Lion's Head water user's association

June 29, 2023

Infrastructure

Lion's Head is a private water company with about 5 miles of pipe, two wells, two in ground tanks, and services 8 lots. We currently have 3 houses on the system – lots 12, 14 and 15.

A single pipe (2", I believe) runs, in order, through lots (Elk Stream unless qualified) 10, 16, Elk Springs lot 8, 15, 14, 13, 12, and 11. Lots 10, 16, ESpR 8, and 15 are on the lower system, and lots 14, 13, 12 and 11 are on the upper system.

We have two tanks (the transfer station and the upper cistern) that reside between the lower system and the upper system. The lower system and lower lots receive water from the transfer station, and the upper lots receive their water from the upper cistern. The upper cistern is 10,000 gallons. The transfer station is 1,800 gallons. There are two pressure tanks by the upper cistern, providing pressurized water to the upper system. These pressure tanks are located in the electronics vault, under the manhole cover.

Water is pumped from the wells through the lower system pipe into the transfer station. Lower lots then receive water gravity fed back through this pipe. When the upper cistern requests water, water is pumped from the transfer station up to the cistern. Water is then pressurized and distributed to the upper 4 lots.

The lot 15 well is our primary well. It is left ON. It is a spectacular well, with the ability to provide 50 gallons/minute, sustained over a 24-hour period. There is a meter in a covered pit next to this well. This meter provides meter readings for monitoring of the system and fulfilling requirements for the Elk Springs agreement.

The lot 8 well is a backup well. It is left OFF. It is a good well, delivering around 5-15 gallons/minute. We have issues with iron eating bacteria in this well. There is a meter in a covered pit next to this well. This well is artesian and sometimes overflows onto the meadow to the west. Be sure to read the Elk Springs agreement (on the website) before running this well. Be sure to read the section Lot 8 well maintenance below before running this well.

When a float in the transfer station calls for water, a wireless signal is sent to the wells (both, whichever is turned on). The wells (almost always lot 15) then pump water to the transfer station. Power and control lights for this transfer are located at the wells.

When a float in the upper cistern calls for water, a signal is sent through a wire in a conduit back to the transfer station. A pump in the transfer station pushes water to the upper cistern. Power and control lights for this transfer are located at the transfer station.

When the pressure in the pressure tanks on top (and the pipe on top) goes below a set pressure, control electronics requests more water. This request turns on a pump in the upper cistern, pressuring the pressure tanks. Power, control lights and the pressure tanks are in the electronics vault.

Semi-annual maintenance

- In the spring and fall (near May and November), pour a cup of plain Clorox into both wells. The tops come off with a 10mm box wrench.
- In the spring and fall, read the lot 15 well meter.
- About once a year get the water tested for coliform and e-coli bacteria. Get the appropriate container from San Juan Basin Public Health. From an outside tap, let the water run for 5 minutes. Then, fill the bottle to the line, close, and have tested. Testing is also done by San Juan Basin Public Health.
- About once a year, generally in the fall, replace the battery in the transfer station radio. Battery is a 123. Climb on to the roof. With an Allen wrench (wrench is sitting on one of the electrical boxes inside), pull out the Allen bolt. Comes out a long way – maybe half inch. Be sure to watch which way the battery is in the holder. THE BATTERY MUST NOT BE INVERTED, it will kill the transmitter. Gently pull the battery unit out the bottom with a pocket knife. Replace the battery IN THE CORRECT DIRECTION. Also important - hit the reset button above the battery (little black thing). Put it all back.

Lot 8 well maintenance

Note that the lot 8 well is owned by a resident in Elk Springs, currently Ed Grun. He has asked for notice before we enter his lot.

About every 2 years, perform maintenance on the lot 8 well. This basically means heavily chlorinate the well, run the well, flush the system, and bring the system back online. I always have Clint help, if for no other reason than to decide how much chlorine to put in the well. NOTE – currently, the well electronics does not automatically turn the well off. Be sure to monitor the transfer station, and make sure it doesn't overflow. This needs to be fixed. (I believe this was fixed back 4 or 5 years ago. I don't remember details.)

- Two days before (and hopefully 2 weeks before) let users on the lower system know water will be shut off. Tell them not to run ANY water, as the system will be dirty.
- The day before, pour solid chlorine in the lot 8 well. Ask Clint how much. Historically, this is ½ cup of yellow lid swimming pool chlorine. We then added another cup the day of the maintenance.
- Turn off the breakers in the transfer station. This now isolated the systems, not allowing any water to go to the upper cistern.
- Turn off the lot 15 well. This is now isolated from the system.

- Pump out the transfer station water onto the ground. (Pump comes from Clint, and is very high volume).
- Turn on the lot 8 well. Fill the transfer station.
- Pump out the transfer station onto the ground. Lot 8 well still running. (You will be able to remove water much faster than the well can provide water). Stop pumping.
- After the transfer station fills, turn off the lot 8 well.
- Empty the transfer station.
- Turn on the lot 15 well. Fill the transfer station. Turn off the lot 15 well. Empty the transfer station. This is your first flush.
- Turn on the lot 15 well. Fill the transfer station. Turn off the lot 15 well. Empty the transfer station. This is your second flush.
- Turn on the lot 15 well. Button up the transfer station. Turn the breakers on in the transfer station.
- Let users know the system is back up. Let users know that we chlorinated – which is bad for colored hair.

