



Engineering Report Form

for

Water Distribution Systems and Ground Water Wells

The _____ proposes the construction of a waterline extension(s), ground water well(s), pumping facility, chlorination facility, and/or water storage facility in the manner indicated by the information contained herein and by the plans, profiles, specifications, and other data attached hereto. The plans and specifications have been approved and signed by the proper city officials or owner and an application for a permit properly executed by the Mayor, Chairman of the Board or owner accompanies this report.

I. General Information

1. Name of Facility: _____
2. PWSID Number: _____
3. Legal Description: ___/4, ___/4, ___/4, of Section _____, T- ___ - ___, R - ___ - ___, I. M. / C. M., _____ County
4. Source of Water Supply: _____
 - a. Surface _____, Ground _____, or Purchase _____
 - b. Community _____ or Non-Community _____
5. Population Served by System: _____
6. Type of Service Area (Rural waterline extension, Municipal, Mobile Home Park, Camp Grounds, School, Etc.) : _____
7. Number of Service Connections (System): _____
8. Technical specifications for the proposed waterline extension, booster pump(s), and water well(s) are provided? Yes (); No (), if No, the most current City Ordinances or Standards are referred to: Yes (); No (). If Yes, the Ordinances/Standards are included or on file with the Construction Permit Unit, Water Quality Division, Oklahoma Department of Environmental Quality.

9. The area of the proposed development: _____. If area of development is 1 acre or more, has the developer/builder obtained a DEQ Storm Water Construction Permit? Yes (); No (). Developers/builders are required to obtain a DEQ Storm Water Construction Permit for a construction site that will disturb one (1) acre or more in accordance with OPDES, 27A O.S. 2-6-201 et siq.

II. Waterline Extension Technical Information

A. Municipal Waterline Extensions

1. The proposed waterline system is designed to maintain a minimum pressure of 25 psi at all points under all conditions of flow? Yes (); No ()
2. Hydraulic analysis based on flow demands and pressure requirements is used to size all water mains? Yes (); No ()
3. Hydraulic analysis is provided (hydraulic analysis is required for the review process)? Yes (); No ()
4. Number of service connections to be served by this waterline after the construction is complete: _____
5. A minimum waterline size of six (6) inches in residential areas and eight (8) inches in high value districts are proposed? Yes (); No ()
6. The normal static pressure throughout the area to be served will range from _____ to _____ psi.
7. The normal dynamic pressure throughout the area to be served will range from _____ to _____ psi.
8. Flushing hydrants that discharge above the ground surface are provided for dead-end lines? Yes (); No ()
9. Positive closing valves are located so that a single break in the line will require no more than 500 linear feet of line to be disconnected in high value districts and 1,320 linear feet in other areas? Yes (); No ()
10. Hydrants are provided at each intersection and at intermediate points so spacing does not exceed 600 feet? Yes (); No ()
11. Hydrants should have one (1) 4 ½ inch pumper outlet, not less than two (2) 2 ½ inch hose outlets.
12. Hydrants, with 4 ½ inch pumper outlets are to be connected to mains smaller than 6 inches? Yes (); No (). If Yes, explain _____
13. Drains from hydrant barrels do not connect to any sanitary sewer or storm drain? Yes (); No ()
14. Air relief valves are provided at high points? Yes (); No ()
15. In large mains, blow offs are provided at low points? Yes (); No ()
16. Are there any cross connections between the public water supply and any sanitary sewer or storm drain? Yes (); No ()

B. Rural Waterline Extensions

1. The proposed waterline system is designed to maintain a minimum pressure of 25 psi at all points under all conditions of flow? Yes (); No ()
2. Hydraulic analysis based on flow demands and pressure requirements is used to size all water mains? Yes (); No ().
3. Hydraulic analysis is provided (hydraulic analysis is required for the review process)? Yes (); No ().
4. Number of service connections to be served by this waterline after the construction is complete: _____.
5. The normal static pressure throughout the area to be served will range from _____ to _____ psi.
6. The normal dynamic pressure throughout the area to be served will range from _____ to _____ psi.
7. Flushing hydrants that discharge above the ground surface are provided for dead-end lines? Yes (); No ().
8. Valves are located at no more than two (2) mile intervals? Yes (); No ().
9. Air relief valves are located at high points in the distribution system? Yes (); No ().
10. Are there any cross connections between the public water supply and any sanitary sewer or storm drain? Yes (); No ().

