

**A. Owners information**

<b>Type of ownership (select one):</b>		<input type="checkbox"/> Sole proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Society <input type="checkbox"/> Other:	
<b>Legal owner</b> (ex: Jane Doe or 123456 Ltd.):		<b>Common Name of Water System</b> (ex: City of Fort Frank Water System):	
<b>Owner contact name:</b>		<b>Owner contact number:</b>	

**B. Contact information**

<b>Site information:</b>			
<b>Person in charge (operator)</b>		<b>Postal code:</b>	
<b>Position:</b>	<input type="checkbox"/> Owner <input type="checkbox"/> Manager <input type="checkbox"/> Other	<b>Phone/Fax:</b>	
<b>Street address:</b>		<b>Cell:</b>	
<b>City/municipality:</b>		<b>Email:</b>	
<b>Mailing/Billing information:</b> <input type="checkbox"/> Same as site information			
<b>Mailing address:</b>		<b>Phone:</b>	
<b>City/municipality:</b>		<b>Prov:</b>	
<b>Postal code:</b>		<b>Cell:</b>	
		<b>Owner Email:</b>	

<b>Reason for applying</b>		
<input type="checkbox"/> <b>New system</b>	<input type="checkbox"/> <b>Existing system needing approval (not previously approved)</b>	<input type="checkbox"/> <b>System upgrade/alteration/extension</b>

<b>Components being modified</b> (Check all that apply)					
<input type="checkbox"/> New system	<input type="checkbox"/> Source*	<input type="checkbox"/> Treatment	<input type="checkbox"/> Storage	<input type="checkbox"/> Distribution	
<b>Section to be completed:</b>					
All parts	Part A	Part A and B	Part C	Part D	

**Describe Proposed Works \*\***

\* New OR not previously approved water source

\*\* For watermains, list length of each size, class, type – eg, 85m of 150mm C900 DR18 PVC – include # hydrants, # valves



<b>Submission Package Checklist - to be completed for all applications in addition to "Parts" selected above.</b>	Enclosed	Previously Submitted	Not Applicable
<b>Cover Letter</b> (explain the context of application)	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Manufacturer's Technical Specifications</b> (for new or altered equipment, specify model, settings, NSF validation, test protocols)	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Design Brief</b> (eg, assumptions and design parameters)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Plans and Drawings (11x17 or 8.5x 11 preferred in pdf electronic format)</b>			
<b>Either: A) Three Basic Plans (i, ii, iii)</b>			
i. Location Map (regional setting, how to get there from the nearest town)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Site Plan (intake, treatment, storage, watermains, valves, hydrants, clean-outs, sampling locations - include contaminant sources like sewers, lagoons, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Schematic Diagram(s) - water flow sequence. See Appendix B for examples	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Or B) Engineered Plans (plan and profile, piping and instrumentation, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Source Approval</b>			
Completed by EHO if a new source or a source that has not previously been approved is proposed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reference any additional plans, drawings, reports, etc. that will be submitted with your application below:

Does the water system have an existing <b>Operating Permit</b> under the <i>Drinking Water Protection Act</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the water system currently on a <i>Boil Water Notice</i> or <i>Water Quality Advisory</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the water system operated only part of the year (seasonal operations e.g., camps, resorts)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the system classified as a small water system (max. 500 users within any 24 h period)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is this application for the purposes of a subdivision under the <i>Local Services Act</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Will the Water System operate as a <i>Water Utility</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all proposed works located on public right-of-ways or registered easements?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the proposal involve any strata lots or buildings?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are plans and drawings signed, sealed, and dated by a Professional Engineer?	<input type="checkbox"/> Yes <input type="checkbox"/> No

**Incomplete applications will not be processed and will be returned to the applicant.**

Please mail or email the submission package (or any questions) to:

**Att:** Regional Public Health Engineer  
 Northern Health Authority, Public Health Protection  
 4th Floor - 1600 3rd Avenue, Prince George, BC V2L 3G6  
**Phone:** 250-565-2150    **Email:** PHE@northernhealth.ca

Please allow 30 to 60 days for normal processing of Waterworks Construction Permit Applications. The works may be inspected by Northern Health during or following construction. You also require a valid Water System **Operating Permit** before supplying water to users. Operational details should be discussed with your local Drinking Water Officer / Environmental Health Officer.

