TROUBLE AT LIFT STATION NO. 4 (HIGHWAY)

The Highway Lift station is a Smith and Loveless station and, like the Fawnwood Lift Station, there are no VFD's (Variable Frequency Drives) at this site. There are two pumps at 2.3 hp with standard redundancy settings. Because there are no VFD's, the operator will rely on runtime minute increases and the ft/ lb. gauges mounted inside the station. The ft/lb. gauges can diagnose three issues: plugged suction, priming issues, and plugged skid or force main.

Smith & Loveless pumps can pump anything smaller than a golf ball, however it could plug with rags. The newer Smith & Loveless design enables access from above to check valves, and to pumps/volutes. There is a pump-pulling stand present at this station. A small chain puller is recommended for pulling pumps for repair. Consult the station's manual for maintenance instructions. All manuals for lift station maintenance including tear-down procedures and troubleshooting are kept in the filing cabinets in the barn office. Smith & Loveless also provides repair videos online (Using your computer browser, search under Smith & Loveless.)

This station has a compressor priming system. The compressors will prime the pumps. There are two of them, one each. After achieving prime, the pump will activate. Should a pump not start, it will show up on the readings and may be a priming issue. Consult the station manual for troubleshooting technique at this station. This station will show around 9 or 10 ft./lbs. head pressure on the gauges at the outlet sides of the pump skid. These are three-inch gauges and are easy to see. When one pump is running normally at the station, you will notice the pressure gauge go up while pump is underway. The check valves are state-of-the-art "Rapid Jack" checks and easily accessible from the topside of the station. The pumps, volutes, and the pump skid piping are also accessible from the topside.

Spare parts kept on hand for these stations include:
Contact Smith & Loveless for parts)

Priming bulb and gaskets

Rapid Jack cover gaskets (rubber)

ump mounting surface gaskets, (paper).

spare solenoid assembly,

spare compressor motor

misc. tubing and connections.

This station is designed one pump at a time, with 12-hour cycles divided between two pumps. If the secondary, or “Lag” float, is activated, you may have two pumps running. (high water in wet well, indicating higher than normal flows). A failed pump will mean one pump running even after the “Lag” float is triggered. Note: Two pumps running is not normal; begin troubleshooting. Check water level, switches, floats, and the priming system.

Lift station No.4 has a Mission Control radio for alarms. (as do all lift stations and reservoirs). It communicates alarms through cell towers and to a cell phone. The station has two 3-phase, 2 hp pumps.

This station pumps against approximately 9.5 PSI static head pressure.

The Highway Lift Station is kept grease-free. All lift stations require monthly maintenance.

Gasoline Bypass Pumping Procedure

If there is no power at the station, first check the power meter. Is the display functioning? If the power meter is not functioning, check the “knife switch” at the telephone pole/power line feed. You can see this switch hanging down from the power coupling at the top of the telephone pole tee. If the switch is open, there is no circuit/power. Immediately inform the PUD. Try to ascertain whether or not there is an issue with the supply lines coming from the pole to the station underground. Is there a short? Is there a broken wire?

Be prepared to ask PUD. to check this.

If there is power to the meter at the station, then check the breakers inside the Smith and Loveless electrical panel, the main breakers and pump breakers. If there is a major issue in the Smith and Loveless panel that cannot be resolved, then it will be necessary to use the 4-inch emergency trash pump to pump down the station. This station can go 6 to 8 hours without pumping and so there is more time available for trash pump setup. Turn off both pumps (there are two of them) in the station by turning the manual top switches to “off.” This is to prevent accidental pumping of the station if the power is suddenly restored.

With the station pumps disabled, set up the 4-inch trash pump with the suction hose in the wet well. The discharge hose will be connected to the bypass valve in front of the station in the black colored water service box. It is a 4-inch camlock setup. At this time, a 2-inch outlet saddle needs to be installed on the 4-inch force main inside the station. (pending). This will facilitate draining the force main for priming ease with the 4-inch gasoline trash pump. Expect to have half of your wet well capacity available for draining the force main. Drain the force main and open the bypass valve. Make sure to have your outlet hose hooked to the camlock because if you open the bypass valve while exposed, you could get influent running out on the ground, from the force main. (The force main goes uphill a fair distance.) This valve is right next to the camlock bypass and is a standard 2-inch square valve top. The wet well will begin to fill with the force main contents.

When close to drained, the force main head pressure is now low enough to allow the gasoline trash pump to prime easily. Make sure your suction is in the wet well, and your outlet is hooked to the camlock style bypass valve.

Fill the priming cavity on the trash pump. There is a water service box that is close to the station for this. Start the trash pump.

It is very unlikely that the emergency trash pump will ever be used at this station as it has very low influent flow. Power interruptions are not likely to be long enough to need the emergency trash pump. Still, the redundancy should be maintained. Another option is to have the trash pump pumping into the tanker truck instead of through the force main. Flows are small enough here to do this. This would avoid having to drain the force main.