What has gone wrong

- If we aren't getting water to the transfer station (open the cover in the transfer station and look), the transmitter isn't transmitting, the receiver isn't receiving (at the well), the well isn't pumping or we have a pipe break. Make sure the lot 15 breaker is on, and if that doesn't work, replace the transmitter battery at the transfer station. The battery has a limited lifetime. Lightning (or ghosts) have popped the breaker on the lot 15 well. If the well is running, walk the pipe. We have a pipe break. There are lights at the wells that tell us the status of the electronics. I believe solid green – powered not running. Blinking green, running. Anything yellow or red, call Clint
- If we have numerous power spikes and/or voltage high/ low events (I am not sure), we can have the well electronics lock out. The yellow and red buttons will both be flashing. Reset the lockout on the well by turning the240 volt breaker off, wait AT LEAST 3 minutes, and then turn it back on. The green light should go on - flashing, indicating the well is running or solid saying the well is powered.
- If we aren't getting water on top, check the lights in the transfer station. No signal – problem on top. Signal – bad pump. Next, climb into the electronics vault on top. Check the breakers; turn back on if they have popped (lightning once again). If that doesn't fix it, it is probably time to call Clint.
- We have had extreme amounts of moisture in the electronics vault, which ruined electrical equipment. We currently think this is solved with a plastic ventilation pipe.
- Note – not sure why, but if power goes out on top, automatic valves close the upper system pipes and the upper lots don't get water. Wouldn't matter anyway – the pressure tanks would very quickly drain if power wasn't available to move water from the cistern. The lower system gravity feeds – thus would have water until the transfer station ran dry.

Well master

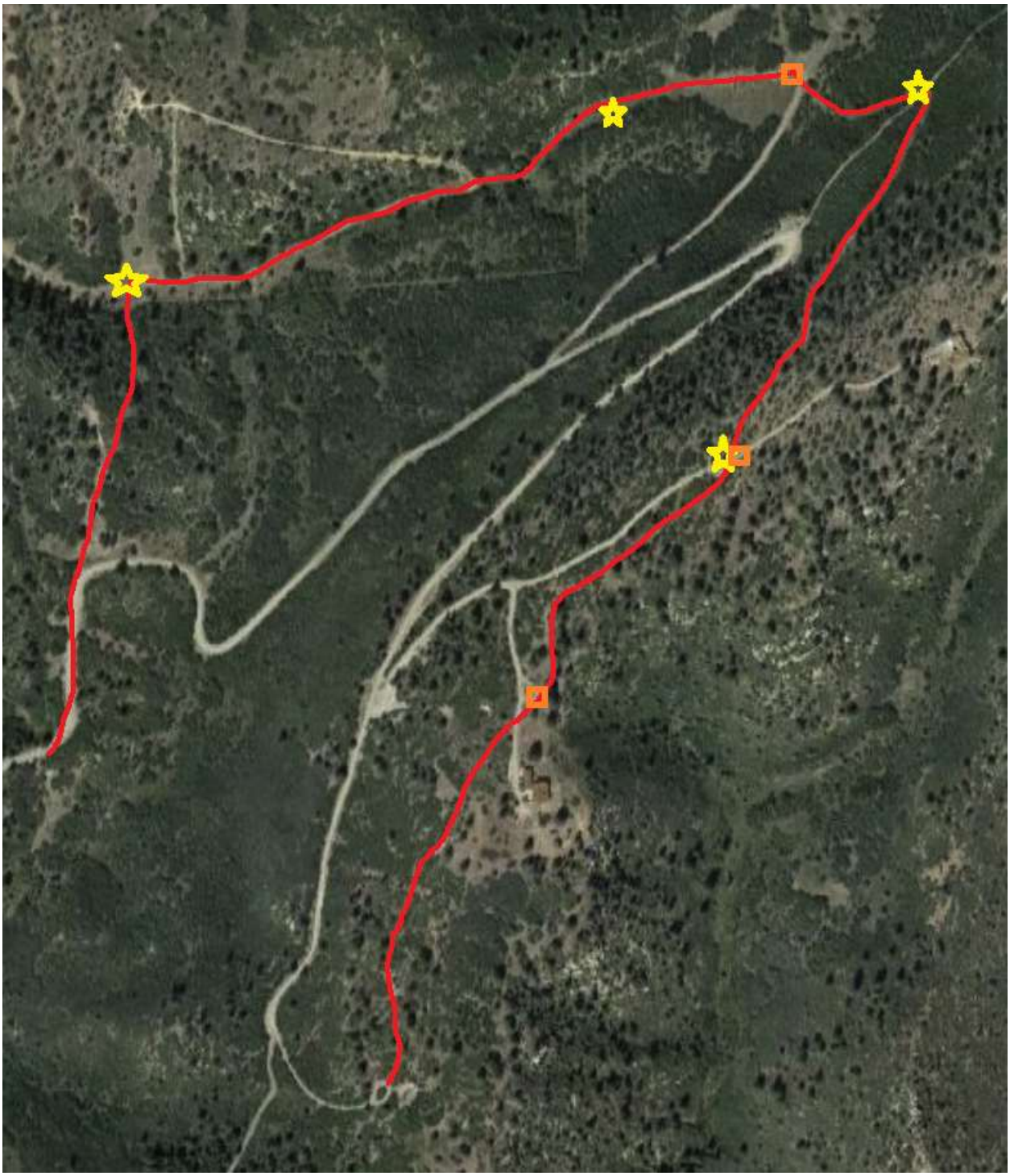
Clint Brooks

Brooks Well Service

970-749-7769 (cell)