Submitted by:		Signature:	
Representing:	<input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Designer		<input type="checkbox"/> Legal Agent for Owner
Address:	<input type="checkbox"/> as above		
Telephone(s):		Email:	

**Part A: New or Modified Raw Water Source**

<b>Source</b>	<input type="checkbox"/> <b>Groundwater Source</b> <input type="checkbox"/> Well construction: <input type="checkbox"/> drilled <input type="checkbox"/> dug <input type="checkbox"/> driven <input type="checkbox"/> other <input type="checkbox"/> not sure <input type="checkbox"/> Well pit: <input type="checkbox"/> drained <input type="checkbox"/> sump pump <input type="checkbox"/> Flowing (artesian) well <input type="checkbox"/> Well pump: <input type="checkbox"/> submersible <input type="checkbox"/> hand <input type="checkbox"/> turbine <input type="checkbox"/> other <input type="checkbox"/> none	<input type="checkbox"/> Aquifer type: <input type="checkbox"/> sand/gravel <input type="checkbox"/> bedrock <input type="checkbox"/> not sure <input type="checkbox"/> Aquifer protection: <input type="checkbox"/> confined <input type="checkbox"/> unconfined <input type="checkbox"/> not sure Attached documents: <input type="checkbox"/> driller's well log <input type="checkbox"/> hydrogeologist's report <input type="checkbox"/> GUDI/GARP screening	<input type="checkbox"/> <b>Surface Water Source</b> <input type="checkbox"/> MoE Water Licence <input type="checkbox"/> Lake <input type="checkbox"/> Stream <input type="checkbox"/> Spring <input type="checkbox"/> DFO approved intake <input type="checkbox"/> Low-lift pump <hr/> <input type="checkbox"/> <b>Hauled Water Source</b>
	<input type="checkbox"/> Attach lab report on chemical, physical, and bacteriological raw untreated, source water quality <input type="checkbox"/> Water quality concerns [ <input type="checkbox"/> iron <input type="checkbox"/> manganese <input type="checkbox"/> arsenic <input type="checkbox"/> uranium <input type="checkbox"/> sulphur <input type="checkbox"/> hardness <input type="checkbox"/> turbidity <input type="checkbox"/> colour <input type="checkbox"/> UVT <input type="checkbox"/> coliforms <input type="checkbox"/> cysts <input type="checkbox"/> viruses <input type="checkbox"/> DBPs <input type="checkbox"/> Other (specify) _____ ] <input type="checkbox"/> Odour: <input type="checkbox"/> none <input type="checkbox"/> slight <input type="checkbox"/> strong (describe: _____ ) <input type="checkbox"/> Taste: <input type="checkbox"/> none <input type="checkbox"/> sweet <input type="checkbox"/> salty <input type="checkbox"/> bitter <input type="checkbox"/> metallic <input type="checkbox"/> other (Describe: _____ ) <input type="checkbox"/> Sampling tap for raw water quality		
	Does raw, untreated, unfiltered source water quality meet current <i>Canadian Drinking Water Guidelines</i> : - for all <b>health-based</b> parameters? <input type="checkbox"/> Yes <input type="checkbox"/> No List any exceedances _____ - for other <b>aesthetic</b> parameters? <input type="checkbox"/> Yes <input type="checkbox"/> No List any exceedances _____		

