

## WHAT IS WASTEWATER...?

Wastewater is liquid waste that comes primarily from households, public facilities and industries, although some of it may come from groundwater infiltrating into collection system pipes. Wastewater is typically more than 99 percent water and less than 1 percent solids – composed mainly of food and human wastes.

## ...AND WHY DOES IT SMELL?

As part of the human digestive system, naturally occurring bacteria help break down food into the chemicals our bodies need for energy. But not all of the food is used, and some of it exits as human waste, along with some bacteria. At a wastewater treatment facility like DCRWS, that digestive process continues as we use bacteria to digest waste – their “food” – until it is used up or removed from the wastewater. The natural byproducts of this digestion process are gases – and they often have a strong or unpleasant odor.

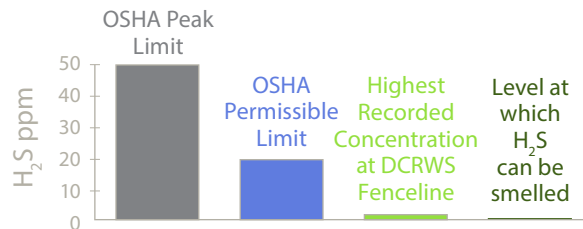
The worst culprit is hydrogen sulfide, which boasts the distinctive odor of rotten eggs – and it’s detectable in very low concentrations. It doesn’t take much to make a strong odor. Other common odorous gases associated with wastewater treatment include mercaptans (also sulphur-containing), ammonia and amines (nitrogen-containing compounds).

## DO THE ODORS CAUSE HEALTH CONCERNS?

*“Exposures of hydrogen sulfide shall not exceed 20 ppm (ceiling) with the following exception: if no other measurable exposure occurs during the 8-hour work shift, exposures may exceed 20 ppm, but not more than 50 ppm (peak) for a single time period up to 10 minutes.”*

**Occupational Safety and Health Administration Permissible Exposure Limit**

Although H<sub>2</sub>S can pose a significant health risk if encountered where ventilation is limited – inside a manhole, for example – its disbursement into the air renders its concentration level significantly below OSHA safety thresholds, as illustrated in the figure below.



## WHAT CAN I DO TO HELP?

We ask for your help in identifying, as quickly as possible, the times and locations at which any odors associated with our treatment facility can be detected outside of its boundaries. Please log on to <http://odorreport.trinityra.org> or call the DCRWS plant directly at 817-430-4657 if you detect odors. Someone from our facility will be assigned to investigate your report, and if necessary may contact you for additional information.



TRINITY RIVER AUTHORITY OF TEXAS

# ODOR CONTROL AT DENTON CREEK REGIONAL WASTEWATER SYSTEM

**TRA-WORKING TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT**

## WHAT IS DCRWS?

The Denton Creek Regional Wastewater System is a wastewater collection system and treatment facility owned and operated by the Trinity River Authority of Texas. TRA is a political subdivision of the state that provides essential water-related services throughout the nearly 18,000-square-mile Trinity River Basin. When it comes to operating DCRWS, TRA is committed to the following:

- Providing appropriate wastewater treatment for customer cities
- Meeting stringent regulatory requirements that protect the environment
- Acting as a good steward of the finances associated with providing high-quality treatment
- Being a good neighbor and minimizing odors detected in the DCRWS vicinity

The plant is designed to treat an annual average flow of 11.5 million gallons per day. DCRWS serves Fort Worth, Haslet, Roanoke, Southlake, the Circle T Municipal Districts Nos. 1 and 3, Keller, Northlake, Flower Mound, Westlake and Argyle.

As an industry leader in wastewater treatment, TRA has won many national awards for safety, operations and innovation, and the DCRWS facility has been recognized by the National Association of Clean Water Agencies for **EIGHT consecutive years** of 100-percent compliance with regulatory requirements. In addition, DCRWS works closely with the Texas Commission on Environmental Quality to ensure that all regulatory requirements are met.

[www.trinityra.org](http://www.trinityra.org)

Log on to <http://odorreport.trinityra.org> or call 817-430-4657 to report odors.

