

Crater-Max® Enhances Biofilter System Performance

Cedar Rapids, Iowa – Water Pollution Control Facility Odor Control Upgrades



Crater-Max® Media

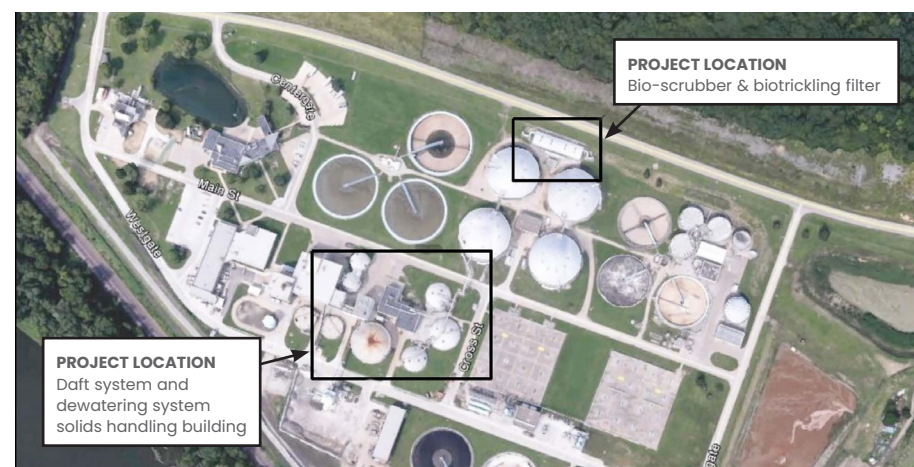
SCREENING & GRADING (ASTM C136)	
Upper Zone Crater-Max™ Media	
SIEVE SIZE	PERCENT PASSING BY WEIGHT
3"	100 %
2½"	100 %
2"	96.0 %
1½"	77.5 %
1"	16.5 %
¾"	2.3 %
½"	0 %
⅜"	0 %
Lower Zone Crater-Max™ Media	
SIEVE SIZE	PERCENT PASSING BY WEIGHT
2½"	95-100 %
2"	70-100 %
1½"	20-50 %
1"	0-20 %
¾"	0-20 %

In 2018, the odor control upgrades for the **City of Cedar Rapids Water Pollution Control Facility** were successful as a result of the installation of GES Biotek's proprietary **Crater-Max®** media and performance testing services for the biofilter system. This project marked a significant step in GES Biotek's dedication to delivering high-performance, sustainable odor control solutions.

Upgraded Biofilter System Overview

The Cedar Rapids facility operates two Biofilter units, engineered for effective odor mitigation through biological treatment. As part of the system optimization, GES Biotek integrated its proprietary **Crater-Max®** Inorganic Media, designed to maximize hydrogen sulfide (H₂S) removal efficiency while maintaining long-term operational stability.

The Biofilter System is comprised of two cells with a nominal total cell area of 5,040 square feet and features a lower and upper zone of **Crater-Max®** media, each 3 feet in media depth resulting in a total of 30,240 cubic feet of media installed. The lower and upper zone of **Crater-Max®** media were manufactured to comply with ASTM C136 requirements for particle size distribution and grading of aggregate material.



Overview of Cedar Rapids Water Pollution Control Facility

GES Biotek's Crater-Max® Media

GES Biotek's **Crater-Max®** media is a key component in fostering a robust microbial ecosystem within the biofilter system. Its highly porous structure provides an ideal environment for the growth of Acidithiobacillus thiooxidans, a microorganism essential for the biological oxidation of H₂S. Unlike conventional media that experience pore-clogging over time, Crater-Max® media is engineered with non-through-and-through surface openings, preventing increases in static pressure due to fouling. This feature ensures uninterrupted airflow distribution, prolonging system efficiency and reducing maintenance demands.

Proven Performance & System Validation

Performance testing of the upgraded biofilter system confirmed a significant improvement in odor mitigation. Hydrogen sulfide concentrations at the inlets were recorded as high as **49.7 ppm**, with outlet levels reduced to near non-detectable concentrations, with **H₂S removal efficiencies exceeding 99.6%**. These results highlight the reliability of the upgraded system and its ability to meet stringent environmental compliance standards, reinforcing the effectiveness of the **Crater-Max®** media in controlling odorous emissions.

Commitment to Innovation

GES Biotek continues to set industry benchmarks in biological odor control technology by providing innovative, sustainable, and high-efficiency biofiltration solutions. The successful implementation of **Crater-Max®** media at the Cedar Rapids facility is a testament to the company's commitment to advancing wastewater treatment technologies that benefit both communities and the environment.



Cedar Rapids Biofilter System



Field Sample Collection from the Two Biofilter Inlet Ducts



Analyzing field sample using a Jerome 631-X



Analyzing discharge flow rate using a TSI VelociCalc 9545

GES Biotek — Good for People, Good for the Environment