**Part B: New or Modified Treatment Works**

<b>Treatment</b>	What is the <i>design flow</i> for the treatment works? _____ <input type="checkbox"/> gpm, <input type="checkbox"/> m <sup>3</sup> /d, specify: _____	
	<input type="checkbox"/> Attach supporting calculations for design flow, if available, based on population served, fixture counts, etc. <input type="checkbox"/> Discharge backwash/reject water to: <input type="checkbox"/> sanitary sewer <input type="checkbox"/> storm sewer <input type="checkbox"/> ground <input type="checkbox"/> subsurface pit <input type="checkbox"/> surface water	
	<input type="checkbox"/> Source water protection plan <input type="checkbox"/> Bank (subsurface) filtration <input type="checkbox"/> Coarse pre-filter ( $\mu$ m ) <input type="checkbox"/> Oxidation: <input type="checkbox"/> aeration <input type="checkbox"/> Cl <sub>2</sub> <input type="checkbox"/> KMnO <sub>4</sub> <input type="checkbox"/> Coagulant: <input type="checkbox"/> PACl <input type="checkbox"/> Alum <input type="checkbox"/> other <input type="checkbox"/> flocculation/sedimentation <input type="checkbox"/> Rapid sand filter (backwashable) <input type="checkbox"/> Multi-media filter: <input type="checkbox"/> gravel <input type="checkbox"/> sand <input type="checkbox"/> anthracite <input type="checkbox"/> GAC <input type="checkbox"/> garnet <input type="checkbox"/> other <input type="checkbox"/> greensand <input type="checkbox"/> pyrolusite <input type="checkbox"/> BIRM <input type="checkbox"/> Water softener ( <input type="checkbox"/> Na <input type="checkbox"/> K ) <input type="checkbox"/> Anion exchange (target: _____)	<input type="checkbox"/> Activated carbon: <input type="checkbox"/> granular, <input type="checkbox"/> block, <input type="checkbox"/> powdered, <input type="checkbox"/> other <input type="checkbox"/> Membrane cartridge filter(s) _____ $\mu$ m $\rightarrow$ _____ $\mu$ m $\rightarrow$ _____ <input type="checkbox"/> $\mu$ m <input type="checkbox"/> (abs) <input type="checkbox"/> Pressure drop measured <b>Chlorination:</b> <input type="checkbox"/> feed pump <input type="checkbox"/> batch <input type="checkbox"/> Ozone disinfection <input type="checkbox"/> Contact tank volume? <input type="checkbox"/> gal <input type="checkbox"/> L <input type="checkbox"/> CT? _____ mg·min/L <input type="checkbox"/> Membrane filtration: <input type="checkbox"/> micro <input type="checkbox"/> ultra <input type="checkbox"/> nano <input type="checkbox"/> RO <input type="checkbox"/> Validation: <input type="checkbox"/> NSF <input type="checkbox"/> EPA <input type="checkbox"/> none <input type="checkbox"/> Integrity testing: <input type="checkbox"/> direct <input type="checkbox"/> indirect
Does the treatment comply with <b>4-3-2-1-0</b> treatment objectives? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not required Required for surface water and groundwater at risk of containing pathogens as per the BC Drinking Water Treatment Objectives (Microbiological)		

**Part C: New or Modified Storage (Raw or Treated Water)**

<b>Storage</b>	<input type="checkbox"/> <b>Raw Water Storage</b> <input type="checkbox"/> Volume? ____ <input type="checkbox"/> gal <input type="checkbox"/> L <input type="checkbox"/> m <sup>3</sup> <input type="checkbox"/> Covered <input type="checkbox"/> Uncovered <input type="checkbox"/> Above ground <input type="checkbox"/> Below ground <input type="checkbox"/> Pressurized <input type="checkbox"/> Vented	<input type="checkbox"/> <b>Treated Water Storage</b> <input type="checkbox"/> Volume? ____ <input type="checkbox"/> gal <input type="checkbox"/> L <input type="checkbox"/> m <sup>3</sup> <input type="checkbox"/> Pressure tank(s) <input type="checkbox"/> Clear well <input type="checkbox"/> Cistern(s) <input type="checkbox"/> High lift pump _____ <input type="checkbox"/> kW <input type="checkbox"/> hp	<input type="checkbox"/> <b>Distribution Storage</b> <input type="checkbox"/> Volume? ____ <input type="checkbox"/> gal <input type="checkbox"/> L <input type="checkbox"/> m <sup>3</sup> <input type="checkbox"/> Rechlorination stations <input type="checkbox"/> Distance to first user? _____ <input type="checkbox"/> metres <input type="checkbox"/> feet
	Has provision been made for backflow prevention and a sampling tap at all storage sites?		<input type="checkbox"/> Yes <input type="checkbox"/> No
	At average flow conditions, how long will water be stored in the tank or reservoir last? _____		

