

Water Supply Division

1. ***Enter System Name***
2. ***Enter WSID Number***
3. ***Enter completion date***
4. ***Insert your name here on date***
5. well/lake/stream/pond/etc., enter all pertinent data including location of source, size and depth of well/intake, year constructed, permitted yield (if known), estimated yield if permitted yield not known, well tag number, UPDATE with any maintenance or work done on well (new pump, new electrical controls, redevelop, deepen, hydrofracture – some of these will necessitate a permit from the Division)
6. same information for as many sources as you have
7. Emergency source(s) include information for any non-permitted sources you own or have access to during an emergency operating condition.
8. Create a map of the sources and add it to Appendix A
- 9a. enter location information.
- 9b. enter capacity
- 9c. ***enter appropriate %***
- 9d. enter appropriate information
- 9e. enter location
- 9f. enter or reference any Standard Operating Procedure (SOP) for tank draining.
- 9g. create a schematic drawing of the raw water storage tank, piping schematic, valve ties, etc. and add it to Appendix B)
10. If applicable, describe how to bypass raw water storage for cleaning and maintenance. Include any raw water main flushing, surface water intake (and pretreatment injectors) inspection maintenance, source water security, emergency source water pumping strategies. Also specify any source water quality on-line instrumentation - Total Organic Carbon (TOC) analyzers, pre-oxidation, zebra mussel/taste and odor disinfectant monitoring, temperature monitoring, de-chlorination procedures or state permits pertaining to the discharge.
11. Adjust the following processes to represent your system in the order that they occur in your system. Many systems only have Chlorination/Disinfection systems; however, many others have multiple treatment processes (such as Taste and Odor Treatments, Zebra Mussel Control, Pre-Oxidation, etc.). Please identify and explain EACH of the treatment processes in use or available

for use at your system, and how this treatment effects the finished water quality. The following is an example for a system that adds chlorine to the raw water.

12. Or change to "on a standby basis", if applicable. Also explain why the Water System chooses to, or is required by the state, to disinfect on a continuous basis. Insert appropriate %
- 12a. or change to the chlorinated chemical used in your system and include the dilution procedure as necessary
- 12b. or change to the pump used in your system)
- 12c. Enter appropriate size of tank in gallons
- 12d. or change to method you use to assure flow-paced feed).
- 12e. enter appropriate system specific information i.e. "a 300 gallon plastic tank" or "a 50-foot section of 24-inch diameter pipe", etc.)
- 12f. create a schematic drawing and indicate the current contact time value for the system and add it to Appendix B – Water System Schematic Drawings
13. Some - but not all - other possible treatments; each should include: What, Why, how often (frequency), how, where in the treatment train, and any other specifics of the treatment
14. Create a schematic drawing of the treatment train and add it to Appendix B
- 15a. insert number of gallons
- 15b. insert tank material; add extra tanks here if there is more than one
- 15c. enter tank name here
- 15d. enter tank location here
- 15e. enter overflow location here
- 15f. Enter location
- 15g. Enter or reference any SOP for tank draining
- 15h. *create a schematic drawing of the finished water storage tank and add it to Appendix B*
16. *For multiple storage tank systems:* There are also (XX) additional storage tanks that "float" on the distribution system. This is defined as tanks that have a single inlet/outlet so they are constantly either filling or emptying based upon the demand the distribution system places upon them. These tanks are (*Name , type of material and size – volume- of each of the tanks*), respectively. (*For systems that have multiple storage tanks, please use the following .:*)
17. *"x" number of hydropneumatic tanks, a gravity storage tank – what elevation?-, and booster pumps at "x" location). (Add as many pressure systems as are necessary to completely represent the system. Also describe geographically where the different pressure zones are*
18. *appropriate system*
19. *location*
20. *For multiple pressure zones/systems, please use the table below*

21. The distribution system is composed mostly of *(insert pipe material and sizes here, also include approximate date(s) installed or repaired/replaced)* piping and runs from the storage tank *(or pressure tank or source...insert whatever is appropriate)* throughout the distribution system to each service connection. *(Some systems will need to add the qualifying statement that much of the system is unknown or location is not known, or composed of a variety of pipe materials, those should all be listed)*. The distribution system covers approximately *(enter a square distance, i.e. 2 square miles, or the entire facility property or something similar)*, from *(location)* to *(location)*, North to South and *(location)* to *(location)* East to West.

