Reports from Tim Guishard Enterprises

Water Operator for H & J Water Company

September 2026
August 2026
June 2026

September 2026

[Incident Report on Outage 9/8/26]

Monday's water outage has somewhat of a mystery, which will be explained later.

The primary issue: The jockey pump's pressure transducer failed in the opposite manner of the main pump's transducer failure. This time this pump went to full speed and pressure. It only appears to have shut down on low current due to a dead head condition.

- This pump has the capacity to build in excess of 150 PSI. Any time a pump is capable of building in excess of the pressure tank rating (usually around 100-150 PSI) an axillary high pressure cut off switch or pressure relief valve is supposed by installed per most pressure tank manufacturer's installation requirements. Below are excerpts from a couple different pressure tank manufacturers. Sitting at my desk, I do not remember what manufacturer of pressure tanks are in place at H&J.

WARNING: Explosion or Rupture Hazard Risk of death, serious injury, property damage, and void warranty.– For use with potable water applications only.– Do NOT pump flammable or explosives fluids such as gasoline, fuel oil, kerosene, etc– Do NOT pump chemicals or corrosive liquids.– ALWAYS install a pressure relief valve to match system pressure ratings and maximum flow rate.– Do NOT exceed max. working pressure: 125 PSIG or 100 PSIG (depending on your tanks nameplate rating).– Do NOT exceed operating temperature: 120°F (48°C) Max.– Do NOT expose to freezing temperatures: 35°F (2°C) Min.

WARNING: RELIEF VALVE REQUIRED. A relief valve should be installed which is set to open at excessive pressures (125 psig or more). This will protect the Well-X-Trol and other system components should the pressure switch malfunction and fail to shut the pump off. The relief valve should be installed at the connection of the Well-X-Trol to the system piping and have a discharge equal to the pump's capacity at 125 psig.

It was a failure of the original pump installer to heed these warnings, and install the proper protection.

Additional issues:

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- Part, if not most, of the water system did in fact exceed 150 PSI. However, if any members pressure relief valves on their water heaters did not open at 150 PSI, that indicates that these valves have also failed.
- In order to change the pressure transmitters I had to completely drain the water system, because the valves needed to isolate the pumps were never installed or are non-functional. I did go ahead and install valves to make it easier to change pressure transmitters in the future, but when the main pump needs replacement the entire water system must be shut down, because a valve was never installed to isolate the discharge side of this pump.
- Likewise if a single pressure tank needs replacement the entire water system must be shut down, because valves were never installed to isolate the pressure tanks.
- When trying to shut down the water system to replace the pressure transducers we found that valves in the distribution system are leaking excessively. When this system was originally installed, or valves were replaced, the lowest cost valves were purchased. Unfortunately, this is a common occurrence with many small water systems!
- When repressurizing the water system, initially only part of the system came up to pressure. We found that a valve that we thought only shut off a hydrant, actually also shut off part of the water system. This also tells us that a valve somewhere else in the water system is also closed, as the water system is supposed to be looped.
- **The mystery:** someone at some time closed a number of valves going into/out of the storage tanks. That same person also installed red colored surveyors flagging on the valves they closed. This was done without notifying either myself or any member of the BOD. This not only starved the main booster pump for water, it also caused high pressure on the filter system and all piping from the well head to the closed valves, causing pipes to leak in the treatment plant. I suspect that the valves were closed by someone trying to mitigate the water tanks that were overflowing on Saturday before I arrived. I had my blinders on concerned with trying to get water flowing, that I did not observe the red flagging. I immediately left on Saturday after making sure the well pump was turning on and off as it should have. I did not look for water flow at the water meter in the treatment plant.

I'm going to make a statement that if SCADA were present in this water system, several of these issues could have been caught and responded to more quickly. I also suggest that cameras should be installed to monitor the water tanks, wells and surrounding areas. A lack of quality lighting Monday night, and the fact that some of the electrical controls in the pump room are not listed for wet environments, sure hampered the repairs once the sun went down and we had water spraying uncontrolled inside the booster pump room. I was severely concerned of an electrocution hazard!

In my opinion, whomever installed the jockey pump should be held financially responsible for any damage related to the high pressure in the distribution system. Whomever is responsible for closing valves and not notifying anyone, should also be held financially responsible for any damage that this action caused.

