

# Lion's Head water user's association

December 10, 2025

## 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 4 houses on the system – lots 12, 14, 15 and 16.

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 and is located at the base of the driveway to lot 14. The transfer station is 1,800 gallons and is located to the north of the switchback on G3.

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. There are two pressure tanks by the upper cistern, providing pressurized water to the upper system. These pressure tanks are in the electronics vault, under the manhole cover.

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 15 well can be valved off in this pit if needed.

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. The water is also less clear than the water from the lot 15 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 lot 15 well. The lot 15 well then pumps water to the transfer station. I believe that due to the ridge on the east end of lot 8 ESPr, the wireless system does not work for lot 8. When turned on, it will deliver water until turned off. BE SURE TO MONITOR THIS WELL WHEN RUNNNING. Power and control lights 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.

## System Maintenance

- On an as needed basis, pour chlorine into the well(s). Ask Brooks Well Service for dosing. If you can't get in touch with Brooks, pour a cup of plain Clorox into whichever well is appropriate. The tops come off with a 10mm box wrench. Note that chlorine dosage is important – chlorine can damage hair dye, and larger doses are not good for human consumption. If needed use a Chlorine test kit.
- In the spring and fall, read the lot 15 well meter.
- About twice a year get the water tested for coliform and e-coli bacteria. Testing is always done at lot 14, which tests the whole system. Get the appropriate container from La Plata County Health Water Lab. From an outside tap, let the water run for 5 minutes. Then, fill the bottle to the line, close, and have tested. Testing is then done by the La Plata County Health Water Lab. For positive tests, see below.
- About twice a year, generally in the spring and fall, replace the battery in the transfer station radio. Battery is a 123. Use a long extension ladder. 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 – there is a little string that hangs down. Replace the battery IN THE CORRECT DIRECTION. Put it all back.
- We now have a low water alarm on the transfer station. It can be heard at the lot 15 house and should be visible in the northern end of the canyon as a red light at night. This can be silenced by flipping a breaker in the transfer station.
- There is a dry hydrant on the upper cistern. This was plumbed for fire trucks from Mancos. We also have a normal fire hydrant at the upper cistern. Both are fine for fire trucks to use, and the normal hydrant was used for the East Canyon fire.
- Dosage for the wells, as per Clint December 2025:
  - Note on chlorine below. If you are using the 70% powder, we can get enough chlorine in the system to be harmful to residents. If using the powder, proper flushing of the system is mandatory. Also, even if we are using Clorox, this can strip color from hair. Let homeowners know we have chlorinated.
  - If we are bringing the lot 8 well online, or if we have a coliform issue with the lot 8 well, ½ cup of 70% chlorine powder the day before, then 1 cup of 70% powder the day of

work. This must be flushed through the transfer station and pumped out onto the ground.

- If we have issues with the lot 15 (main) well, 1 cup of 70% chlorine powder the day before, then 1 cup of 70% powder the day of work. This must be flushed through the transfer station and pumped out onto the ground.
- If we are not going to flush chlorinated water, and want to chlorinate the lot 15 well, 2 cups of unscented Clorox in the lot 15 well. Make sure you don't use splash less Clorox. Just plain old, unscented Chlorox. Surprisingly, it's sometimes hard to find.

## How to deal with positive coliform tests

Every few years the system has tested positive for coliforms. There are three types of coliform bacteria of interest. One is E. coli (which is bad), one is fecal coliforms (which I believe is not good), and other coliforms. Tests at the La Plata health department test for E. coli (which we have never had) and all other coliforms. Here is how to sanitize the system. (This follows the procedure taken early November, 2025). Note that this procedure is designed to help determine the source of the issue. We purposefully do not treat the wells in order to determine the source of the issue. The wells have never been a source of coliforms. All directions below are using our primary well, the lot 15 well.