All valves are mapped *(if they are not, you must create a complete map of all valves)* and marked by *(poles, tape, paint, etc)*. There are *(xx - number)* fire hydrants on *(xx)* –inch lines, *(xx-number)* yard hydrants, *(xx-number)* blow-off valves for system flushing, *(xx-number)* air releases, and *(xx-number)* pressure reducers on the main line. Scheduled maintenance of these items is covered in Section IV – Normal Operations.

(Identify meters and/or backflow protection devices at individual service connections as either being present or not present and who is responsible for maintaining them - change and update as appropriate): Each of the service connections has an individual water meter and is protected by a backflow prevention device *(enter what kind- single check valve, testable double-check, or RPZ)* to ensure that no fluid can be drawn into the distribution system from the connection. Additionally, each connection that has a main line pressure of greater than 80 psi is fitted with a pressure reducing valve.

A map showing the approximate location of the entire distribution system, relative to the area is contained in the Appendix A, titled "Water System Maps". *Create a generic "overview" map of the entire distribution system and add it to Appendix A – a detailed schematic will be created in the next section*

22. *Insert a copy of your Division-approved Source Protection Plan, and label it as Appendix C*
23. *Create a detailed schematic drawing of the entire water system or use your as-built or record drawings as a base map. Start at the source, and trace route that the water travels all the way to the service connection. EVERY SINGLE PIECE of the system should be identified. This means every valve and every service connection, each permit-required/non-permit required confined space per OSHA CFR 1410.146. Please make sure you read and understand the text in this section, and then make your drawing agree with that text. Add the schematic to this section of the O&M Manual and a copy to Appendix B*
24. *Larger systems may need to simply place a reference here that directs the reader to the location of their valve, hydrant, maintenance, map, and tie-in books are located – since it would encompass several books of information it is not necessary to duplicate that information here. All "smaller" systems should complete the following table*
25. *A separate Valve/Hydrant book may have an entire page devoted to each valve or hydrant with information like: map of ties, valve #, make and model, year installed, does it open left or open right, and a maintenance log; every time it was operated, maintenance performed, and notes (how many turns, opened hard, valve won't seat completely, or the famous "do not open (or close) this valve for any reason". Hydrants books are very similar, with the addition of: hydrant isolation valves are shown tied off to the hydrant, the inclusion of breakaway repair kit part # on the info.*
26. *Create a detailed flushing/disinfecting procedure for your system and add the appropriate steps here, include as many steps area as necessary, include simple steps like "turn the switch to 'on'"*
27. *add system specific details here, which NSF Approved disinfectant do you add, how much to add, dilution procedures, how to add – see AWWA standard C654-03: Disinfection of Wells*

