

Proactive Measures Plan

Water line replacement

The age of our water lines is a large factor contributing to the number of failures in our water infrastructure along with increased corrosion due to soil conditions. Numerous water mains need to be replaced. The replacement of these problem lines will reduce manpower needs as well as the cost of repairs and the loss of water.

PVC pipe will be used to replace these problem water mains. The appropriate PVC pipe is just as strong as iron, more flexible, and does not corrode. The life expectancy of a PVC pipe is estimated to be over a hundred years if installed correctly.

Leak detection action

Along with updating meters, identifying and repairing leaks is a major part of the problem with the water system. Gaining control of unaccounted-for water will go a long way in getting the water fund under control. Unaccounted-for water is money down the drain.

As soon as the weather breaks and the budget is approved, the water department will be calling in a leak detection service. The plan is to survey the entire downtown area. We will repair the identified leaks in an orderly fashion.

Once these repairs are made, the leak detection service will survey the same area again. The reasoning for this is because once the breaks are fixed the system becomes quieter and smaller leaks can be located.

The plan is to do this three times. After the downtown area is completed, the hilltops will be next using the same procedure. Then, it will be on to the west end of town.

Leak detection equipment

The water department is also looking into leak detection equipment for our own use. With the right kind of leak detection equipment, we can eliminate the need for a contractor. The savings from doing this ourselves will justify the cost of the equipment.

Because of manpower issues, we will need leak detection equipment that is not labor intensive. Equipment exists that can be placed on the system and left for a few days. During the time that it is placed in the system, this equipment can listen to the area that it is in and correlate the sound information to identify any leaks. When the equipment is retrieved, all of the data is downloaded and any leaks can be located. This type of system will only do an area of a couple blocks but can do more if more data probes are purchased. Once the data is retrieved, the equipment can be placed in a different part of the water system and so on.

Neptune, who is performing the meter changeout, indicated that they can install something of a more permanent nature for the whole water system. This is still being discussed with them.

Valve exercising program

A valve exercising program is a part of a water distribution preventive maintenance program. Many valves in a distribution system can go decades without being operated. If this happens, and no maintenance is done, rust and corrosion set in and the valve will not work when it is needed. Valve exercising

involves operating the valve open and shut, cleaning, lubricating, and making any repairs that have been identified.

We have not had a valve exercising program in place for many years. The reasons for this are varied and can only be speculated upon at this time. Currently, manpower issues are the reason this is not being done. There are thousands of valves in the system and any program put in place will take a few years to complete one circuit of the system at current staffing levels.

However, this needs done. We will be able to identify valves that don't work, valves that need repaired, and an inventory of valves that can be relied upon in an emergency. Another aspect of this program is creating problems that will need immediate attention. It is very likely that, in the attempt to operate a valve, we will cause it to break and leak.

Valve replacement

Numerous valves in our water distribution system do not work. Because of this, when repairing water line breaks, large sections of our water system need to be shutdown to isolate a leak or the repairs are made while the water is still on. Valves that don't work need to be identified and replaced.

To replace a valve, the valve in question needs to be treated like a break. It needs to be isolated with other valves and can't be replaced while the water is still on. The old valve will need to be cut out and the new valve put in its place.

There are some options that we can use to get started and any valves selected for replacement will have to have a strategic value, meaning that they should help us for isolating other valves for future replacement. One option is to contract out for two line stops. A line stop is essentially a rubber plug that is temporarily put inside the water line to stop the water so the valve can be cut out and a new one put in its place. Once the repair is made, a sleeve is placed over the hole where the line stop was inserted. The other option is to have a valve

inserted near the broken valve. This is done while the line is still live. The broken valve will need to be removed afterwards.

Once again, because of current staffing levels, this is another program that will take time. This goes hand-in-hand with the valve exercising program. If our system is maintained properly with the valve exercising program, valve replacement should not be an issue in the future once we take care of our current needs.

Hydrant replacement

Last year, in coordination with the fire department, a hydrant inspection plan was instituted. As far as the water department is concerned, hydrants in need of repair are being identified through this program. The current numbers of the inspections are indicating approximately 20% of our hydrants do not work or have some operating issue.

Hydrants are similar to the valves in our distribution system. Many hydrants can go decades without being operated if there is no inspection plan in place. If this happens, and no maintenance is done, rust and corrosion set in and the hydrant will not work when it is needed. Hydrant inspections involve operating the hydrant open and shut, cleaning, lubricating, and making any repairs that have been identified. Flows and pressures should also be checked.

Replacing hydrants usually take about a shift to complete. At this time, we are attempting to replace a hydrant once a month. Again, this comes down to manpower.

When selecting hydrants to be replaced, the Fire Chief will be consulted to determine if he has any areas of concern as far as hydrant coverage. Priority will be given to the hydrants identified by the Fire Chief. At this time the Fire Chief has identified 8 hydrants that need replaced and are essential for coverage. These 8 hydrants will be the first to be replaced.

Metering of system

Another part of the meter change out program that is being considered is placing meters in the water distributions system for different sections of town. With a radio read system in place, we can have real time information at our disposal to identify leaks as they occur and give us an area to focus our leak detection capabilities.

By placing meters in the distribution system, we can compare total water flow to an area of the system with the commercial and residential meters in that area. Any differences will indicate a leak. We can then concentrate any leak detection capabilities in that area.

Proactive Work Scheduling

In the past and more frequently in recent months, we have found ourselves in a pattern of reacting to water line emergencies. The feeling of coming to work and wondering where the next break will occur needs to be disrupted. A routine work schedule is being implemented which will change this reactive approach. For example, a hydrant is scheduled to be replaced every other week and Fridays are dedicated to locating our infrastructure for the GIS project. Mondays will be spent on equipment maintenance and valve identification and repair. Tuesday through Thursday will be spent making repairs found during the leak surveys.

Any emergency water line breaks will be addressed as they occur. This will be an interruption to our schedule instead of the schedule being an interruption to emergency water line breaks. I realize that this sounds like common sense but this is a state of mind that we have found ourselves and this pattern needs broken.