

# MVLWB / GNWT

## Operation and Maintenance Plan

## Templates for Municipal Water Licences: Water Treatment Plant

November 10, 2015





Name	Phone	Email
Role/Responsibilities		

**3. Security and Control**

How is public access to the facility controlled? (Check any that apply.)

No control

Chain-link fence around reservoir

Locked man-door

Other:

Is the following signage posted at the WTP? (Check any that apply.)

Name of facility

Notification of restriction of public access

Warning signage regarding chemicals used in the treatment process

**4. Facility Design**

Facility design shall be provided in the form of a piping and instrumentation diagram (P&ID) and general arrangement views of the equipment and facility prepared by a Professional Engineer or Geoscientist registered with NAPEG, who has expertise in the subject area. Attach one of the following drawing options with the documents you are submitting. As-built drawings are preferred, if available. All drawings are required to have scales and north arrows (for plan views).

Indicate what type of drawings are attached:

As-built drawings    Design drawings    Other:

## 5. Raw Water Sources

Name of **primary** raw water source (if applicable). Note that if you have a second water source, there will be a place to add this information on the next page. For now, enter the information for the source that is used most often.

Type of raw water source (check any that apply):

Lake          River          Groundwater          Other:

Average annual quantity of water drawn from the source:

m<sup>3</sup>/year

Is a Source Water Protection Plan (SWPP) in place for the **primary** raw water source?

Yes    No

If **yes**, provide the following information for the plan:

Prepared by (name of company or person that wrote the plan):

Title of document:

Completion date:          yyyy/mm/dd

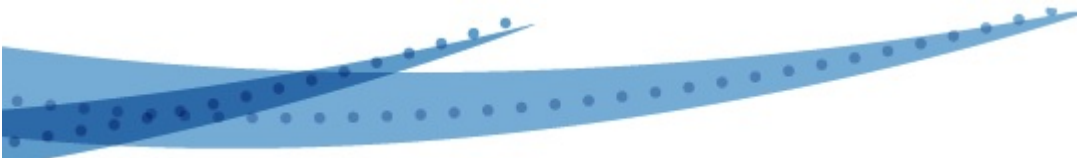
Location of document (where is the plan kept, or where can a copy be obtained?):

If **no**, what is being done to protect the **primary** raw water source?

Identify the type of raw water storage (check any that apply):

None          Reservoir          Storage Tank          Other:

Raw water storage capacity:          m<sup>3</sup>



Name of **secondary or alternate** raw water source (if applicable). This could include a source used seasonally, during maintenance, when there are problems with the primary source, or any other backup raw water source. If only one water source is used, skip the rest of this page.

Type of raw water source (check any that apply):

Lake                  River                  Groundwater                  Other:

Average annual quantity of water drawn from the source:

m<sup>3</sup>/year

Is a Source Water Protection Plan (SWPP) in place for the **secondary** raw water source? (Skip this question if no secondary source is used.)

Yes    No

If **yes**, provide the following information for the plan:

Prepared by (name of company or person that wrote the plan):

Title of document:

Completion date:                  yyyy/mm/dd

Location of document (where is the plan kept, or where can a copy be obtained?):

If **no**, what is being done to protect the **secondary** raw water source?

Explain the reasons or situations where the secondary raw water source is used, including the time of year for seasonal sources (skip this question if no secondary source is used):

## 6. Water Treatment Process

Indicate any **pre-treatment** processes that are used at the WTP. (Check any that apply.)

Screen          pH adjustment          Gravity settling          Other:

Indicate any treatment technologies that are used at the WTP. (Check any that apply.)

Coagulation and Flocculation

(A chemical is added to the water to make particles of dirt stick together and sink.)