## DCRWS SERVICE AREA

### WHAT DOES DCRWS DO TO MINIMIZE ODORS?

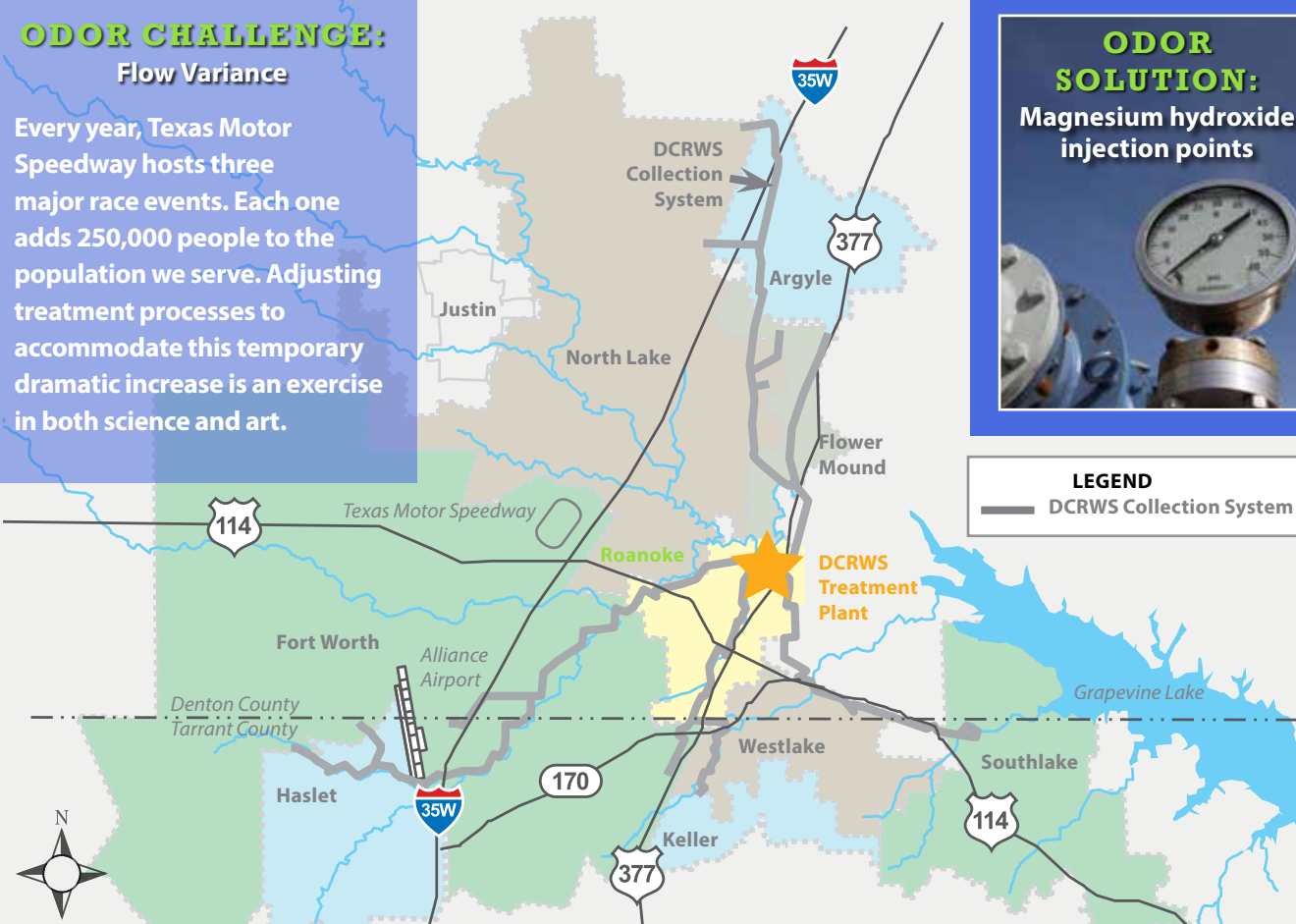
DCRWS provides quality wastewater treatment services while maintaining its commitment to being a good neighbor to residents and students in the nearby Roanoke community. To date, the following steps have been taken:

- **NO PRIMARY CLARIFIERS** - These are the final step in preliminary treatment at most wastewater treatment facilities and are also the most odorous. TRA opted to use a different treatment process to reduce odors.
- **CHEMICAL FEED** - Magnesium hydroxide is injected at various locations within the collection system and at the plant to reduce the formation of H<sub>2</sub>S gas.
- **VAPEX UNITS** are located at all three enclosed headworks locations. These generate ozone that reacts with odorous gases and washes them back into solution.
- **PORTABLE MISTERS** - Three misters are located on site and emit a fine perfume spray to mask adverse odors.
- **COLLECTION SYSTEM IMPROVEMENTS** - Biofilters are installed at multiple locations to treat foul air from the pipelines. Check valves have been installed at multiple locations to prevent backflow from the wastewater interceptor into homeowners' drain lines. Manhole lids have been sealed to prevent foul air from leaking out.
- **COVERS** have been installed over the headworks locations to minimize air exchange.
- **DAILY OPERATIONS MONITORING** - TRA personnel monitor daily H<sub>2</sub>S concentrations, weather conditions and operating conditions such as influent pump station wet well levels.
- **REDUCTION OF LEAKS** - TRA has installed valves to minimize leakage from various treatment units.
- **QUICK REMOVAL** of dewatered biosolids.
- **TIMELY WASHDOWNS** of aeration basins or detention basins when not in use.
- **TREES** planted as a wind block.
- **ONGOING STUDY** of odor-control effectiveness.

#### ODOR CHALLENGE:

##### Flow Variance

Every year, Texas Motor Speedway hosts three major race events. Each one adds 250,000 people to the population we serve. Adjusting treatment processes to accommodate this temporary dramatic increase is an exercise in both science and art.



#### ODOR SOLUTION:

##### Magnesium hydroxide injection points



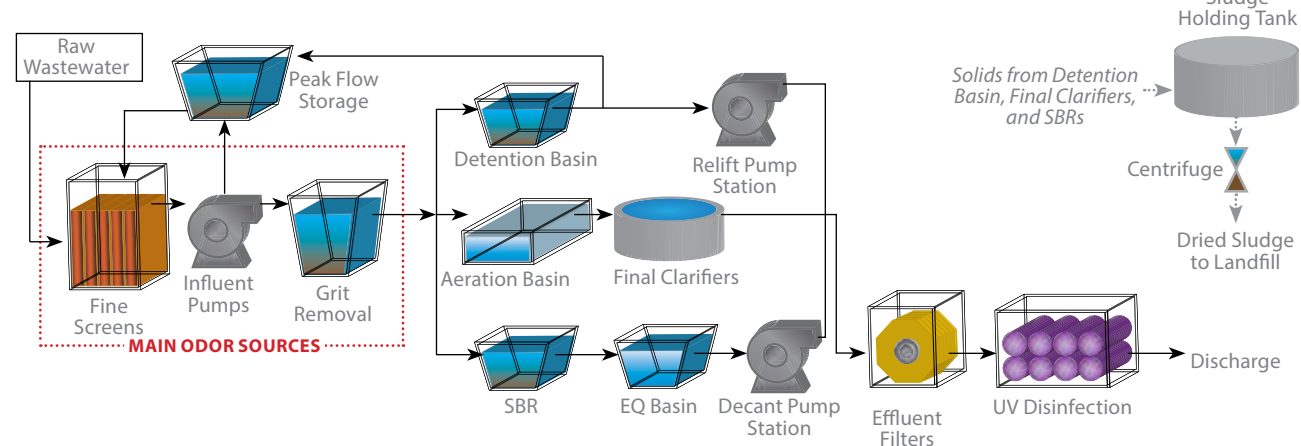
DCRWS uses magnesium hydroxide within the collection system and at one location within the treatment facility. This process raises the pH of the wastewater, keeping H<sub>2</sub>S dissolved and out of the air. Since DCRWS implemented this process, test results have shown a 90-percent reduction in the H<sub>2</sub>S air concentration at the testing location.

### DENTON CREEK REGIONAL WASTEWATER SYSTEM TREATMENT PLANT



DCRWS staff take an active role in addressing the odor concerns in the community.

#### DCRWS WASTEWATER TREATMENT PLANT PROCESS SCHEMATIC



#### ODOR SOLUTION:

##### Cedar Trees at DCRWS Perimeter



A double row of nearly 150 large cedar trees lines the edge of the plant, both to create a physical barrier and to provide a pleasant aroma. Unpleasant odors rise over the tree line, causing smells to disperse.