- Obviously, call Brooks Well Service. All of the directions below are a fallback in case you can't find a well master to perform, or at least oversee this process.
- We need two bags of 70% chlorine powder. I have been picking this up from Leslie's pool supply in Albuquerque. Each bag will be very close to 2 cups of chlorine powder. Read the directions, this stuff is dangerous.
- Pick up a chlorine test kit. Again, I got mine from Leslie's pool supply. We want at least 4 ppm throughout the system. This will test as yellow. Clint said that if it goes orange that is fine. Directions below will test as orange.
- Inform everyone on the system that Lion's Head water is not to be used for anything other than toilets. It's important homeowners know not to drink this water or let it touch skin.
- If the folks at lot 16 are onsite, make sure they use no water at all. If possible, have them turn off the water valve entering their house. They have a cistern in their crawl space. Don't put chlorine in this cistern.
- Note we are going to run pumps dry below. Magic electronics will protect the pumps.
- Put 2 cups of 70% chlorine powder in the transfer station.
- Turn off the well. Open the fire hydrant on lot 11, southmost lot on top of the ridge. Open the yard hydrant on lot 14.
- When the transfer station is out of water, the upper system now has the chlorine it needs. Turn off the pumps moving water to the upper cistern.
- Test the water on lot 11 and 14 for chlorine. When chlorine has arrived, close both valves. The upper pipes now have the chlorine they need.
- Turn on the well. When the transfer station is full, add ½ cup of 70% chlorine. Turn off the well.

- Turn on the yard hydrant at lot 16. Run until the water tests positive for chlorine. The lower line now has the chlorine it needs.
- Have all homes other than lot 16 open their kitchen cold water tap for 10 minutes. After this, have everyone other than lot 16 open all other cold water taps that they could drink from for 5 minutes.
- Turn the well on. We want to chlorinate the transfer station tank.
- Leave the system as is for 24 hours.
- Now we want to remove the chlorine. We will do so for the lower system first, then the upper system.
- Turn the well off. Turn the pump on to move water to the upper cistern. Open the lot 11 fire hydrant.
- Once the transfer station is drained, turn the well on and the pump for the upper cistern off.
- Test for chlorine at the transfer station. Cycle draining and filling the transfer station as needed until the chlorine test shows no chlorine.
- Run water at the lot 16 yard hydrant until it tests negative for chlorine.
- Turn off the pump moving water to the upper cistern. Let this cistern drain.
- Turn on the pump moving water to the upper cistern. Test for chlorine. If not absent, repeat.
- Have everyone run their kitchen taps for 10 minutes, then all other taps for 5 minutes.
- Announce that Lion's Head is back to normal, non-potable status again.
- Test the water at lot 15 and lot 14 yard hydrants. Lot 15 will show if the lower system (and well) are clean, lot 14 will show if the total system is clean.

## 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 lot 8 well off. Be sure to monitor the transfer station, and make sure it doesn't overflow. I believe this is due to the ridge on the east side of lot 8 blocking transmission/reception.

- 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. Ask if they know how to turn water off to their house, and if possible, do so.
- The day before, pour solid chlorine in the lot 8 well. Ask Clint how much. Historically, this is ½ cup 70% chlorine powder. We then added another cup the day of the maintenance. (I checked with Clint, this is correct.)
- Note we do not need to chlorinate the lot 15 well. It's still clean.

- Turn off the water meter valve at lot 16. Lot 16 has a cistern; we don't want water moving into their cistern.
- 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.
- We now have a block of lot 8 well water between the lot 8 and lot 15 wells. As lot 15 is providing clean water, this needs to be flushed out of the pipe towards lot 16/ lot 10. (This hasn't happened yet) There is a yard hydrant on lot 10, which is the end of the lower system pipe. Run this for 2 hours.  $((3.14 \text{ Inch}^2 \text{ for a } 2'' \text{ pipe}) * 12 \text{ (to feet)} * 5280/2 \text{ (we need about } \frac{1}{2} \text{ mile of water moved)} / 231 \text{ inch}^3 \text{ per gallon)} / (\text{how many gallons of water in a bucket per minute}) = \text{number of minutes} * 2 \text{ safety buffer.}$
- 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. See Pumptec-Plus below.
- Pumptec-Plus. This is the magic electronics that turn the pumps on and off. Lights are as follows:
  - Solid Green. This means the Pumptec-Plus has power. The wells will show this as green, the transfer station will show all lights off.
  - Blinking Green. This means the pump is on.
  - Solid Yellow. Underload. The pump is in air, not water. If a well, the well is dry.