**Part D: New or Modified Distribution System**

<b>Distribution</b>	<input type="checkbox"/> Watermain replacement <input type="checkbox"/> Watermain extension <input type="checkbox"/> Pumping station <input type="checkbox"/> Other (specify) _____		
	How many new lots/units will be serviced?	# strata units _____	# fee simple units _____
	Does the waterworks produce enough water (quantity) to service existing and future lots?		<input type="checkbox"/> Yes <input type="checkbox"/> No
	Will all watermains have 3 metres clear <b>horizontal separation</b> from sewers and drains? If NO, propose protection measures on plans and submit <b>Schedule A</b> below.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	At all sewer/drain crossings, and wherever the normal 3 m <b>horizontal separation</b> is not possible, are the watermains at least 450 mm (18 inches) above the sanitary or storm sewer? If NO, propose protection measures on plans and submit <b>Schedule A</b> below.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	Do all service connections meet the above separation guidelines?		<input type="checkbox"/> Yes <input type="checkbox"/> No
	Have blow-offs or hydrants been provided for flushing purposes on all dead-ends and low points?		<input type="checkbox"/> Yes <input type="checkbox"/> No
	Does the location of valves permit flushing to be carried out effectively?		<input type="checkbox"/> Yes <input type="checkbox"/> No
	Have valves, hydrants, or services designed to provide air relief been provided at all high points?		<input type="checkbox"/> Yes <input type="checkbox"/> No
	Will water for flushing, testing, and disinfection come from a hydrant (testable BFP) or water hauler?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you have enough water pressure to achieve a flushing velocity of at least 0.8 m/s (2.5 ft/s)?		<input type="checkbox"/> Yes <input type="checkbox"/> No	

**Schedule A:**

(Attach a separate page if necessary, and refer to the *Guideline: Sewer - Watermain Conflicts* for more details.)

#	Street Name	Station (0+000)	Horizontal Separation (m)	Vertical Separation <sup>a</sup> (mm)	Proposed Protective Measures
1					
2					
3					

<sup>a</sup> Vertical Separation = elevation of bottom sewer - elevation of top of watermain (can be negative)

How will you disinfect the new pipes and equipment before putting them in service following construction activities?	
<input type="checkbox"/> AWWA C651-C654	
<input type="checkbox"/> MMCD Section 02666	
<input type="checkbox"/> No disinfection planned	
<input type="checkbox"/> Other (describe)	

**Appendix A: Required Water Quality Parameters**

<b>Core Parameters</b>	<b>Guideline</b>	<b>May require ...</b>	<b>Guideline</b>
<b>E. Coli</b>	<b>[none detected]</b>	UV Transmittance (UVT) <sup>(4)</sup>	[80%]
<b>Total Coliforms</b>	<b>[none detected]</b>	<b>Disinfection By-Products (DBPs)<sup>(5)</sup></b>	
HPC <sup>(1)</sup>	[~ 100-500 CFU/mL]	<b>Trihalomethanes (THMs)</b>	<b>[0.100 mg/L]</b>
Alkalinity	[~ 30-500 mg/L]	<b>Haloacetic Acids (HAAs)</b>	<b>[0.080 mg/L]</b>
Chloride	[250 mg/L]	Bromide	[0.050 mg/L]
Colour	[15 TCU]	Tannins and Lignin <sup>(6)</sup>	[~ 0.400 mg/L]
Electrical Conductivity	[~ 800 µS/cm]	Iron & Sulphate Bacteria <sup>(7)</sup>	[presence]
<b>Fluoride</b>	<b>[1.5 mg/L]</b>	Sulphide <sup>(8)</sup>	[0.050 mg/L]
Hardness	[~ 250 mg/L]	<b>Hydrocarbons<sup>(9)</sup></b>	
Langelier Saturation Index	[ ~ -2 to +2]	<b>Benzene</b>	<b>[0.005 mg/L]</b>
<b>Metals Scan</b>	<b>[varies]<sup>(2)</sup></b>	Toluene	[0.024 mg/L]
Nitrogen species: <sup>(3)</sup>		Ethylbenzene	[0.002 mg/L]
Ammonia - N	[~ 1.5 mg/L]	Xylenes	[0.300 mg/L]
Organic N	[~ 0.15 mg/L]		
<b>Nitrate - N</b>	<b>[10 mg/L]</b>		
<b>Nitrite - N</b>	<b>[1 mg/L]</b>		
pH	[6.5 – 8.5]		
Sulphate	[500 mg/L]		
Total Dissolved Solids (TDS)	[~ 500 mg/L]		
Total Organic Carbon (TOC)	[2.5 mg/L]		
<b>Turbidity</b>	<b>[~ 1 NTU]</b>		
Odour	[describe]		

