

MASON COUNTY
DESIGN AND CONSTRUCTION STANDARDS FOR
GROUP B WATER SYSTEMS
(9 connections or less)

Last updated 4/26/2021

Mason County Code Chapter 6.64 Group B Water System Regulations
6.64.060 – Minimum standards and adoption by reference.

(b) Standards for design and construction shall be established and maintained by the department. Said standards shall be called “Mason County Department of Health Services Design and Construction Standards for Group B Water Systems,” and shall, upon completion, apply to all Group B water systems. Copies of said document shall be kept on file and made available for public inspection at the department office.

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SECTION ONE: PROCEDURAL REQUIREMENTS

1. **APPLICABILITY**

These design and construction standards apply to Group B Public Water Systems under the jurisdiction of Mason County through a Joint Plan of Operation between Mason county Health Services and Washington Department of Health.

2. **REVIEW PROCEDURE**

A. Source Site Inspection

The first step for installing a Group B public water system is to complete an application for Well Site Inspection, pay the fee, and stake the proposed well site out on the lot. The application plot plan will need to show the exact location of the well stake and provide measurable distances between proposed well location and property lines. Any nearby existing and proposed structures, sewage components, or other sources of contamination may be needed to be shown on plot plan for review.

B. System design

The second step for installing a group B water system is to submit a complete Group B water system design report. A Group B water system design report is the vehicle by which all pertinent water system details are presented. A complete design report contains a satellite management contract (except residential 2-party water systems) water quality information, water quantity information, hydraulic analysis, water system design and layout, ownership information, and other information necessary for the efficient development, construction, and maintenance of the water system. The design report must be completed by a professional engineer or design professional per WAC 246-291-120(4). Fees must be paid at the time the design report is submitted for review. Mason County staff will work with the engineer or designer to an approved state and issue the permit for construction. Per MCC, design permits are valid for 2 years.

C. Notification and Final Inspection

After installation, the contractor will need to contact Mason County and the system engineer or designer to arrange for a final inspection. The well house will need to remain unlocked for a maximum of 48 hours, allowing the installation to be inspected by the engineer or designer and health department staff. The final inspection checklist form shall be completed by county staff at time of final inspection.

D. Final Approval

The system installation will be verified as complete and within current code when a Certification of Inspection and Installation of Public Water System Projects is completed and submitted to the health department. A revised "as-built" drawing must also be submitted if system was **not** installed according to the design. System changes may not be acceptable to health department; therefore, it is advisable to get approval prior to making changes.

SECTION TWO: DESIGN ELEMENTS

1. **Water System Identification**

The Water Facilities Inventory (WFI) identifies the water system name, managers/contact person, owner, mailing address, number of connections in service, location of well and other critical items about the water system. This information allows our department to contact the appropriate individual regarding monitoring, complaints, and other routine functions.

2. **Source Site Inspection**

Whenever possible the sanitary control area (100' radius) must be located inside the property lines of the proposed development. If the sanitary control area is not bound by the development boundaries, then all effected property owners must be contacted and sign the restrictive covenants.

In addition, all potential contaminates should be located 100 feet from the proposed well. If this is not possible then the minimum horizontal separation shall be the distances found in table 1.

3. **Water Rights**

Washington State Department of Ecology requires that a Water Right Permit be issued prior to approving systems that require daily production of 5,000 gallons or more and/or irrigation of more than half an acre. Refer to the DOH Group B Design Guide for more information on water rights.

4. **Satellite Management Contract**

A contract with a Washington State Department of Health approved Satellite Management Agency is required for new and expanding water systems. The water system shall be designed to meet the Satellite Management Agency's conditions of service. The conditions of service may be more stringent than state and local design requirements. A signed contract will be required when the workbook is submitted to Mason County for review.

5. **Vicinity Sketch**

The vicinity sketch must indicate the general location of the water system. This should allow a person unfamiliar with the county to find the water system with ease.