970-259-3848 (work)

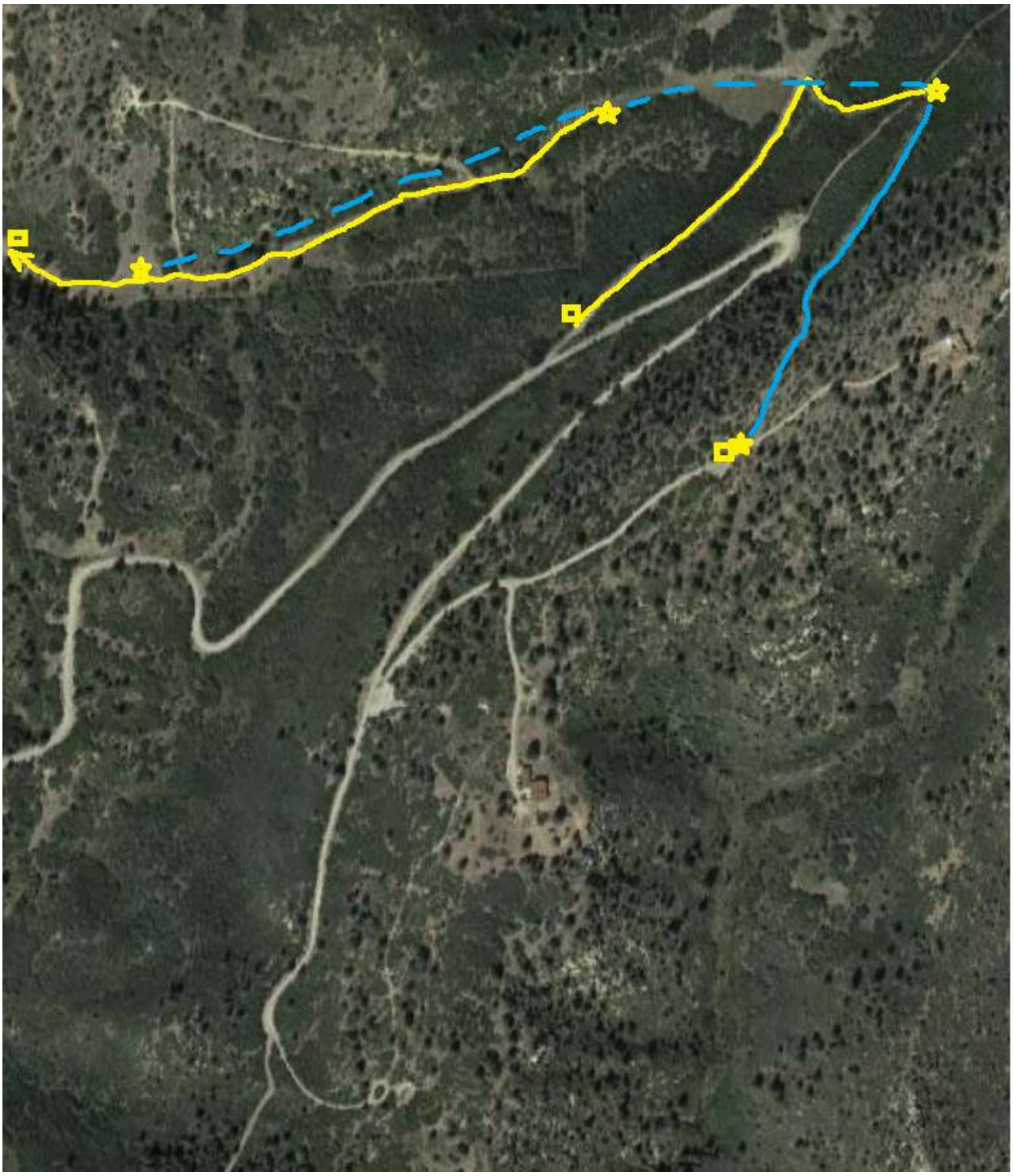
Maps of pipes and infrastructure



Red lines are pipes. Orange squares are meters. Yellow stars are infrastructure.

From the upper left, yellow stars are: lot 8 well, lot 15 well, transfer station, upper cistern

Maps of electrical meters, wires and equipment



Yellow lines are power wires. Yellow squares are electrical meters. Yellow stars are electrical equipment.

Blue solid lines are buried control wires. Blue dashed wires are signals from the transfer station transmitter to the well receivers.