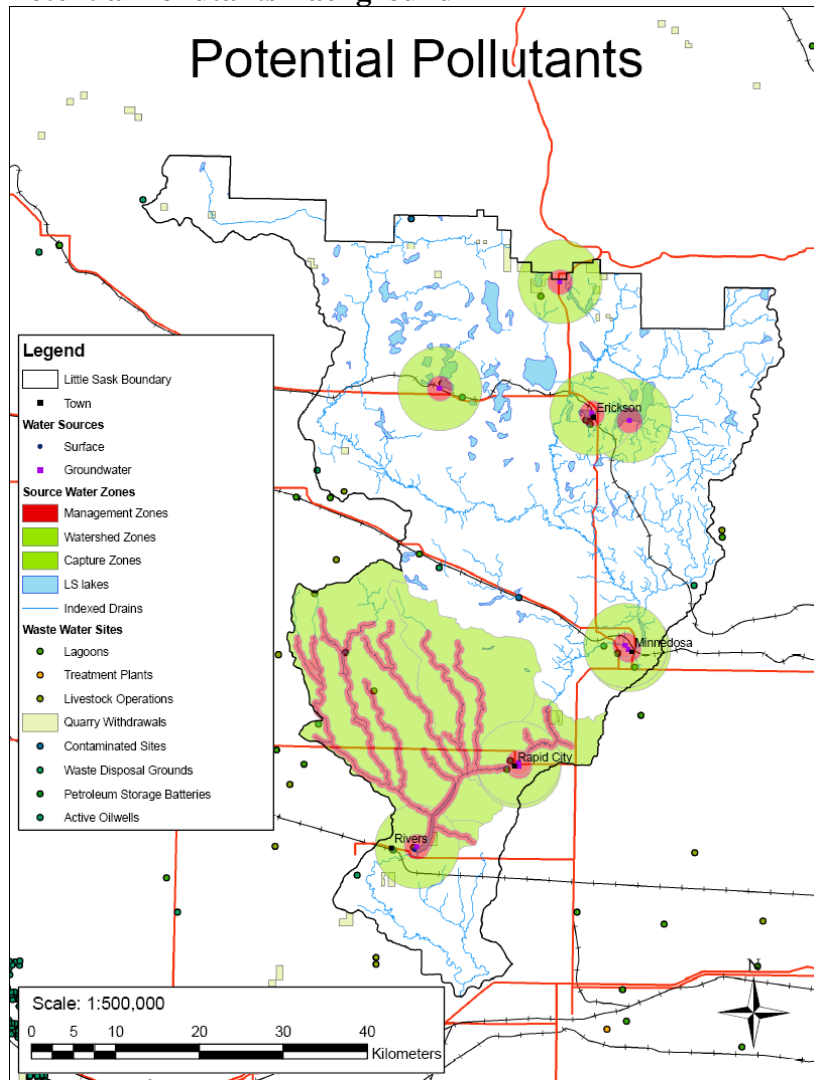
**Table 1**

Public Water Treatment Plant	Source	Treatment	Guidelines for Canadian Drinking Water Health Exceedence	Guidelines for Canadian Drinking Water Aesthetic Exceedence	Population Served (Approximate)
ERICKSON	Well 1 Well 2	Ion exchange softening, greensand filtration, chloramination disinfection.		TDS, Manganese, Sodium	450
MINNEDOSA 1	Well 1	Greensand filtration, chlorine disinfection.		TDS	2500
MINNEDOSA 2	Well 2 Well 3	Iron removal, chlorine disinfection.		TDS, Manganese	
ODANAH, R M of	well	Greensand filtration, chlorine disinfection.	BDCM	TDS, Hardness	300 (most outside the watershed)
OTTER LAKE	well	Chlorination.			Seasonal
RAPID CITY	East well West well Back-up well	Greensand filtration, chlorine disinfection.	THM	TDS, Manganese, Hardness	425
RIVERS	Surface (Lake Wahtopanah)	Coagulation, filtration, chlorine disinfection.	THM		1200
RIVERS PROVINCIAL PARK	well	Chlorination.			Seasonal
SANDY LAKE	East Well 1 West Well 2	Membrane filtration with greensand filter by-pass, chlorine disinfection.			300
SPORTSMAN PARK	Well 1	Chlorination.			Seasonal

The Guidelines for Canadian Drinking Water Quality were established to examine 85 parameters considering microbiological, physical and chemical, and radiological factors which may negatively impact human health. As **Table 1** shows, there are three public water sources that exceed the Guidelines for Canadian Drinking Water Health. The water for the RM of Odanah (rural water pipeline) exceeds the standards for Bromodichlormethane, and Rapid City and Rivers drinking water exceeds the standard established for THMs (??).