TABLE ONE

Minimum Horizontal Separations for new Group B Public Water Systems

Potential Contaminate ¹	Drilled well (ft)	Spring (ft)
Barns, chicken coops, barns, manure piles, dog kennels, commercial gardens, compost piles	100	200
Roads ²	Private ³	25
	County	50
	State or Federal	75
Houses or garage ⁴	100	200
Septic tanks, drainfield, and other sewage components	100	200
Surface Water ⁵	Fresh water: Wetlands, Ponds, Streams and Lakes	25
	Marine	100
Chemical Storage	100	200
Landfills	>1000	>1000

¹ A variance request to any of these setbacks requires proper justification. Proper justification would include but is not limited to; providing adequate drainage to outside the 100-foot protective radius, having a hydro-geologist review completed well log and comment on susceptibility of well to contamination, road slope away from source and proper adjacent roadside ditching.

² Mason County will consider this setback from the road right of way.

³ Mason County will not consider this set back requirement to apply to driveways

⁴ Mason County will allow portions of a house to be within 100 feet from well if that portion contains no plumbing fixtures (i.e.: bathroom (s), kitchen, etc.)

⁵ Mason County will allow a new or replacement drilled well within the 100-year flood plain provided that the well is sealed into a restrictive layer and that the well casing is installed five feet above the flood plain elevation. The Mason County Planning Department also has regulations which govern the location of wells in relation to saltwater and freshwater shorelines, streams and wetlands. When two setbacks are given the most restrictive applies.

6. **Layout Sketch**

The layout sketch must show the following:

- distribution system pipe diameter,
- length and schedule from the pump house to each connection,
- gate valves,
- water meters,
- blow-offs,
- other system components, and
- elevations at each connection and at the source.

Indicate how the piping is to be buried (i.e.: depth, cover etc.).

7. **Source Location Sketch**

The Source Location and sanitary control area must include all affected properties and property owner(s) names. This sketch can be combined with the layout sketch if there is room. The sketch will need to include distances to the following:

- property lines,
- building,
- roads and
- other sources of contamination.

8. **Source Site Inspection**

The Source Site Inspection must be approved and valid. Source site inspections are valid for a two-year period. All conditions must be addressed prior to approving the water system.

9. **Restrictive Covenant, Easement, Notices, and Agreements**

A. Restrictive Covenant

Restrictive covenants limit certain types of land uses within 100 feet of the well and within 200 feet of a spring. Document titles are the Declaration of Covenant and the Restrictive Covenant. These documents must be signed, notarized, and recorded prior to approving the water system. All affected property owners must sign covenants.

B. Easements

Easements for the distribution system and access to well must be recorded prior to approving the water system. All affected property owners must sign easement.

C. Notice to Future Property Owners

The Notice to Future Property Owners is a document which provides specific information regarding the water system (i.e.: its name, number of connections it was approved for, jurisdictional agency.... etc.). The document provides information to new property owners and assists in the prevention of loss of this important information through time.

All property owners served by the water system must sign the Notice to Future Property Owners.

C. Agreements

Where a water system agreement is appropriate, the agreement will need to address the following:

- Name of the water system
- Cost of maintenance of the water system and financial responsibilities of each party
- Designation of the water system purveyor (who is responsible for arranging for submission of all water samples and handling emergencies)
- Provisions for continuation of water service in the event the well goes dry or becomes contaminated, and
- Restrictions on furnishing water to additional parties.

Easements of placement of water lines and crossing of property lines and access for maintenance and repair of the water line, pumphouse, and well may be incorporated into the water system agreement. The water system agreement may also incorporate the Notice to Future Property Owners as well as the protective covenants for the 100-foot well radius.

All affected property owners must sign the agreement.

10. Well Log

A Well Log must be included and must be in accordance with WAC 173.160. 141.

11. Source Capacity

A source capacity test must be completed for in accordance with WAC 173-160-321 except, when appropriation permit is not needed, the test pump shall run a constant pump rate not less than the proposed pumping rate for at least long enough to supply the required daily production of the system with no less than a four hour stabilization. A draw down of more than 0.2 feet over the last four hours is unacceptable. Recovery data must be logged until the well reaches 90% of the original static water level.