There is still work that needs to be done:

- To determine where the closed valve(s) is(are) in the distribution system.
- Fix/replace several leaking or non-operational valves around the water tanks, pressure tanks, booster pumps, water treatment equipment and in the distribution system. Do not buy valves from any hardware store or big box retailer. Only purchase valves that are approved by AWWA for use in a drinking water system, from a waterworks supply house.
- Fix leaking piping in the treatment plant.
- The installation of a pressure relief valve or high pressure cut off switch, on the jockey pump.
- Verify that the pressure tanks were not damaged by the high pressure.
- I will be installing nylon "zip ties" on the valves that were closed, locking the valve handles in the open position. This will provide a visual indication that my team will be looking for during future visits.
- I have not even looked into what kind of pressures the main booster pump can produce, but that also may be a concern for a larger pressure relief valve or a high pressure cut off switch.

[Supplemental Report – 9/11/26]

ITEM 1) After that meeting, I investigated the pressure tanks to see if they might have been damaged by the high pressure. I do not see any physical external damage to these tanks, however there is evidence that one of the tanks probably has a ruptured diaphragm. There is some moisture under this tank as well, suggesting there might be a leak on the bottom or in the piping. This does happen as the tanks age, so I do not think that this was a result of the high-pressure event. Another tank appears to be low on pre-charge pressure. However, I could not confirm if any tank has issues, as whomever installed these tanks did not install proper isolation valves, and the only valve near the tanks will no longer shut off with reasonable force. Lower quality valves strike again! Unfortunately, the tank that appears to have failed is the hardest to replace, as the other 2-tanks must first be removed to access it. To replace the failed pressure tank will require a complete shutdown of the water system again.

As a note: I do not recommend this type of pressure tank (diaphragm, bladder, air-cell, etc.) in a community water system. It has nothing to do with the manufacturer in this case, as these tanks are manufactured by what I consider the highest quality of this type. I typically recommend the older style of pressure tank that used to be connected to the system, but I am sure that INITIAL COST was a consideration when that tank (I assume) leaked and these tanks were installed. In the long run the

older style pressure tank that uses an air compressor to maintain an air cushion is much less expensive to own, as they typically last 30-50 years.

Based on the serial number on the potentially failed tank, it might still be under warranty. I need a copy of the original installers invoice, showing the installation date to attempt a warranty replacement. Any potential warranty however does not cover labor. To install a high-quality valve to isolate the pressure tanks and possibly isolate the main booster pump from the distribution system, you are looking at somewhere between $1,000 and $1,500 after the sampling costs are added in. If the tank does not fall under warranty, add another $1700.00. I would propose to take all pressure tanks out, and install the new valve(s), then put the older tanks back in before even ordering a replacement pressure tank. The newest tank would be on the end that is easy to install. This work will have the water to the community shut down for hopefully only 2-3 hours. If problems arise, the water may need to be shut down for a much longer period.

ITEM 2) I also investigated a few valves in the distribution system. I found a valve near the hydrant in front of Jim's house closed. When I opened the valve and flushed the piping, a lot of dirty water was discharged. I then closed that valve and found much lower flow from the other side of the loop, so I opened the valve back up. I also found a valve next to the hydrant near the treatment plant, has a broken stem and will not open or close fully. This valve will need replacement. and once more this is a low-quality valve, not meeting AWWA standards, and will require draining all of the distribution system to replace the valve. I also found that there appears to be no valve that will isolate this hydrant if it gets broken. There is a second valve at this location that also should be replaced at the same time due to age and low quality, while the distribution system is drained down. Since I really do not know what is under the ground, I am going to estimate that replacing these two valves and installing one for the hydrant will be somewhere around $5,000 in labor and materials. All of the piping in this area needs to be exposed, so that an accurate price can be given. This work will have the water to the community shut down for 10-12 hours.

ITEM 3) I have attached the Water Quality and data-log spreadsheets for August. The water quality is meeting State Standards. The well production seems normal for tis time of the year.

[Supplemental Report on Well #1 – 9 /12/26]

I would like to see well 1 used is a daily basis. Electrically it is probably more efficient, as you are not pushing water 200' up the hill. Once SCADA is on line, it is easy to Alternate or set up as a Lead/Lag situation. I do not have recent lab reports to identify what well is better in quality, but that is something I also look at when determining what wells to use first/last.