- Blinking Yellow. Overload. The pump has probably eaten a rock, or bearings ceased up. Call Brooks.
- Solid Red. Under voltage. Bad electricity from Empire. I have never seen this. Call Brooks.
- Blinking Red. Over voltage. Bad electricity from Empire. I have never seen this. Call Brooks.
- Blinking Yellow and Blinking Red. Rapid cycling. I believe this means the battery in the transmitter is very weak, and the well is cycling turning on and off. This will ruin the pump. Replace the transmitter battery. Next, turn the power to the Pumptec-Plus/well off, wait 5 minutes (really, it takes that long), and turn the Pumptec-Plus/well back on. Check lights. If not solid or blinking green, call Brooks.
- We have had the breakers pop, especially on the lot 15 well. If so, turn them back on and check the Pumptec-Plus. Lights should be solid or blinking green. If not, Call Clint.
- 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 masters

A quick note on well masters. In Colorado, state law says that a person or company must be a licensed well master to work on wells and all infrastructure related to the well. This means we can't use a plumber. (If a plumber did work on our system, they could lose their license.) Alternatively, a well master is not licensed to do plumbing, such as inside your house.

### **Clint Brooks**

#### **Brooks Well Service**

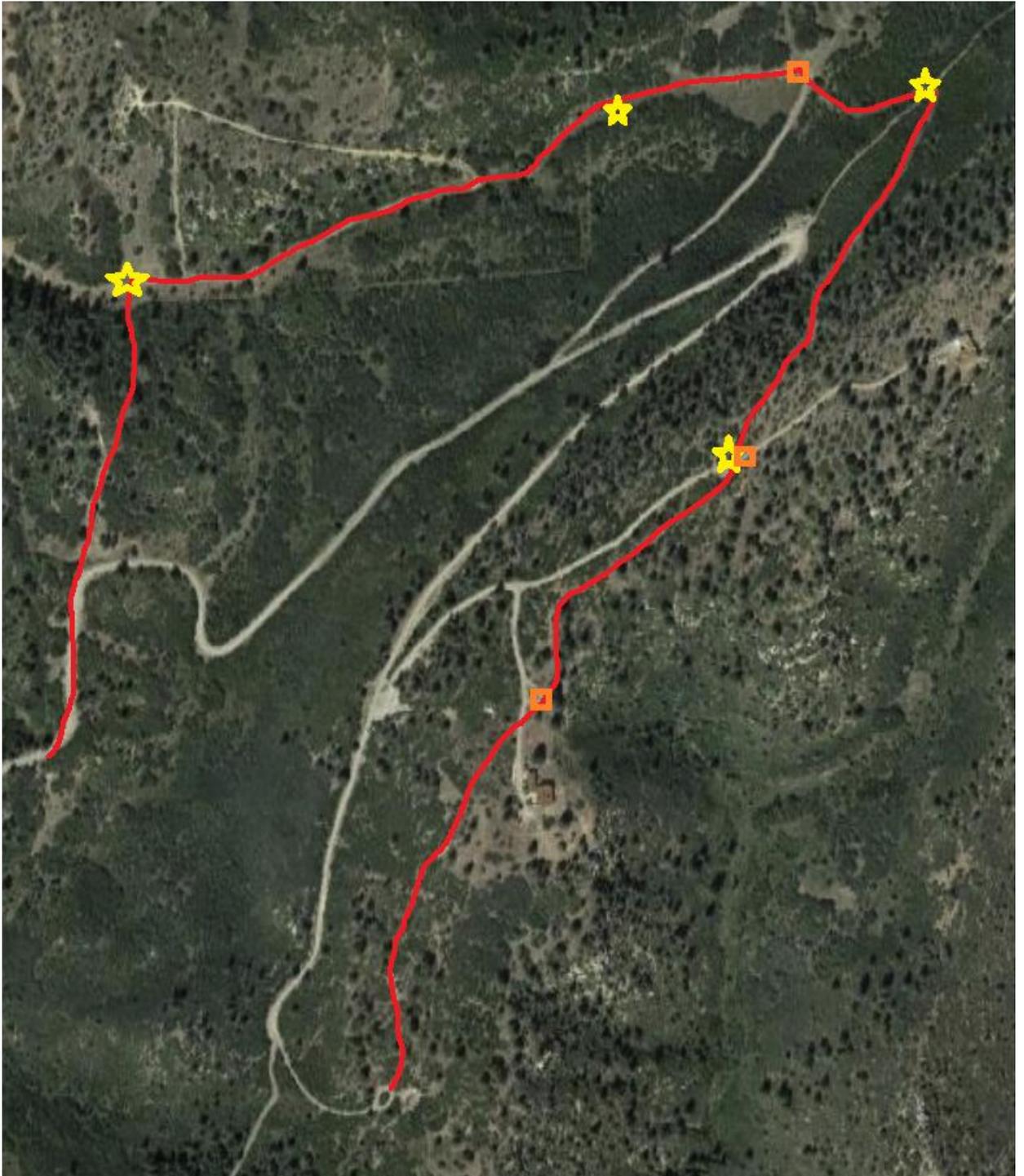
970-749-7769 (cell)