28. Create a detailed startup procedure for your system and add the appropriate steps here, include as many steps area as necessary, include simple steps like "turn the switch to 'on'"
29. Add system specific details as are necessary, for example:
 1. Fill the storage tank with at least xx gallons or to xx feet before turning on the booster pumps so that the pumps don't cavitate or get damaged.
 2. Add one eight ounce glass of 12.5% sodium hypochlorite and 20 gallons of fresh water to the chlorinator solution tank – mixture yields a xx% chlorine solution
 3. Open main gate valve (valve 001)
 4. Turn Pump switch to "auto";
 5. Plug in chlorinator to solenoid controlled outlet, labeled "chlorinator";
 6. etc;
30. Please place your most recent monitoring schedule – provided to you by the Division- as your last page in this section
31. if your monitoring schedule is changed by the Division, include that schedule as well
32. These charts will be different for groundwater vs. surface water systems and should be prepared accordingly
33. Copy each task identified the Routine Tasks Chart and give detailed instruction on how to complete the task
34. add any additional equipment
35. Copy each task identified the Routine Tasks Chart and give detailed instruction on how to complete the task
36. insert location that samples are sent
37. *Insert location*
38. Insert system name here
39. *Copy all MSDS sheets for every chemical used in the water system, and include in Appendix D of this document*
40. Create a map that identifies all of the confined spaces in the system including both permit required and non-permit required spaces and place map in Appendix A
41. The following are examples only, please complete table as it pertains to your system
42. Following the examples below create a list of potential system safety hazards and their effects and fixes; these will be duplicated in greater detail in section VII
43. If you have a contingency plan that addresses ALL of the sections identified in this template, you may simply copy it and place it in this section, otherwise complete the missing sections that are identified below. This section should not be "short-changed" or done without appropriate forethought. Remember, this section of the manual will only be used in an emergency and you, as the operator, may not be available to implement the plan. It must be clear for anyone.
44. Insert the Emergency Response plan into Appendix J

45. Insert the names and contact phone numbers for all relevant parties here. This should include at a minimum, all water system operators, the water system responsible party, the local health officer, and any other "special" consumers that you identify as needing to be informed
46. Insert system name here
47. insert alternate supply name
48. If the system has been properly prepared it will have permitted back-up or redundant sources of supply available for use. If not, then a non-permitted or emergency source may be used by following very specific Public health and safety protocols
49. Fill in step-by-step instructions for "start-up" of emergency source. This may be as simple as call xxx bottled water company or it may be a series of instructions encompassing installation of "quick-connect" pieces of pipe, and valve opening and closing
50. Please fill in the sequence of steps that must be completed to completely shut-down the main water system. This list of steps should be very, very close to simply reversing the "system start-up" steps that were identified in Section III of the O&M Manual
51. Copy sample "Do Not Use", "Do Not Drink", and "Boil Water" Notices and place into Appendix E
52. The next several pages have many of the potential problems that may reasonably be anticipated to occur in a water system. You should address the steps necessary to remedy each of them. It should not be considered a complete list of potential problems, only a "starter" set. Please enter any others that you can think of. Additionally, this section should be updated at a minimum anytime a new "problem" is identified along with the steps that were taken to rectify the situation
53. insert approximate length of pipe – i.e. 4 miles or 300 feet - , pipe type and diameter
54. insert age of distribution system, insert age range if system has been developed over a number of years
55. "larger" water systems need to construct a valve book to incorporate all of this information, "small" systems should be adequately served by a map
56. create a simplified version of the full system schematic that shows only key shut-off points in the distribution system, title it "Key Shut-Off Points", and add it to Appendix A
57. *add special notes as needed to "Key Shut-Off Points" map in Appendix A*
58. Insert the flushing protocol for your water system here, the plan should incorporate the order in which valves should be opened –and closed- as well as any special directions for time left open or special conditions peculiar to that valve. Include the Unidirectional Flushing Program maps and protocol in Appendix F. Be sure to include the method of dechlorination used for chlorinated systems to prevent the unintentional release of chlorine to the environment)
59. *create a simplified version of the full system schematic that shows only locations of "special" appurtenances in the distribution system, title it "Special Appurtenances", and add it to Appendix A*
60. Insert either the manufacturer's "cut-sheet" of each item or create a hand-drawn representation of each item and add them with appropriate labels to Appendix B
61.
 - Air release valves - (enter how many) – (enter locations and identify on map) – (enter annual maintenance requirements)

- Pressure reducing/sustaining valves - (enter how many) – (enter locations and identify on maps) – (enter annual maintenance requirements)
- Backflow prevention devices – (enter all types that are in the system) - (enter how many of each) – (enter locations and identify on maps) – (enter annual maintenance requirements)
- Blow-off valves - (enter how many) – (enter locations and identify on maps) – (enter annual maintenance requirements)
- Valve Actuators
- Altitude Valves
- Pressure Relief (Release) Valves
- Control Valves (for booster pumps, Altitude valves, PRV's etc)
- Etc.