List chemical(s) added:

Clarification (methods to help particles settle out after they are stuck together)

Gravity          Inclined plate          Settling tubes          Dissolved air floatation (DAF)

Other:

Filtration (filters use various methods to trap particles and remove them from the water)

Slow sand          Rapid rate gravity          Rapid rate pressure          Bag/cartridge

Other:

Membrane Filtration (a material with tiny holes is used to strain particles from the water)

Microfiltration          Ultrafiltration          Nanofiltration          Reverse osmosis

Membrane of unknown type

Other:

Additional Treatment Processes

Activated carbon          Ion exchange (softening or targeted removal)

Other:

Iron and/or Manganese Removal

Greensand          Oxidation/filtration

Other:

Indicate what types of disinfection are done at the facility. (Check any that apply.)

Chlorination

Solid

Liquid

Gas

Ozonation

Ultraviolet Radiation (UV)

Other:

Water Demand, Production and Distribution:

Total annual water usage:

m<sup>3</sup>/year

Identify the water distribution methods used (check any that apply):

Piped (underground or utilidor)

Trucked

Other:

Identify the type of treated water storage (check any that apply):

None

Reservoir

Storage Tank

Other:

Treated water storage capacity:

m<sup>3</sup>

## 7. WTP Waste Production

**Skip** this section if the WTP does not produce sludge.

Is sludge composition data available? (Lab report, engineering study, etc. showing what substances are in the sludge.)

Yes No

If yes, please attach the data to this document when submitting.

Sludge composition data attached

Estimate monthly quantity of sludge disposal:

m<sup>3</sup>/month

How is the sludge disposed of?

Discharged to sewage system or lagoon

Direct discharge to waterbody (lake, river, etc)

Discharged onto land

Mechanical dewatering

Evaporative sludge drying (sludge is spread out to air dry before disposal)

Other:

**Skip** this section if the WTP does not produce wastewater from backwashing, regeneration (e.g. for softeners), or a reject water stream from membrane filtration.

Estimate monthly quantity of filter backwash, regeneration and/or membrane reject wastewater disposal:

m<sup>3</sup>/month

How is the backwash/regeneration/membrane reject water disposed of?

Discharged to sewage system or lagoon

Direct discharge to waterbody (lake, river, etc)

Exfiltration

Discharged onto land

Other:

Combination (describe):

Indicate if any of the following waste streams are produced at the plant. Provide the annual quantity and the disposal method for each. (Check any that apply.)

**Skip** this section if no waste is generated at the WTP.

Check the items that apply:	Method of Disposal	Quantity per year	Units
Spent cartridges or other disposable filters			



Spent media and/or resin			
Expired reagents such as DPD			
Expired calibration standards			
Chemical waste (specify):			
Other*: <input type="text"/>		<input type="text"/>	

\*Do not include regular municipal waste (garbage, such as paper towels and packaging) or wastewater from a sink or washroom that is discharged to the municipal system (trucked or piped).

**8. WTP O&M and Record-Keeping**

Does the WTP have an existing O&M Plan or Manual?  
Yes    No


If yes, please provide the following information for the plan:

Prepared by (name of company or person that wrote the plan):

Title of document:

Completion date:                      yyyy/mm/dd

Location of document (where is the plan kept, or where can a copy be obtained?):



The following are record keeping requirements related to O&M of the WTP and should be filed as an annual report with the MVLWB no later than the date stipulated in the water license for the previous year. The annual report should include the following items:

- Monthly and annual quantities of fresh water obtained from all sources, reported in cubic metres.  
How and where is this recorded?  
Where are these records kept?
- A summary of modifications and/or major maintenance work carried out on the WTP, including all associated structures. Check your water licence for specific requirements regarding modifications.  
How and where is this recorded?  
Where are these records kept?
- A list of spills and unauthorized discharges.  
How and where is this recorded?  
Where are these records kept?
- A summary of any studies requested by the MVLWB that relate to water treatment waste disposal or water use and a brief description of any future studies planned.  
How and where is this recorded?  
Where are these records kept?

Are records of repairs kept?

Yes    No

Are records of upgrades kept?

Yes    No

## The Mackenzie Valley Land and Water Board

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