



### **TROUBLE AT LIFT STATION NO. 1 (MAIN)**

The Main Lift Station No. 1 generator should be running in the event of a power failure. If not running, troubleshoot via the manual in the generator enclosure, or consider running the gasoline-fueled bypass pump. Lift Station No. 1 has triple redundancy...(1) AC, (2) generator, or (3) gas-powered bypass pump.

#### **Gasoline-Fueled Bypass Pump Operation**

1. Unplug the battery trickle charger. If it has been charging for a long time, it can be dry and might cause the battery to explode.
2. No AC and no generator: Turn pump switches on the main electrical panel down in the station to OFF.
3. Verify the gas-powered bypass pump drain/prime line is closed. If open, you will have a mess with step 4.
4. Open the bypass valve in the green box in front of the station. This is a 2-foot square num style valve and the wrench key is stored on the top of the access ladder in the station. This valve is a rubber-coated gate valve. No Harvey over torque! It can damage the valve.
5. Open the manhole cover and get a visual of the sewer level in the tank. You may get a call on the phone to informing you of high-water levels in the tank. It will be some time after this that you will need to start the gas pump. Allow the tank to keep flooding. There are two tar sealant lines in this tank. These can be used for pumping levels, or the wet well gauge in the pump chamber electrical panel may be used. The wet well gauge runs normally from 5 inches to 20 inches. 5 inches is off and 20 inches is pump on as bubbler system is set. 40 inches and up is considered "high" to "flooding". The two tar seal lines inside the sewer tank can be used with a flashlight. The lower tar seal line is reached by sewer tank level. About 2 inches beyond this point is where you want to start your pump.



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There is an upper tar seal that is easily seen, and you should be underway with the pump by the time the sewer water level reaches this upper tar line.

6. After the manhole is open, and the gasoline pump has been started, start priming the pump by opening the 1-inch gate valve at the top of the pump on the priming outlet. Open a few seconds and close. Observe effluent running through the outlet line on the pump and into the tank. Once the pump is full, you will see this water when you open the 1-inch valve. It will be exiting just under the manhole cover inside the tank.
7. Choke the pump motor in advance before starting.
8. Turn the pump motor switch to ON.
9. Use starting key to start the pump. After starting, it will run rough momentarily while the operator slowly unchokes it. After 30 seconds or so, the temperature of the engine should be such that you can set the choke off and secure it. Motor will be running unprimed.
10. No throttle, these run at a set speed. Start priming, using the 1-inch gate valve on top of the pump outlet.
11. Several attempts can be made, and expected, before the prime is complete. Continue to open and close the 1-inch valve until prime is complete.
12. Listen and learn to differentiate between this engine under the pumping load and under no prime, which means no pumping yet. Observing the throttle position on the throttle level helps. Also, as suction occurs, the water will often spin around slowly inside the tank and then increases. If new to the process, an operator can call the Water Reclamation Facility in advance in order to have assistance with establishing "pump under way." They will see it coming in at the WRF.
13. Pay attention, again using a flashlight, to the declining level in the tank as the bypass pump draws the tank down. The two tar lines are considered here. It may be helpful to pick a white rock in the tank wall and watch it closely. By watching the level drop below the white rock in the wall, you can most often tell when you are pumping well. Again, the gauge inside the pump chamber on the electrical panel could also be used, but, as a habit, it is not.



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It is planned to install a gauge on the outlet line which will eliminate any doubt as to whether it is pumping or not.

When the level is around 40 inches on the wet well gauge, or the water in the tank is low enough that you can see the water really start to swirl as you get closer to the end of the bypass pump suction line. At this point, the bypass pump should be turned off.

14. Repeat as necessary. As the lower tank line is overcome, start your pump. Turn off when 40 inches displays on the gauge, or when the sewer tank water swirls as it reaches the bottom of the bypass pump suction tube. Don't overdue the pump down. It is better to under-pump the tank than to draw air into the system.
15. After bypass pumping is no longer needed, such as when AC power is restored, close the bypass valve in the green box outside the station.
16. Turn on one AC pump station to AUTO. It will start pumping down the remainder of the water in the wet well to the proper level, as set. Two AC pumps can be turned on at this point, but it is preferred to let one pump finish up and then turn the second pump to AUTO. Both pumps will come on after a bypass test, or high wet well setting is flagged. Knowing this, it is better to let only one pump come on and then set the other pump to ON or AUTO after the first pump stops running. This avoids a large surge that isn't necessary unless the station is flooding and needs both pumps to keep up with the inflow.
17. Record the maintenance in the daily log book.
18. Plug in the trickle charger for the battery.
19. Close the manhole. If the operator has time, it is prudent to remain onsite through one pump cycle to verify normal operation.