

July 19, 2018 – Sewer Odor Resolution Update

1. Aerator Status: Six aerators have been ordered and are scheduled to ship August 10, 2018.
2. Enzymes: A third lengthy report is being compiled for Colorado Department of Public Health and Environment after the 1st and 2nd applications required more information
3. Pool Discharge: Williams Construction is scheduled to start construction to relocated the pool discharge from the Sewer Lagoons to the Uncompahgre River
4. Hydrogen Sulfide Levels: 7:00am July 19, 2018 = 1.0 ppm

For Your Information

- Aerator is a mechanical system that provides air mixture and increases oxygen gas to sewer lagoons. The City Sewer Lagoons require a specific model, size and horse power. The factory that manufactures this model closed expectantly and a new manufacturer has been identified and the City is doing everything possible to be considered a priority. If a mismatched aerator is used the process could damage the plant process beyond repair. When the new aerators are installed the odor will increase intensity until oxygen levels are restored.
- Enzyme is a type of chemical that when applied can reduce odor.
- Pool Discharge at the 2017 opening of the Hot Springs Pool was directed to the Sewer Lagoons. This design was intentional, however this discharge is too clean and has disrupted the biological process in the Sewer Lagoons.
- Hydrogen sulfide is often produced from the microbial breakdown of organic matter in the absence of oxygen gas.
- The first three items identified as a resolution may not solve the odor problem.

The following is Hydrogen Sulfide information

ppm = Parts per Million (Wikipedia)

- 0.00047 ppm or 0.47 ppb is the odor threshold, the point at which 50% of a human panel can detect the presence of an odor without being able to identify it.^[34]
- 10 ppm is the OSHA permissible exposure limit (PEL) (8 hour time-weighted average).^[19]
- 10–20 ppm is the borderline concentration for eye irritation.
- 20 ppm is the acceptable ceiling concentration established by OSHA.
- 50 ppm is the acceptable maximum peak above the ceiling concentration for an 8-hour shift, with a maximum duration of 10 minutes.^[19]
- 50–100 ppm leads to eye damage.
- At 100–150 ppm the olfactory nerve is paralyzed after a few inhalations, and the sense of smell disappears, often together with awareness of danger.^{[35][36]}
- 320–530 ppm leads to pulmonary edema with the possibility of death.^[26]
- 530–1000 ppm causes strong stimulation of the central nervous system and rapid breathing, leading to loss of breathing.
- 800 ppm is the lethal concentration for 50% of humans for 5 minutes' exposure (LC50).
- Concentrations over 1000 ppm cause immediate collapse with loss of breathing, even after inhalation of a single breath.



City Staff are working diligently to resolve the immediate odor problem.
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