62. Only applicable for Public water systems that also provide for fire protection
63. "Large" systems should substitute a "hydrant book" that is set up like the valve book referenced earlier – instead of the drawing in Appendix A. The Hydrant Book should show approximate location of the hydrant, hydrant isolation valve tied off to the hydrant, make, model, break away repair kit #, maintenance history, flow test results, indicate the ISO fire requirements and how they were met or reasons why they were not, etc.) --- create a simplified version of the full system schematic that shows only locations of fire hydrants in the distribution system, title it "Fire Hydrants", and add it to Appendix A – or create a hydrant book
64. enter number of times flushing is completed per year
65. Add the formal ISO test results for each hydrant to appendix G). (The Water System must indicate if the hydrants are self-draining – for each one – and outline routine operation and maintenance procedures to prevent freezing and assure the working reliability of the hydrant
66. Compile a list of all equipment anywhere in the system. The following items listed may or may not be in your particular system and are listed as examples only, change them as is necessary. Include everything you can think of
67. Acquire technical specification sheets for each of the pieces of equipment in the system and place them into Appendix H. These can usually be obtained from the equipment manufacturer with a phone call if you do not have them in your possession already
68. Compile as complete a list as is possible for your water system taking into account anything that you may need to order now or in the future for maintenance or repair of the water system, some suggestions –not vendors- are included below
69. Insert location of all files and records – if there is more than one location for various files, identify where each item is located
70. The following is a partial list of manuals and/or records that may be maintained by the water system. Please edit the list to fit your system
71. You must identify the location of each of the records, identify the various files that are kept and the length of time to keep the records
72. The consumer confidence report is only applicable to public community water systems; however the customer notification procedure should be completed by all water systems which provide water to the Public
73. Please elaborate upon the standard method whereby information is distributed to all customers on the water system. Please pay special attention and give special instruction for those situations that

are not typical, like seasonal tenants, non-bill paying customers, or customers that are "removed" from the system in some other way

74. Please construct a detailed approach to handling customer complaints and addressing customer concerns. All of the sections listed below must be addressed.
75. Insert appropriate process here.
76. Insert the detailed appeal process that a customer may utilize
77. The following is for privately owned system only
78. Insert appropriate person to receive forms
79. Create a customer Complaint Form that water system personnel can complete. Insert this form in Appendix E
80. Insert any required water conservation measures that the water system employs – this can include low-flow showerheads and/or toilets, car washing bans, lawn watering bans, etc.. Also include things you may not think of like meters and public education. Are there any requirements for new construction?
81. Insert this procedure in Appendix F
82. Insert any other potential requests
83. Any special 'rules" or guidance particular to your system should be added here including enforcement of the restricted-use rules, penalties associated with non-compliance to the "bans", etc.
84. Insert all relevant backflow prevention devices, procedures and policy that is used in your water system. For a "small" system, this may be as short as 4 or 5 sentences including the backflow preventers that are in the system – ensure that these valves are appropriate for the level of protection needed/level of risk - and the 'rules' that are in place governing these connections. For a "large" system this may be several paragraphs in length detailing the rules for connecting to the distribution system, installation, maintenance and routine 'checkups' of the backflow preventers
85. Insert appropriate information into Appendix E
86. Insert agreement to Appendix E
87. Insert the location that the current Vermont Water Supply rule is located

This guidance sheet and related environmental information are available electronically via the internet. For information visit us through the Vermont Homepage at <http://www.vermont.gov> or visit VT WSD directly at <http://www.vermontdrinkingwater.org>

Water Supply Division
103 South Main Street
Waterbury, VT 05671-0403
Toll free 1-800-823-6500
Out of State 1-802-241-3400
Fax 1-802-241-3284