Aesthetic quality guidelines are in place to address factors such as taste, odour and colour which, although they do not affect human health, may affect public acceptance of drinking water. Five source waters, Minnedosa, Erickson, Rapid City, and the RM of Odanah, exceed the aesthetic guidelines for Canadian Drinking Water Health for factors such as Total Dissolved Solids (TDS), hardness, manganese, and sodium.

### Potential Pollutants Background



It is an accepted fact that drinking water must be clean and of pristine quality – nobody wants to drink water which tastes odd, looks dirty, or which may negatively impact human health. Unfortunately, many human activities and natural processes on the landscape hold the potential to degrade the quality of our drinking water sources. It is impossible to capture all of the potential risks to drinking water quality, this section attempts to capture those potential threats which are most serious or most likely to pose a hazard to drinking water sources.

It is important to recognize that when a potential pollutant risk exists, it may not be possible to simply eliminate the risk. For example, a highway upstream of drinking water intake poses a potential risk from a spill of hazardous goods, this does not mean that the highway should be closed – a comprehensive spill response plan may be sufficient to protect the drinking water source, and human health, from any contamination.

### Disturbance Indicators

Public Water Source	Source	Watershed Zone	Management Zone	Aquifer Status
Erickson	Well 1	12.45%	23.39%	Confined
	Well 2	12.46%	23.37%	Confined
Minnedosa 1	Well 1	19.02%	38.72%	Unconfined
Minnedosa 2	Well 2	18.62%	35.98%	Unconfined
	Well 3	18.61%	36.31%	Unconfined
RM of Odanah	Well	Water treated by Town of Minnedosa		
Otter Lake	Well	12.33%	7.4%	?
Rapid City	East Well	17.91%	18.63%	Unconfined
	West Well	17.91%	18.63%	Unconfined
	Back-up Well	17.8%	17.93%	Unconfined
Rivers	Surface (Lake Wahtopanah)	20.19%	18.57%	N/A
Rivers Provincial Park	Well	21.07%	9.5%	Unconfined
Sandy Lake	East Well 1	15.97%	16.27%	Confined
	West Well 2	15.97%	16.23%	Confined
Sportsman Park	Well 1	8.19%	19.31%	Unconfined (?)

### Trends

- Upgrading of treatment and distribution facilities throughout the watershed
- Rural water pipelines
  - Moving from private wells to a public source – easier to ensure drinking water standards are adhered to

## **Management Concerns**

### **Drinking Waters Exceeding the Guidelines for Canadian Drinking Water Health**

Within the Little Saskatchewan River watershed, three public water supplies exceeded the Guidelines for Canadian Drinking Water Standards, Rivers & Rapid City exceeded the levels of THM, and the R.M. of Odanah exceeded the standard for BDCM. Under current regulations these municipalities have 5 years to correct these deficiencies and bring the drinking water up to the standards of the Guidelines for Canadian Drinking Water.

#### **Management Recommendations**

- The water system for the RM of Odanah must conform to Canadian Guidelines for Drinking Water Health by lowering BDCM levels to within the acceptable limits within the next 5 years
- Rivers & Rapid City must conform to Canadian Guidelines for Drinking Water Health by lowering (THM???) levels to within the acceptable limits within the next 5 years
- What can be done in terms of land/water management to address high BDCM levels?
- What can be done in terms of land/water management to address high THM levels?
- What can be done in terms of treatment to address these high levels?

### **Drinking Water Susceptibility (Source Water Protection Assessment)**

Public water supplies are managed by the Office of Drinking Water to ensure adequate treatment and safe distribution for the protection of human health. One of the key factors that affect drinking water quality is the quality of the untreated water at the intake location. This source water will naturally vary in quality due to natural processes, the potential also exists for human activities to introduce pollutants, bacteria, and pathogens which may harm human health. This section of the report examines the relative susceptibility of drinking water sources to pollution introduced as a result of human activities.