Where there are wells, in fields of wells, within 100 feet of each other a simultaneous draw down will be required.

Additional monitoring of wells with in 600 feet of the well field may be required during the time of the simultaneous pump test in area where water quantity is of concern to the department.

Recovery data for the well field and monitored wells will need to be recorded and attached to the pump tests.

12. Bacteriological Analysis

A satisfactory Bacteriological Analysis must be submitted.

13. Chemical Analysis

A complete Inorganic Chemical Analysis must be submitted. All primary and secondary contaminants must meet the Maximum Contaminate Levels (MCL's). The following exception will apply:

Iron and Manganese (secondary contaminants), up to 1 mg/l combined, can be left up to the homeowner to treat. A covenant will need to be recorded with the property to notify the owner of the problems associated with Iron and Manganese (i.e.: color, taste and staining).

Turbidity (primary contaminate) can also be treated at the individual connection provided that the turbidity is caused by either Iron or Manganese. Lab confirmation will be required.

Trihalomethanes, Pesticides, Radionuclides, Volatile Organic Chemicals (VOC's) and Synthetic Organic Chemicals (SOC's) only need to be tested in those areas which have been designated as highly suspect. These areas will be designated on the basis of density, commercial development & landfills. The areas will be subject to change as areas become developed and problems arise.

14. **Storage**

Storage will be required if estimated maximum instantaneous demand in gallons per minute cannot be maintained. The source capacity test will need to demonstrate peak flow if storage is not used.

Tanks will need to be certified under ANSI/NSF Standard 61 or must meet the following requirements established by WDOH in material specifications or solution tests. Tanks must be located above ground and have locking access lids.

Tanks must be equipped with the following:

- floats or another approved device for turning the pump on/off
- sized to allow 6 inches above and below outlet of tank
- a built-in drain

15. **Pressure Tanks**

Pressure tanks can be used for storage, pump protection or both. Pump protection is used to prevent excessive pump cycling with the requirement of no more than 6 cycles per hour. Justification must be provided on the number of tanks (i.e.: equation used to determine size or number of tanks).

Pressure tanks in excess of 120 gallons need to be ASME or equivalent. Tanks less than 120 gallons require an approved ASME pressure relief valve.

The Guidelines for Group B Public Water System Approval Appendices shall be used to determine the number of bladder tanks required for pump protection.

16. **Equipment Specifications**

Equipment specifications will need to be submitted for all pumps, pressure tanks, storage tanks, and any other items used in the water system.

17. **Pump House**

Pump house specifications will need to include, but are not limited to the following:

- dimensions of building,
- lockable door,
- insulation,
- type of sheeting over insulation,
- screened vent and
- a four-inch concrete floor
- location of pressure tanks,
- storage tanks (if applicable)
- electrical panel,
- a heating unit,
- floor drain,
- flow meter,
- raw water sampling tap (6" above floor)
- Plumbing in the well house must be scheduled 80 PVC (or better), copper, or galvanized.

18. **Distribution System**

A hydraulic analysis is required for distribution sizing. A minimum of 30 pounds per square inch (psi) is required at each service connection. Pressure reducing valves shall be installed where pressure exceeds 80 (psi). Piping must be scheduled 40 or better.

19. **Water Treatment**

Water treatment other than simple hypo-chlorination must be designed by a professional engineer licensed in the State of Washington. The engineer will need to provide instruction for operation and maintenance of the device.

Mason County will consult with the State Department of Health Drinking Water Section on review of treatment devices.

20. **New Technology**

Technologies may be available for use in the development of water systems that is not incorporated into the guidelines offered by the WDOH. New technologies may be used in water system designs provided that the technology or proprietary device has been reviewed and approved in writing by the Technical Services Section of the Drinking Water Division of the Washington State Department of Health.

SECTION THREE: 2-PARTY WATER SYSTEMS

WAC 246-291-060 of the Drinking Water Regulations provides for waiver by the health officer of all or part of the rules for Group B water systems with two connections. For those public water systems where the waiver has been affected the health officer may approve project reports and construction documents in accordance with criteria approved by the department.

