

### August 10, 2018 – Sewer Odor Resolution Update

1. Aerator Status: Six aerators arrived in Ouray on August 6, 2018. All five aerators have been set on Lagoon #1. Four of them are operational. A starter failed on one of the pedestals, Cam electric will be here on Monday to replace starter and get the last aerator running. All three aerators on Lagoon #2 are operational.
2. Enzymes: CDPHE sent the City of Ouray an approval letter for both enzymes, Formula 52 and H2S No More, to be used in the lagoons. Both have been approved. We began dosing one gallon of the Formula 52 in each of the lagoons the morning of July 25, 2018. Today will be our last day of dosing with the Formula 52, we have used all the enzyme. H2S No More has been ordered and should be delivered on Monday.
3. Chris Reinhardt with the Air Pollution Control Division was here on July 24, 2018 at 7am. He stated that the result was no reading of pollution with a Nasal Ranger (a device used to conduct odor readings). In order for the Nasal Ranger to read pollution the levels must be at a dilution of 2:1 or higher. A detectible dilution of 8:1 or higher is considered non-compliance with Air Quality Pollution Regulations. The City of Ouray Wastewater Lagoons are in compliance with Air Quality Pollution Regulations.
4. Pool Discharge: Williams Construction has completed the work in the filtration building. The pool discharge has now be relocated from the Sewer Lagoons to the Uncompahgre River.
5. Hydrogen Sulfide Levels: 6:15am August 10 , 2018 = 0.0 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 unexpectedly 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.<sup>[34]</sup>
- 10 ppm is the OSHA permissible exposure limit (PEL) (8 hour time-weighted average).<sup>[19]</sup>
- 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.<sup>[19]</sup>
- 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.<sup>[35][36]</sup>
- 320–530 ppm leads to pulmonary edema with the possibility of death.<sup>[26]</sup>



- 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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