

Water Technologies

Eliminating Collection System Odor and FOG

2020 Annual Tribal Unity Summit United South & Eastern Tribes, Inc. Hosted by the Coushatta Tribe of Louisiana Kinder, LA

The Common Municipal Collection System





The Collection System is the Beginning of the Waste Treatment System for a Town or City



Where Gravity Cannot be Used to Move the Water to the WWT Plant - Pump Stations or Lift Stations Must be Utilized – and Each One Must Have a Wet Well



A Common Lift Station





The Problems for Lift Stations

- Odor is the first, and a critical problem
 - Caused by
 - Well, it is wastewater
 - Septicity stagnant water
 - Anaerobic Hydrogen Sulfide Gas
 - -Scum on walls (Sulfuric Acid)
 - Corrosive H₂S
- Fats, oils and grease (FOG) coagulation



To Date, All Attempts to Address These Problems Have Utilized Well Mixing, Fine Bubble Aeration, Bio-Augmentation, Chemicals or Expensive Air Scrubbing Systems as Solutions

In many cases they have all proven to be deficient

Wet wells can be mini-wastewater plants but they require understanding in order to deal with their problems



Wet Wells Require –

- An indigenous aerobic microbial population
- High levels of oxygen to:
 - Oxidize chemical constituents
 - Keep H₂S from forming
- Enough surface action to keep floatable solids on the top of the water
 - A FOG emulsifier or homogenizer
- Suction off the bottom of the wet well



- With continuous high levels of oxygen and agitation –
 - Odors will be dramatically reduced
 - FOG caps will never form again
 - The corrosiveness of H₂S will be all but eliminated
 - Pump float switches will not become fouled
 - Pump maintenance is reduced
 - Vacuum trucks and high levels of maintenance become only memories



BUT

- Bubbles must not get to the volute of the pumps or they will cause:
 - Pump cavitation and entrainment
 - Siphoning (above ground self-priming pumps)





The WET WELL WIZARD





The Air Source





Accessory Blower Covers



Open ended weather protection cover



Sound suppressing fiberglass cover



The Wizard is Designed to Aggressively Mix the Wet Well With High Volumes of Air

- The unique bubble cleaving baffles make the bubbles spin and cut as they rise
- This aggressive aeration action forces the oxidation of chemicals and wastes to eliminate odors and the buildup of H₂S
- All of the action in the well is above the Wizard, no air gets down to the pump intake to cause cavitation.





During our Testing We Used ORP and DO to Identify Long Term Success

• ORP in the well water is an indicator of aerobic microbial activity.

 DO level in the well water informs us as to the health of the water – and is an indicator of the ability of H₂S to exist.



Town 7 (2700 Population) Wiz Trials - DO

(1) 1. 4 Mi between LS 4 to LS 3; .9 Mi between LS 3 to LS 2
(2) LS 4 had a 9" grease cap on 5/12 - No grease cap on 5/13
(3) LS 2 had a 15" grease cap on 5/12 - No grease cap on 5/13

◆ LS 4 (I Wiz) 8' Dia ◆ LS 3 (0 Wiz) 8' Dia ◆ LS 2 (2 Wiz) 17' Dia



RELIANT

Town 7 (2700 Population) Wizard Trials - ORP

NOTES

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Advantages of the **WET WELL WIZARD**

- Emulsifies all FOG
- Bacteria consume FOG
- Adds oxygen to the water in the wet well
- Eliminates H₂S from the water
 - Odors are eliminated in the wet well and downstream from that well
 - Eliminates corrosion within the collection system, including between the lift stations



MORE



Necessary Information to Accompany Your Order, or for a Firm Quote

1. How deep is your lift station? _____ Lift Station Name____

2. What is the diameter, or water surface dimensions, of the wet well for that lift station? A single Wizard will handle wet wells up to 8 feet in diameter. Two Wizards will handle wet wells up to 15 feet in diameter. In this case the same blower will work for both Wizards. All that we supply extra is the extra Wizard, another length of hose, and the necessary blower fittings to connect both Wizards to the same blower. Larger wells possibled

3. What is the minimum water level in the wet well (pump shutoff ept h) ? _____

4. What is the maximum water level in the wet well (pump-on depth)? _____

5. Is there a building at the lift station that houses the power panel? ______ Is it possible to locate the blower inside a building? If not, it is suggested that the HDPE blower weather hood be considered. If the area is susceptible to H2S fumes, thetstainless steel filer hood, filer element and painted filer has should be considered.

6. Distance, in feet, from the power panel to the bottom of the wet well? _____ Thirty five feet of air hose is supplied with each Wizard. This hose must reach from the bottom of the wet well to the location where the blower will be located. There should be at least one to two feet of slack in the air hose.

7. Voltage and phase, and Hz of the power for your lift station? _____ Single and three phase blowers, any Hz are standard.

8. Does the lift station outside pad have a flood potential? _____ If there is a chance for flooding of the lift station surface pad, the blower should be placed on cinder blocks or other means of lifting it above high water level.

9. Primary problem – H2S odor _____ FOG Cap _____ Wall scum _____ Other _____

WELCOME TO THE WORLD OF MINIMAL MAINTENANCE WET WELLS

RELIANT Water Technologies

Represented by -

141 Robert E. Lee Blvd. - #284 New Orleans, LA 70124 Tel 504-400-1239 FAX 504-242-8887

sales@reliantwater.us.com www.reliantwater.us.com

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RECENT MOD





INSTALLATIONS





INSTALLATIONS (contd.)





INSTALLATIONS (contd.)





INSTALLATIONS (contd.)





THANK YOU

Any Questions?

Jerry Bidleman Reliant Water Technologies