C. Installation of Waterlines (To Be Completed For All Municipal and Rural Waterline Extensions)

1. Specifications:

<u>Pipe material</u>	<u>Applicable Standard</u>	<u>Class</u>	<u>Pressure Rating</u>
Cast Iron	_____	_____	_____
Ductile Iron	_____	_____	_____
PVC	_____	_____	_____
HDPE	_____	_____	_____
Other	_____	_____	_____

- a. Minimum Depth of Cover (30 inches minimum): _____
- c. Pressure and Leakage Testing in accordance with AWWA C-601? Yes (); No ().
- d. Disinfection Procedures in accordance with AWWA C-651? Yes (); No ().
- e. Reaction blocking is provided at all bends, tees, and hydrants? Yes (); NO ().
- f. Installation of waterlines meets AWWA and Oklahoma DEQ construction standards? Yes (); No ().
2. Does this water line project involve construction along any state or federal highway? Yes (); No (). If yes, has the Oklahoma Department of Transportation (ODOT) been notified, and, do the plans show the location of all affected utilities on file with ODOT? Yes (); No ().
3. Minimum horizontal separation between water and sewer lines is 10 feet? Yes (); No (). If no, please indicated minimum possible horizontal separation: _____ (If 10 feet of separation is not possible, the water line must be constructed in a separate trench and the sewer line designed, constructed, and tested as water line pipe in accordance with OAC 252:656-5-4[c]).
4. Minimum horizontal separation between plastic water lines and gasoline storage tanks (including appurtenances) is at least 50 feet? Yes (); No (). If no, cast iron must be used for water line pipe and in no case be closer than 10 feet to any part of the storage tank system.
5. Minimum horizontal separation between water and all parts of septic tanks and absorption fields, or other sewage treatment and disposal system is 15 feet? Yes (); No ().

6. Minimum horizontal separation distance between waterlines existing or future storm sewers, raw water, oil and gas (includes natural gas), and buried electric lines is 10 feet? Yes (); No (). If no, the minimum horizontal separation for storm sewer lines is _____ feet, raw waterlines is _____ feet, oil & gas lines is _____ feet, and buried electric lines is _____ feet.
7. Where waterlines and sewer lines intersect the minimum vertical separation (edge to edge) is _____ inches.
8. Hydrants or other flushing devices capable of flow velocities of at least 2 feet per second in the waterline are installed at all dead-ends? Yes (); No ().
9. Proposed waterline extension involves surface water crossings? Yes (); No ().
 If Yes, above water crossings () or under water crossing (). Width of crossing _____ ft.
 If above water crossing:
 a. waterline is adequately supported and anchored? Yes (); No (),
 b. waterline is adequately protected from damage and freezing? Yes (); No (),
 c. expansion joints are provided at each end of the crossing? Yes (); No (), and
 d. waterline is easily accessible for repair? Yes (); No ().
 If under water crossing is greater than 15 feet:
 a. minimum cover provided is _____ feet,
 b. waterline has flexible watertight joints? Yes (); No (),
 c. valves are provided at both ends of the water crossing? Yes (); No (),
 d. the valve closest to the water source is in a manhole? Yes (); No (), and
 e. permanent sampling taps are provided on each side of the valve within the manhole? Yes (); No ().
10. Waterlines proposed:
- | Line Segment | Diameter (inches) | Length | Material |
|--------------|-------------------|--------|----------|
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
11. Onsite inspection of the proposed waterline construction will be inspected by:
 Engineering Firm? Yes (); No (),
 Owner? Yes (); No (), or
 Other (please specify)? _____

III. Ground Water Wells

1. General information:

- a. A completed "Checklist for Well Head Protection" is required for all new well construction. A completed "Checklist for Well Head Protection" is included in the plan documents. Yes (); No ().
- b. Number of wells _____
- c. Capacity of well(s): (# 1) _____, (# 2) _____, (# 3) _____, (# 4) _____
- d. Well depth(s) (# 1) _____, (# 2) _____, (# 3) _____, (# 4) _____

e. Legal Description:

Well # 1 ___ /4, ___ /4, ___ /4, of Section _____, T- ___ - ___, R - ___ - ___,
 I. M. / C. M., _____ County
 Well # 2 ___ /4, ___ /4, ___ /4, of Section _____, T- ___ - ___, R - ___ - ___,
 I. M. / C. M., _____ County
 Well # 3 ___ /4, ___ /4, ___ /4, of Section _____, T- ___ - ___, R - ___ - ___,
 I. M. / C. M., _____ County