Drinking water susceptibility includes measures of a number of different indicators including: wastewater treatment facilities, transport of Dangerous Goods routes, mines and quarries, large livestock operations, landfills, contaminated sites, petroleum storage facilities, and landscape disturbance based on land use. A standardized methodology has been adopted for the province of Manitoba which will allow for relative comparison of susceptibility of drinking water sources across the province. It is important to note that this is only a measurement of susceptibility – not of risk, this is an important distinction as the susceptibility assessment only checks for the presence of a potential pollutant but does not include any measure of probability or likelihood of occurrence.

Public Water Source	Source	Well Type	Susceptibility Rating	Factors Impacting Susceptibility Rating
Erickson	Well 1	Confined	Moderate	Highway x3, railway, impacted sites x3, wastewater treatment lagoons, waste disposal grounds
	Well 2	Confined	Moderate	Highway x3, railway, impacted sites x3, wastewater treatment lagoons, waste disposal grounds
Minnedosa 1	Well 1	Unconfined	High	Disturbance, highway x7, railway, wastewater treatment lagoons x2, waste disposal grounds, unconfined aquifer in management zone
Minnedosa 2	Well 2	Unconfined	High	Disturbance, highway x7, railway, wastewater treatment lagoons x2, waste disposal grounds, unconfined aquifer in management zone
	Well 3	Unconfined	High	Disturbance, highway x7, railway, wastewater treatment lagoons x2, waste disposal grounds, unconfined aquifer in management zone
RM of Odanah	Well	Water Supplied by Minnedosa's water system		
Otter Lake	Well	? (assuming unconfined to be safe)	High	Disturbance, highway, railway, wastewater treatment lagoon, impacted sites x3
Rapid City	East Well	Unconfined	High	Disturbance, highway, waste disposal grounds, wastewater treatment lagoons, unconfined aquifer in management zone
	West Well	Unconfined	High	Disturbance, highway, waste disposal grounds, wastewater treatment lagoons, unconfined aquifer in management zone
	Back-up Well	Unconfined	High	Disturbance, highway, waste disposal grounds, wastewater treatment lagoons, unconfined aquifer in management zone
Rivers	Surface (Lake Wahtopanah)	N/A	High	Disturbance, highway, quarries x2, impacted site, wastewater treatment lagoon x2
Rivers Provincial Park	Well	Unconfined	High	Disturbance, quarries x3, highway, railway, wastewater treatment lagoon, impacted site
Sandy Lake	East Well 1	Confined	Moderate	Highway, railway, waste disposal ground, wastewater treatment lagoon
	West Well 2	Confined	Moderate	Highway, railway, waste disposal ground, wastewater treatment lagoon
Sportsman Park	Well 1	Unconfined (?)	High	Quarries x5, highways x2, waste disposal grounds, wastewater treatment lagoon, unconfined aquifer in management zone

NOTE: All uncertain status wells (?) are assumed to be unconfined for the purposes of assessment

It is critical to recognize that a high or moderate susceptibility rating does not mean that water from these sources is unsafe. The source water protection assessment only indicates the relative susceptibility of the water source to pollution that may not be fully treated all of the time. Thus, a water source which is rated with a high susceptibility is not unsafe to

drink; it is simply subject to more potential pollutants than a moderate or high susceptibility water source.

### **Management Recommendations**

- Spill plans should be put in place for all transport of dangerous goods routes within the management zones and watershed/capture zones of drinking water sources
- The existing inventory of potential pollutant sources should be examined to identify high priority pollutant risks which should be addressed first

### **Data Gaps**

- The susceptibility rating does not include any measure of probability from indicators – it simply checks for the presence of indicators – probability information would lend greater precision to Source Water Protection Assessment
- All semi-public water sources in the watershed must be identified so they can be assessed for susceptibility
- Many potential pollutant sources in the watershed could not be identified and located – provincial records need to include location along with non-spatial data
- Many potential pollutant data sets are simply unavailable – location of septic fields/tanks, stormwater outfalls, petrochemical/chemical storage, livestock access to water sources