## Appendix A: Required Water Quality Parameters (cont.)

### General Comments

- The sampler must make arrangements for receiving and shipping of chemical/physical sample bottles and coolers with an accredited private lab. *Northern Health* may accept bacteriological samples only.
- Analysis of additional parameters may be required based on the results of the initial analysis and on potential impact by nearby sources of contamination. The required parameters should be confirmed with Northern Health before sampling.
- The analytical detection limit must be *less than 10% of the Guideline for Canadian Drinking Water Quality* where applicable. Other analyses must provide sufficient information to reasonably assess the water suitability for domestic use and to determine what, if any, treatment might be needed. Analyses must be conducted in accordance with the methods prescribed in *Standard Methods* (latest edition).
- Analyses should be for total or closely equivalent concentrations, to represent potential quality problems.
- A copy of all analytical results must be sent to the *Northern Health* Officer responsible for the water system.

### Notes

1. May be omitted if bacterial growth is not found during Total Coliform test – lab to note “*Other bacterial growth not present*”.
2. *Total metals* required. *Dissolved metals* optional, but recommended if turbidity is elevated. Scan to include both high and low level metals: Aluminum (if coagulant used), **Antimony(0.006)**, **Arsenic (0.010)**, **Barium (1)**, **Boron (5)**, **Cadmium(0.005)**, Calcium (~ 100), **Chromium (0.050)**, Copper (**2, 1**), Iron(0.300), **Lead (0.005)**, Magnesium (~ 30), **Manganese (0.12;0.02)**, Phosphorus (~ 0.100), Potassium (~ 400), **Selenium(0.010)**, Sodium (20-200; **1000**), Zinc (5), **Uranium (0.020)** [expand scan if zone is mineralised to include **Mercury (0.001)**].  
\*For the most up-to-date limits, refer to the [Guidelines for Canadian Drinking Water Quality](#)
3. Required for source water characterisation. If all are less than 1 mg/L as N, later samples may be analyzed for **Total N** only.
4. Required if UV disinfection is being considered as part of the water treatment process. The test must be conducted on a RAW, UNFILTERED water sample. [Modified version of *Standard Method 5910B* where the sample is not filtered or pH adjusted.]
5. Required if chlorination is used or proposed and TOC greater than 2.5 mg/L. For new sources, specify “**DBP formation potential**”. Different DBPs are required for **chlorine dioxide** or ozone disinfection.
6. Required for TOC greater than 2.5 mg/L and/or color greater than 15 TCU.
7. Required if bacterial regrowth is suspected in well or distribution piping. Contact laboratory for sampling procedure.
8. Required if unsatisfactory odor is suspected. Analyse on site or preserve sample. Contact laboratory for sampling procedure.
9. Required if hydrocarbon/gasoline type contamination is suspected. Contact laboratory for sampling procedure.

**Appendix B: Example Schematic Diagram for Typical Water Systems**

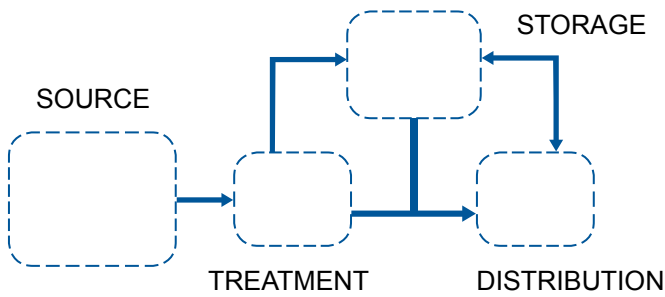


Figure 1. Generic Water System Schematic

Simple boxes are fine, as long as they are in the right order, and neatly labelled.