- f. Type of Well (dug, driven, or drilled): _____
- g. Name and Characteristics of Aquifer: _____

- h. One Hundred Year Flood Elevation: _____
- i. Water Well Elevation of Wells: (#1) _____ (#2) _____ (#3) _____
2. General Water Well Construction
- a. Well Casing:
1. Type of well casing: _____
 2. Diameter of well casing: _____
 3. Thickness of well casing: _____
 4. Depth of well casing: _____
 5. Well casing extends a minimum of 12 inches above the pump house floor and 18 inches above the final ground surface? Yes (); No ().
 6. The top of the well casing is sealed with a sanitary well seal to properly protect against the entrance of contamination into the well? Yes (); No ().
- b. Surface Casing:
1. Type of surface casing: _____
 2. Diameter of surface casing: _____
 3. Thickness of surface casing: _____
 4. Depth of surface casing: _____
 5. Surface casing extends a minimum of 12 inches above the pump house floor and 18 inches above the final ground surface? Yes (); No ().
- c. Type, depth, and thickness of grout: _____
- d. Type and length of screen: _____
- e. The water well is location at the highest point on the premises? Yes (); No ().
- f. The pump house floor is located at least two (2) feet above the 100 year flood elevation? Yes (); No ().
- g. Well(s) is provided with a means to measure the water level(s) periodically? Yes (); No ().
- h. Well(s) has provisions for venting the well casing to the atmosphere? Yes (); No ().
- i. The discharge piping is equipped with the following:
1. Check valve? Yes (); No (),
 2. Shut-off valve? Yes (); No (),
 3. Pressure gage? Yes (); No (),
 4. Flow meter? Yes (); No (), and
 5. A smooth nosed sampling tap located on the upstream side of the shut-off valve and at a point where positive pressure is maintained? Yes (); No ().
- j. All exposed piping, valves, and appurtenances are protected against physical damage and freezing? Yes (); No ().
3. Well development is included as a part of the specifications and meets the requirements of OAC 252:626-7-4 (a)? Yes (); No ().
4. Disinfection of the well and ground water is specified and meets the requirements of OAC 252:626-7-4 (d) & (e)? Yes (); No ().

5. Chlorination facilities required for all ground water systems are proposed? Yes (); No (). If Yes:
 1. Type of chlorinator: _____
 2. Proposed chlorination facility meets the requirements of OAC 252:626-11 and OAC 252:626-11-4? Yes (); No ().
6. Water Well Pumps:
 - a. Type of pumps proposed: _____
 - b. Type of pump motor: _____
 - c. Pump capacity: _____ gpm
 - d. Operating head: _____ feet
 - e. Voltage: _____
 - f. Auxiliary power source is provided? Yes (); No (). If No, explain: _____

IV. Disinfection Facilities

1. Daily flow of water to be treated: _____ gpd.
2. A flow meter is provided in order to measure water flow to determine chemical application rate? Yes (); No ().
3. Disinfection chemicals specified: _____
4. Type of chlorinator specified: _____
5. Maximum feed range: _____ Minimum feed range: _____
6. Capacity of chlorinator can meet chlorine demands at maximum flow? Yes (); No ().
7. Provisions are provided for measuring the quantities of chemicals used? Yes (); No ().
8. Standby equipment is provided? Yes (); No ().
9. A minimum of 30 minutes contact time is provided for ground water? Yes (); No ().
10. Residual chlorine of 0.2 mg/l at distant points is provided for? Yes (); No ().
11. Chlorine residual test equipment is provided? Yes (); No ().
12. Use of chlorine gas is proposed? Yes (); No (), If Yes:
 - a. A separate room is provided? Yes (); No (),
 - b. A shatter resistant, clear glass inspection window is installed in an exterior door or interior wall to permit the chlorinator to be viewed without entering the room is provided? Yes (); No (),
 - c. The chlorine room is constructed in such a manner that all openings between the chlorine room and the remainder of the plant are sealed? Yes (); No (),
 - d. Scales are provided for weighing cylinders? Yes (); No (),
 - e. The chlorine room is equipped with a ventilating fan with a capacity which provides one complete air change per minute in the room? Yes (); No (),
 - f. Exhaust fans take suction near the floor? Yes (); No (),
 - g. Switches for fans and lights are located outside of the room, at the entrance, with a signal light indicating when the fan is in operation? Yes (); No (),
 - h. A heater is provided which has the capability of heating the chlorine room to 60 °F? Yes (); No (), and
 - i. Chlorine gas lines that extend beyond the chlorine gas room are feed under vacuum? Yes (); No ().