At Wynola WD:

Water Operator's Report

- I have their best quality wells pumping 8 hours per day, producing the most water in gallons per day that the wells are capable of. These are very low capacity wells and get stressed if I pump much more daily. This is about 32% of their daily production. These 2-wells are only producing a total of 11 GPM and are using a total of 4 HP of energy to produce it.
- Then the well that is most efficient at producing their water is utilized. This is about 42% of their daily production. This well is producing an average of 26 GPM on 5 HP of power.
- The lowest quality well is severely limited to only an hour or two per day, unless it is needed more. Unfortunately, it is their highest capacity well in terms of GPM. It is providing the remaining 26% of their daily production. If this well if turned up to full speed, is capable of 60+ GPM with 20 HP of energy. I have it limited with a VFD to 30 GPM on average, and it is probably pulling 7.5 HP of energy. If there is a fire locally, we turn up the speed of the pump, and all wells will run longer than normal of the FD is drawing water from them.

In using this scenario, I have been able to keep their water quality in check without any treatment. If they had hired someone like myself much earlier, they would have experienced better water quality many years ago.

By having SCADA in place at the Forest Service water system in Mount Laguna, **and understanding what the data means,** I have saved them over 20,000 gallons per day in water losses. Their previous operator retired December 31. I started working for them as their Operator in mid January. Their wells were running 18-24 hours per day, producing as much as 36,000 gallons per day for the previous year. I immediately identified they must have a leak or leaks because only one campground was open. I found and fixed one leak, and the water production dropped in half, which at the time I felt was still to high. 2-weeks ago we upgraded their SCADA to monitor the water level and water flow into an underground tank feeding part of the water system, and the water level in another above ground tank feeding another part of the water system. This found another 5000 GPD in losses leaking literally from the underground tank and another 350 gallons per day in the water system that is supplied by the above ground tank. They are scheduling a diver to fix the leaking tank. I do not know if we will find the other 350 GPD in losses. We have more SCADA upgrades to make, and who knows what that data will show. I want to know how much water is actually entering every tank, because they have so much piping between the wells and the tanks. They have a total of 5 tanks in one part of the water system, that is fed by 2 wells and over 10 miles of piping of which a large part is over 50 years old.

Respectfully,

Tim Guishard
Tim Guishard Enterprises

Water Operator's Report

August 5, 2026

Weekly, we continue to monitor the water quality out of the treatment plant and perform manual backwashes. The water quality has been good. We also have been recording the water production from well 2. Unfortunately, the water meter is very difficult to read and impossible to replace in the current location. Several reports are attached to the message. We (Rosa) really need daily water volumes, well pump run times and well water levels, to properly fill out the Drought reports, all of which could be automated with SCADA. Properly filling out these reports is an important step to qualifying for grants.

We have started preparing the Minimum Residual Disinfection Reports, taking this off Rosa's plate. We can take on more reports if requested.

I was contacted by a member of the State DDW about well water level measurement equipment that Spencer Valley School qualified to have installed at no cost. I passed on your water system information to see if you might be able to qualify for similar equipment at no or low cost.

I have also sent in some similar well level monitoring equipment that I pulled from Wynola WD when I upgraded their equipment last month, to the manufacturer to get a cost estimate for repairs. If the equipment can be repaired, I'll pass on the costs to you to see if it will be viable to monitor the levels in your wells. This is not the best equipment, but it is better than what you have now!

On July 19, I responded to another emergency water outage at well 2, possibly related to a lightning strike a couple days earlier that almost completely drained the storage tank and caused the booster pumps to stop working. The coil on the 24VAC Definite Purpose Contactor that actuates the main 230VAC contactor for the well pump failed. I was able to make an emergency bypass to get water flowing again, but needed to return with a new component. On July 20 my team switched out the Definite Purpose Contactor for a control relay. The relay is super simple to replace, and may actually last longer. We left a spare relay on site for future replacement if it is necessary.

As a result of the water outage, On July 20th we also had to collect a set of set of special bacteriological samples for analysis to confirm that the water system did not get contaminated. These had to be hand delivered to a local lab.

A SCADA would have alerted us that the well pump did not start, which would have saved hundreds of dollars in emergency repairs and water sampling. It is likely that the repairs could have been completed during normal business hours.