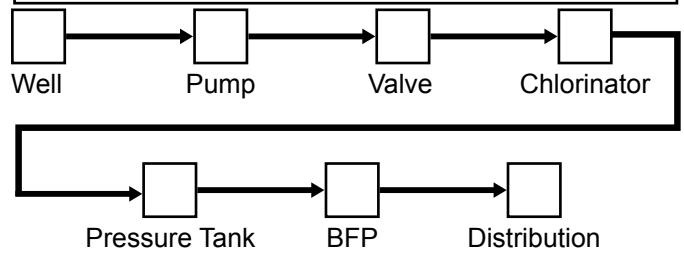


Figure 2. Box Schematic Diagram

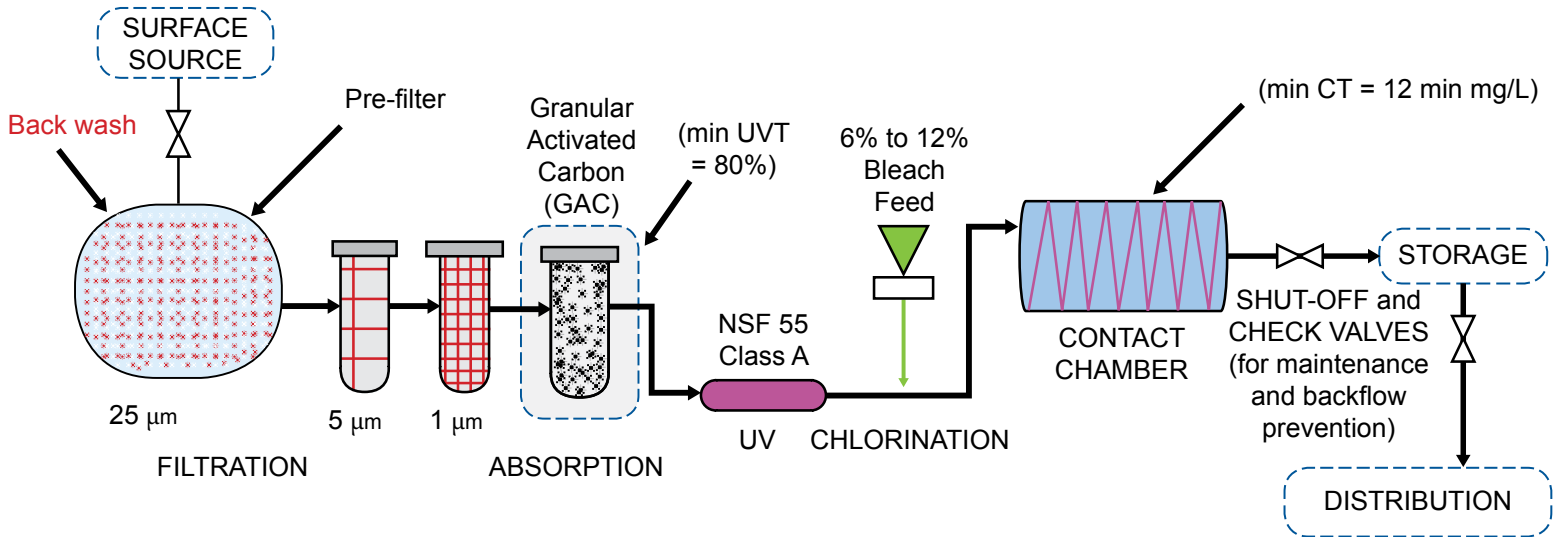
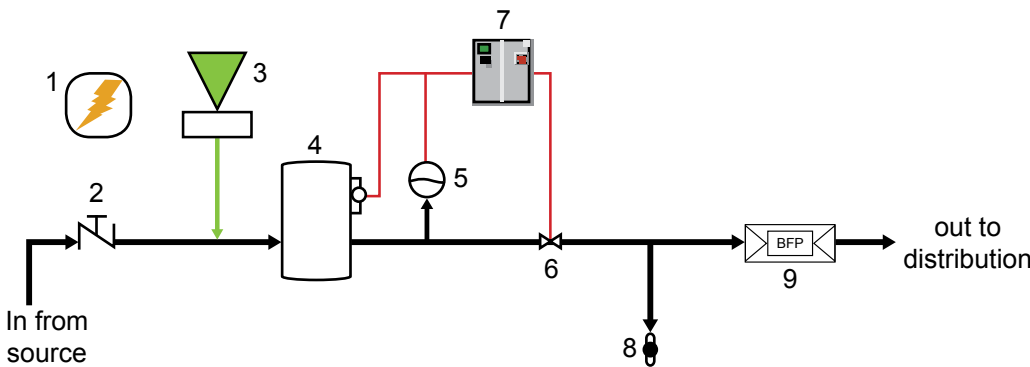


Figure 3. (EXAMPLE ONLY) Typical Small Water System Surface Water Treatment Train



**Water Treatment Equipment List**

- 1 Backup Power
- 2 Shut-off and Check Value
- 3 Disinfectant Feed Pump
- 4 Baffled Pressure Tank with Pressure Sensor
- 5 Disinfectant Meter
- 6 Flow Meter
- 7 Control Panel and Data Logger
- 8 Sampling
- 9 Backflow Prevention Device