V. Pumping Facilities

A. Pump Stations

1. One hundred year flood elevation: _____.
2. Site is accessible at all times, regardless of floods? Yes (); No ().
3. Site will be graded so as to lead surface drainage away from the station so water will not enter or pool against the building? Yes (); No ().
4. Building has outward-opening doors of adequate size? Yes (); No ().
5. All floors slope 0.3 inch per foot to a suitable drain? Yes (); No ().
6. All construction shall be in accordance with state and local safety, building, electrical, plumbing, and sanitary codes? Yes (); No ().
7. Provisions are provided for adequate heating? Yes (); No ().
8. Pump house is adequately lighted throughout and all electrical work conforms with requirements of National Electrical Code and the American Insurance Association? Yes (); No ().
9. A means of bypassing the pumping station is provided? Yes (); No ().
10. Pumping station is equipped with a flow meter? Yes (); No ().
11. Controls provide for proper alternation of the pumps? Yes (); No ().
12. Booster pumps are equipped and controlled so that:
 - a. they will not produce negative pressure in their suction lines? Yes (); No (),
 - b. the intake pressure will be at least 20 psi when the pump is in normal operation? Yes (); No (),
 - c. the pump will automatically cutoff if the pressure in the suction line falls below 10 psi? Yes (); No ().
13. Provisions are made for stand-by emergency power in the event of a power failure? Yes (); No (). If no explain _____

B. Pumps

1. Type of pump(s): _____.
2. At least two pumps are provided? Yes (); No ().
3. With one pump out of service, the remaining pump(s) is(are) capable of providing the maximum daily pumping demand of the system? Yes (); No ().
4. A check valve of the non-slam type is located at each pump casing? Yes (); No ().
5. A positive closing valve is located on the discharge line after the check valve? Yes (); No ().
6. Piping is protected against freezing? Yes (); No ().
7. Shut-off valves are provided on the suction line to each pump? Yes (); No ().
8. Each pump has a standard pressure gage on its discharge line? Yes (); No ().
9. Each pump has a compound pressure gage on its suction line? Yes (); No ().
10. Each pump is provided with smooth nosed sampling cocks on the suction and discharge lines? Yes (); No ().

VI. Water Storage Facilities

1. Water storage tank is located near centers of high demand? Yes (); No ().
2. One hundred year flood plain elevation: _____.

3. Type of storage tank(s): _____.
4. Hydraulic analysis is included? Yes (); No (),
5. The normal static pressure in the receiving line is _____.
6. The normal dynamic pressure in the receiving line is _____.
7. Base elevation: _____.
8. Low water level elevation: _____.
9. Low water level elevation of any other water storage facilities on the distribution system: _____, _____, _____, _____.
10. High water level elevation: _____.
11. High water level elevation of any other water storage facilities on the distribution system: _____, _____, _____, _____.
12. Level controls are provided? Yes (); No (), If No explain: _____
13. A vent is provided? Yes (); No ().
14. Tank is equipped with an overflow which is brought down to an elevation between 12 and 24 inches above the ground surface? Yes (); No ().
15. Separate inlet and outlet lines that provide for positive circulation are provided? Yes (); No (), If no explain: _____
16. The inlet line terminates at a point between 30% and 50 % of the tank height? Yes (); No ().
17. A means of bypassing the tank is provided? Yes (); No ().
18. Convenient access to the interior of the tank for cleaning and maintenance is provided? Yes (); No ().
19. Type of paint used: _____; Manufacturer _____.
20. Paint proposed is listed by the National Sanitation Foundation as meeting the ANSI/NSF standards for contact with potable water? Yes (); No ().
21. Disinfection in accordance with AWWA C-652 is provided? Yes (); No ().
22. Fencing is provided for protection from trespass? Yes (); No ().

Professional Engineer's Certification:

I certify that, to the best of my knowledge, all the information provided in this engineering report form is correct and no significant information necessary for a proper evaluation of the project has been omitted:

Signature of Professional Engineer: _____ Date: _____

Name of Professional Engineer: _____

State of Oklahoma Professional Engineer No: _____

Phone No: _(____)_____