



# Source Water Protection



## What is Source Water Protection?

Source Water Protection is about protecting existing and future sources of drinking water from overuse and contamination. The Clean Water Act was created because the most effective way to ensure safe and sustainable drinking water is to protect it at its source.

## What are vulnerable areas?

There are four types of vulnerable areas:

- 1. Wellhead Protection Areas**  
(areas where groundwater travels to a municipal well)
- 2. Intake Protection Zones**  
(areas around surface water intakes where we get our water)
- 3. Highly Vulnerable Aquifers**  
(where the underground water source is more susceptible to contamination)
- 4. Significant Drinking Water Recharge Areas**  
(where a large proportion of water gets absorbed back into aquifers)



## What are drinking water threats?

There are 21 different types of threats to drinking water under the *Clean Water Act*. They include:

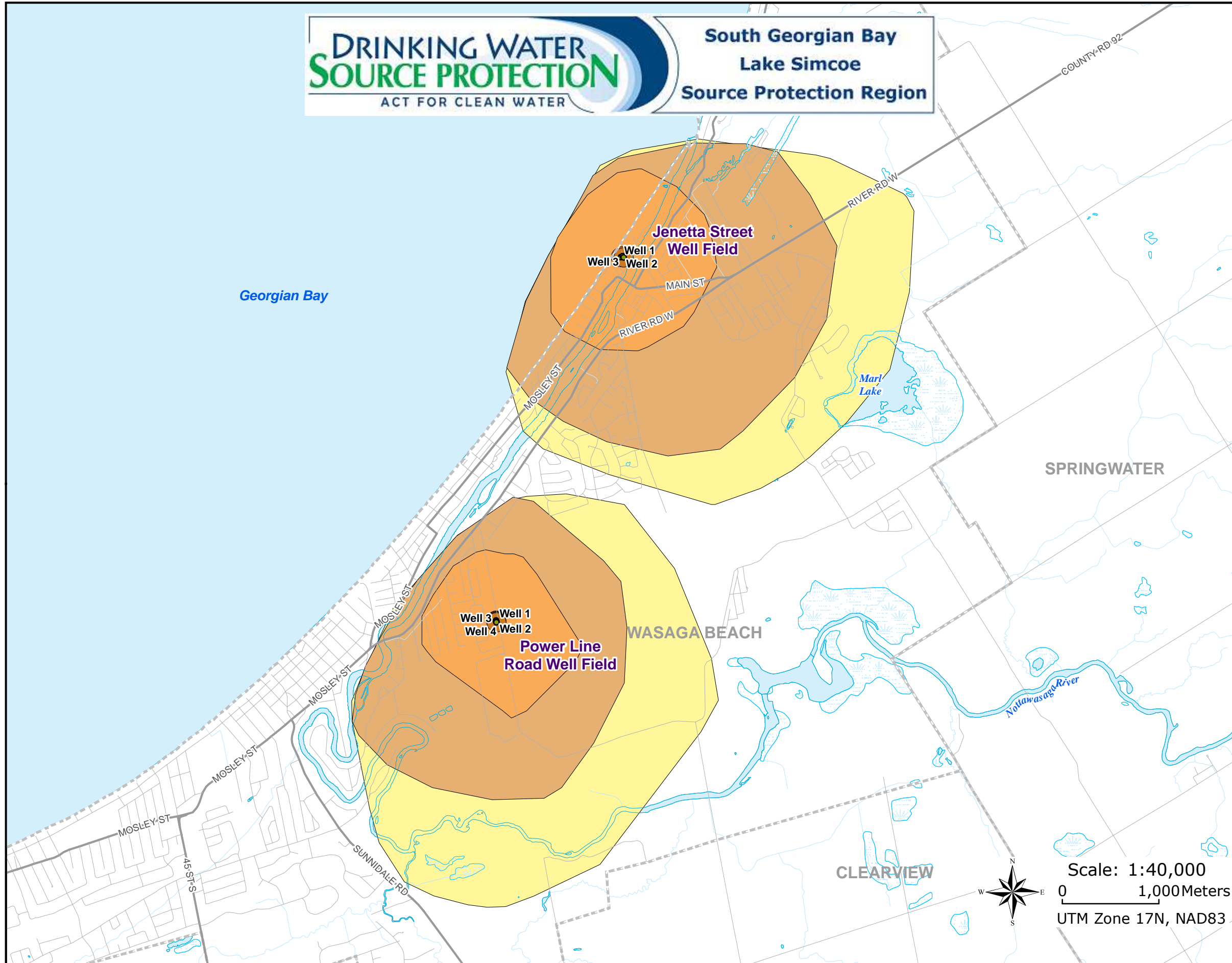
- Waste disposal sites
- Sewage systems (including septic)
- Agricultural and non-agricultural source material applied to land, stored, handled or managed
- Commercial fertilizer applied, handled or stored
- Pesticides applied to land, handled or stored
- Road salt applied, handled or stored
- Snow stored
- Fuel handled or stored
- Activities taking water from an aquifer (groundwater) or surface water body (lake or river)
- Activities reducing recharge of an aquifer's underground water sources (e.g., pavement)
- Livestock grazing, pasturing, outdoor confinement areas and farm-animal yards
- Organic solvents handled or stored
- The handling and storage of a dense non-aqueous phase liquid (DNAPL) (e.g., oil & solvents)
- Chemicals used in the de-icing of aircraft

