

1. Sand filter float valves:

Description: Two float valves are used to control the level of the raw water in the slow sand filters. As the level changes the the valves modulate the flow onto the top of the filter. Since the sand filters must always have at least a 5 GPM flow, the original design uses a type of valve that does not fully shut off.

Problem: The manufacturer of the valves does not specify the minimum flow. The system used to work, but for several years we have not been able to keep them operating properly at low flow, which is the normal operation most of the time other than the summer peak. Even after several rebuilding by the manufacturer, the valves leak too much. The result is we often waste as much raw water as we use. The floats and the control arm are exposed in the treatment plant. If it is bumped, even gently, it can cause a severe water hammer condition on the aging, mile long raw water line. The raw water line burst in 2005? was probably due to water hammer. In hindsight full shut off valves would probably be more appropriate. The Wa State Dept of Health (DOH) listed the overflow and water hammer risk as “should” be fixed. Even though this is less urgent than “must”, we should address this to improve system reliability.

Options being considered:

Upgrade existing valves, similar to DBWU
Incorporate into roughing filter, if tank type

2. Large Storage Tank

Our existing 125K gal storage tank is more than sufficient for our current needs. It needs to be drained, cleaned, inspected and repaired. Chlorine contact must be performed differently during cleaning, and to use the total volume for system expansion.

3. Bring Small Tank Online for temporary Use

Level sensor electrodes and switches need to be installed. CT has to be solved. Plumbing and valves are OK. The small tank must be online before the large tank can be cleaned.

4. Chlorine Contact (CT)

The existing CT volume is 540' of 18" pipe coiled up inside the large tank. If the water level drops below about 1/3, the CT volume is reduced, and we could be out of compliance. This could occur during summer peak use.

Options being considered:

- a) 250' 24" pipe between filters and the tanks. Culvert under the county road is an issue.
- b) Shorter larger diameter stopping short of the culvert. Expensive fittings
- c) Serpentine 24" pipe near filters. Expensive
- d) Baffled concrete tank with a depth similar to the clear wells and filters. Expensive and needs more pumps.
- e) Plastic tanks. Inexpensive, but they would have to be protected from tree falls. Needs more pumps.
- f) Improve the mechanical support of the existing 540' of 18" pipe in the large tank, and correct the plumbing as above. This does not allow operation on the small tank alone.

5. Filter Sand Storage

We should be able to store sand as it is removed while waiting for bulk cleaning, and/or store fresh sand after it is barged in.

6. Bypass meters for leak detection

This has been inactive, and may be replaced by sensitive pressure gauges throughout the system.

Sandy