The intent of this policy is to reduce the number of individual wells and improve existing situations for those lots that can support an individual well without any waivers. It is not the intent of this policy to create a proliferation of two-party wells in order to circumvent lot size restrictions, or to reduce the number of Group B water systems to fulfill land segregation requirements.

1. Applicability

These policies and procedures shall apply to two party water systems except for the following:

two party water systems that are created during land segregation processes in order to comply with minimum land area requirements under an acre in size. These water systems will be subject to Group B requirements.

2. Land Requirements

Mason County Department of Health Services may authorize such **private** two-party water system provided that the water system serves two lots in which each lot is at least an acre or larger in size and the water source is a drilled well. The two-party well must provide water for one existing parcel or for two existing parcels of land that are contiguous, or the two-party well must provide water for two residences on the same lot that are not occupied by members of the same family. The location of all existing and planned encumbrances must meet individual well setbacks and on-site sewage regulations.

A Notice to Title for a two-party water system must be recorded on each lot. The water supply must have a satisfactory bacteriology test and a partial inorganic chemical analysis (iron, manganese, nitrate, chloride and conductivity) from a state certified laboratory. Group B standards (section two, part 13) shall apply to the results.

The water supply must provide a minimum of 1600 gallons per day. In addition,

lots created after January 1, 1995 fulfill the requirements of WAC 246-272; or each lot could support a well with one connection

3. Design Requirements-

Two-party water system meeting the land requirements will be considered private water systems instead of public water systems. 2-party water systems will be exempt from securing a contract with a Satellite Management Agency, installing a generator disconnect switch and a totalizing source meter.

- A. To qualify as a two-party well, proposed or existing, the source site must have been inspected and approved.
- The two –party well may not be expanded to include an additional residence unless the water system is upgraded and approved as a Group B water system.
- B. A zone of protection for the water source shall be established in accordance with WAC 246-272 and WAC 246-291 for these lots created after January 1, 1995.
- C. The minimum horizontal separation specified in Section 2 of Mason County Department of Health Services Design and Construction Standards for Group B Water Systems shall be adhered to except:
- Wells can be placed adjacent to structures in accordance with WAC 173-160
 - Water systems approved prior to January 1, 1995
- D. A satisfactory bacteriological analysis. The department may require additional testing based on known or suspected water quality problems in the area of the proposed water supply.
- E. Positive pressure of at least 30 psi at each residence with a daily production of 1600 gallons not to exceed a total of 5,000 gallons per day without a water right.
- F. A one-hour stabilization pump test.
- G. A water well report.
- H. Plans for the design and construction of the source and distribution system shall include:
- A pump curve
 - Approved potable water pipe. Class 200 or better pipe is required.
 - Pressure tank capacity, for working storage and pump protection, based on 2.5 times the pump rate.
 - When bladder tanks are used for storage use the bladder tank sizing equation in the Guideline for Group B Public Water System Approval Appendices.
- I. Pump house minimum specifications are as follows:
- Lockable door,
 - Insulation,
 - A concrete floor,
 - A heating unit,
 - A raw sampling tap (6" above floor), and
 - Comply with National Electric Code (NEC)
- J. The water source/pumphouse must have a site address.
- K. A water agreement must be drawn up and recorded on the deeds of the affected properties. The water agreement must address necessary easements and maintenance of the water system.

- L. The plan review fee must be paid when the design is submitted.
- M. Notice to Future Property Owners will be recorded on the deeds of properties serviced by the water system.)

SECTION FOUR: MONITORING REQUIREMENTS

1. **Water Quality Sampling**

Approved Group B water systems must conform to any water quality sampling requirements according to Mason County Code, WAC 246-291 and other applicable laws.

SECTION FIVE: ASSOCIATED FEES

1. **Fee schedule**

Fees will be charged according to the current Environmental Health Fee schedule.

2. **Fee Payment Due**

Fees are due at the time permit applications and design reports are submitted for review.