## How will this affect me?

If you own or rent property in a vulnerable area and are currently engaged, have been, or could become engaged in any of the activities listed above, your activities may be identified as a significant drinking water threat. You may be required to have a Risk Management Plan to ensure that your activities do not pose a risk to the municipal drinking water source. Some activities, if not already occurring, will be prohibited in the future. You can learn more about Source Water Protection at [www.ourwatershed.ca](http://www.ourwatershed.ca)

**For more information, contact Patti Kennedy, Engineering Technologist, RMI  
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**Town of Wasaga Beach  
 Wellhead Protection Areas**



- Municipal Wells
- Major Road
- Local Road
- Watercourse
- Water Area, Permanent
- Wetland, Permanent
- WHPA TOT**
- WHPA-A (100 m radius)
- WHPA-B (2yr TOT)
- WHPA-C1 (10 yr TOT)
- WHPA-D (25 yr TOT)
- Municipal Boundary

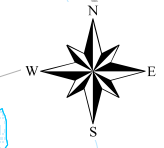


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**17a-1**

Scale: 1:40,000  
 0 1,000Meters  
 UTM Zone 17N, NAD83



This map was produced for the Town of Wasaga Beach, for the purposes of completing the South Georgian Bay Lake Simcoe Assessment Report. Base data have been compiled from various sources, under data sharing agreements. While every effort has been made to accurately depict the base data, errors may exist.

# Dense, Non-Aqueous Phase Liquids (DNAPLs)



## What are DNAPLs?

Dense, Non-Aqueous Phase Liquids, or DNAPLs (pronounced dee-napple) are chemicals that are more dense than water and generally do not dissolve readily in water, but remain as a separate phase liquid in surface or ground waters. If spilled, they tend to sink into the ground and can contaminate the deepest groundwater resources (and those in between). These chemicals are also quite toxic to humans and the environment, even at low levels which means that even if only a little dissolves into the water, it would be harmful to consume. Some compounds are persistent in the environment for decades (polychlorinated biphenyls [PCBs], mercury). Others can become more toxic as they break down (chlorinated ethenes). DNAPLs of greatest interest tend to be those products that have been used extensively in commercial and industrial applications. The Clean Water Act stipulates that we pay extra attention to DNAPLs because if they get into the water they are very difficult to get out. DNAPL contaminants may very well be the most difficult groundwater contaminant to deal with.

## What DNAPLs are threats under the Clean Water Act?

1,4-Dioxane ( <a href="#">dioxane</a> )	Used as a solvent or for chemical processes.
PAH ( <a href="#">polycyclic aromatic hydrocarbons</a> )	Various petroleum and solvent-based products.
Vinyl Chloride ( <a href="#">chloroethene</a> )	Used in the production of PVC plastic.
PCE ( <a href="#">perchloroethylene</a> )	Dry cleaning, metal cleaning, automotive products.
TCE ( <a href="#">trichloroethylene</a> )	Metal cleaning, dry cleaning, paint removers.



## Why are DNAPLs so dangerous?

- DNAPLs' density means that it only takes a small amount to travel deep into the water table.
- DNAPLs don't dissolve readily, which means they sink into the ground and create pools which may remain for decades to centuries.
- You must recover 99.999% of DNAPL in the ground to successfully clean a spill or release.

- Even a small amount of DNAPL can cause a toxic level of contamination for human health.
- DNAPLs are relatively heavy which means they get into aquifers (where we draw our drinking water) quickly and even get into small fractures and spaces underground where they are difficult to find.
- DNAPLs are sometimes also called "sinkers" or "toxic blobs" because of these characteristics.

## How will this affect me?

DNAPLs can contaminate groundwater over large areas and for a long time (decades to centuries). They can form insoluble and highly mobile pools that defy all conventional cleanup methods ultimately getting into our drinking water and causing a number of serious health issues in humans and the environment. The best way to protect water is to make sure that DNAPLs don't get there in the first place.

Handling or storing DNAPLs near sources of drinking water may pose a significant threat to drinking water. Source Protection Plan policies have implications for those activities that have been identified as a threat to municipal drinking water. You may be required to have a risk management plan to protect drinking water sources. The Clean Water Act mandates that the risk associated with all significant threat activities must be reduced. You can learn more about the Source Protection Process at [www.ourwatershed.ca](http://www.ourwatershed.ca).

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