970-259-3848 (work)

#### **Possible alternate well master**

#### **Jeremy Redshaw Eucola Drilling**

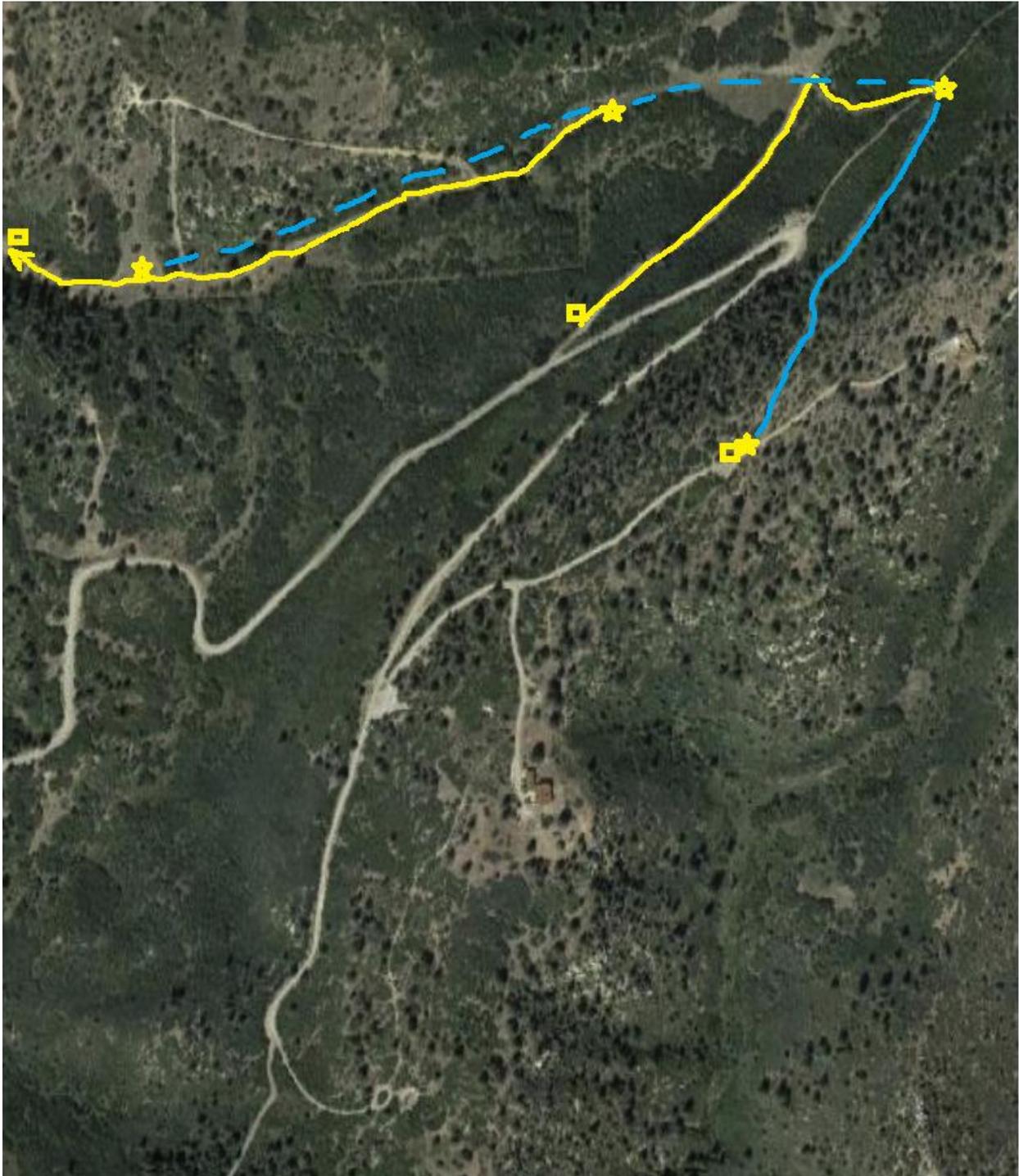
970-565-9339



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.