On July 30, we finally received and installed the Surge Protection Device at the main power supply to well #2 pump control panel. This should reduce issues with power surges at that location. However it might be wise to also install a pair of low voltage SPD's on the 24VAC power that goes between there and the water tanks. I would recommend installing one at each end, which will provide further protection for the low voltage controls between the water tank and well. These SPD might have prevented the coil on the DP contactor from failing. I still recommend installing a SPD and line reactors on the power supply to booster pump VFD's to reduce issues with those pieces of equipment.

Water Operator's Report

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June 15, 2026

The month of May was a relatively quiet month with no major issues.

We did have a minor issue in maintaining a consistent chlorine residual, which may have ultimately been caused by the issues observed in early June.

One weekly sample was above the SMCL for iron, and we are not sure why. It might be due to excessive usage the day(s) before sampling or the filters did not backwash properly. As a result we have changed automatic backwash intervals from once every 3 days to once every 2 days. The increased backwash intervals are a waste of water, if they are not needed! Unfortunately due to a lack of daily water production records and a water meter on the backwash line to the filters, that could be automated with SCADA, we do not know if there was excessive usage or the filters did not backwash properly.

The first week of June is a whole different story:

- The transmission line from well 2 broke. It appears this might have been leaking for weeks before the break was observed!
- Ants got into an electrical contactor (a large relay) at well 2 and damaged the contact points.
- An electrical surge of some type, also at well 2, damaged more electrical (pump/motor protection) components.

As a result of the above

- The storage tanks almost ran dry. **This water system was just a few hours from being out of water, and likely just avoided thousands of dollars of additional damage to the booster pumps!**
- Water samples collected on June 3rd, 4th, and one scheduled for June 10th could, or may, have been compromised.
- Several damaged pump/motor protection components at well 2 were bypassed to allow the well pump to run without these components.
    - This could result in damage to the well pump or motor!
- New electrical components are on order, including an electrical Surge Protection Device (SPD) to help prevent some future damage.
- An emergency repair of the transmission line was completed on a weekend by Josue and Rosa. The community needs to give them thanks for keeping your water flowing!

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- June 8:
    - The chlorine residual dropped well below optimum, to potentially unsafe levels.
        - As a result: We had to perform emergency chlorination of the storage tanks, and shut down the well pump for almost another day to get the chlorine back up to optimum levels.
    - Upon restarting the well pump after the pipe repair, we found that the pump production being reported at the treatment plant has increased slightly since the beginning of April, suggesting the transmission line leak may have started in April.
    - As a result of the increased pump production at the treatment plant, we had to increase the speed of the dose pump to get the proper chlorine residual.
        - We are going to have to monitor the chlorine residuals again and adjust the chlorine pump a few more times to get stable residuals.
- June 9,
    - we checked the chlorine residual in several places in the distribution system. All good after some minor flushing at Susie's house.
    - We also looked at possibly replacing the water meter for well 2, as the register is hard to read due to scratches. Unfortunately due to the location of the meter sitting behind the filters, it is impossible to reach some of the bolts to remove it from service. The meter will need to be literally cut out and moved to a new location.
- June 10
    - Collected special bacteriological sampling after the transmission main break.
    - We replaced the motor starter contactor.
    - We are still waiting on the SPD to arrive.

I keep bringing up the need and benefits of SCADA. If SCADA had been in place:

- **We would have been alerted* of the issues at well 2, while the storage tanks were still nearly full:**
    - We could have seen that the well pump was running longer to keep up with the leak.
        - Thus the repairs could likely have been scheduled and completed during "normal" working hours and days.
    - We could have seen that the well pump did not run, due to the electrical failures.
        - Thus the repairs could have been completed before the tanks were nearly empty and your fire protection was severely compromised.
    - We could confirm that the filters are backwashing as required and only when needed.

- Your community members would not need to be relied on to perform daily chlorine residual readings.
- Collecting most of the required information to complete the required quarterly Drought Reports, would be automated. Collecting all of the required information that helps the water system qualify for grants and low interest loans, would be available in a spreadsheet. This same data also helps us predict when well or pump failure is imminent. Currently H&J can not report or prove:
    - What are the static and dynamic water levels in the well(s)?
    - What is the run time for the well pump(s)?
    - How many gallons per day are produced from each well?
    - How many gallons per minute are produced by each well pump?

* With SCADA I calculate things like total pump production and run time on a daily basis. It is much easier to see on a spreadsheet that the pump run hours and daily production are getting out of whack. Just looking at the GPM, does not give the full picture. I would likely have easily seen the effects of the leak 6-weeks ago.

Respectfully,

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