Figure 4. (EXAMPLE ONLY) Typical Secure Groundwater Treatment Train with Monitoring and Control



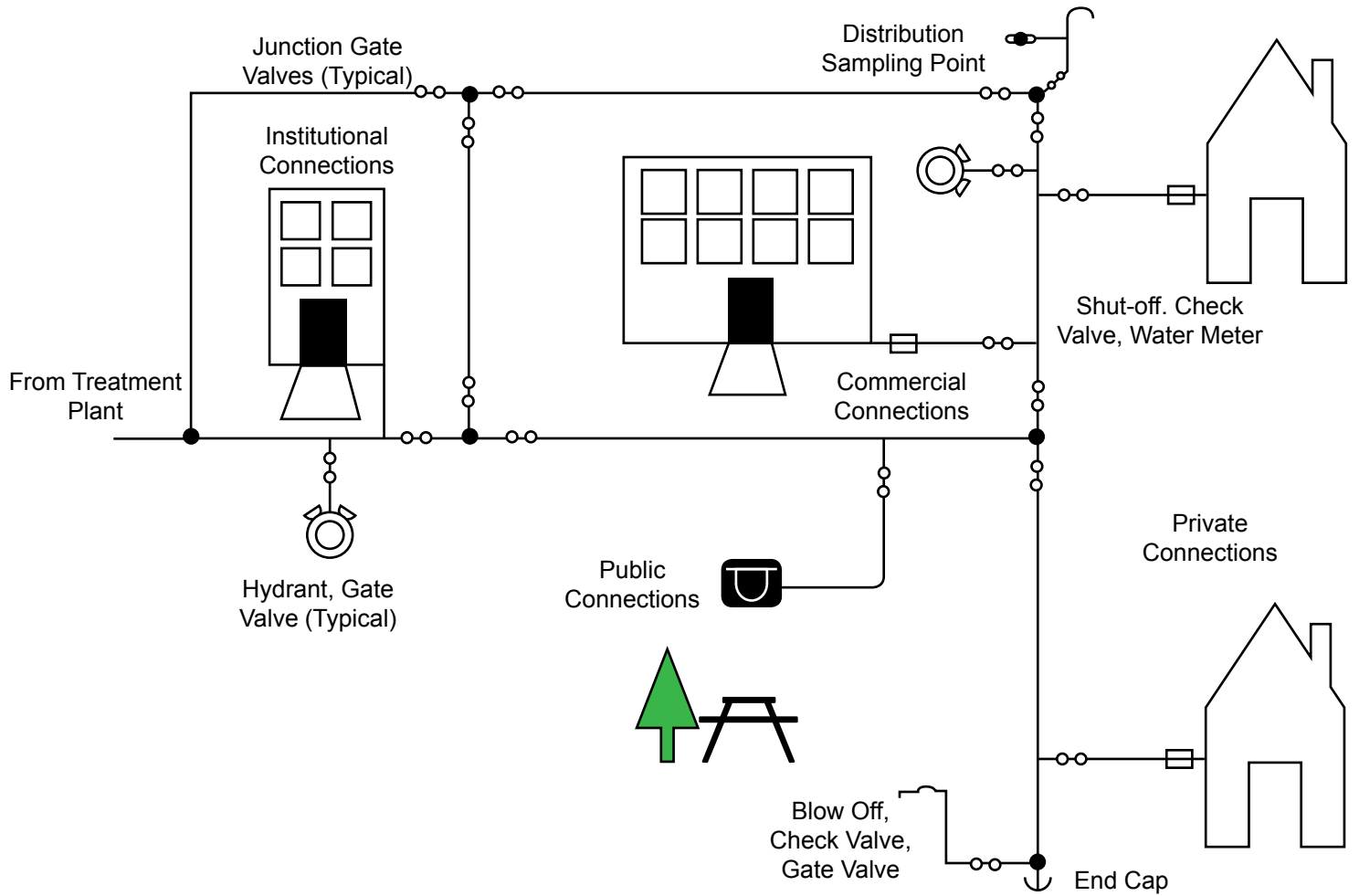


Figure 5. (EXAMPLE ONLY) Typical Distribution System Appurtenances