

Industrial

Date Completed:

2007

Construction Cost:

\$1 Million

Client or Owner's Rep:

Mr. Casey Mueller, PE
Mr. Steve Reynolds, PE
Project Managers

Highlights:

- ✓ **Technology Evaluation**
- ✓ **Integrated Fixed Activated Sludge (IFAS) Biological Process**
- ✓ **Significant Improvement in WWTP Performance**
- ✓ **Reduced Total Installed Cost (TIC)**

Photos: *IFAS Retention Sieves and Adding Media to Aeration Tank*



Refinery Wastewater Treatment Plant Holly Frontier | Cheyenne, Wyoming

Project Description | Evaluation of Selenium Removal in WWTP Effluent and Improve Performance of Existing WWTP to Meet Permit Requirements.

Services Provided | Holly Frontier (formerly Frontier) hired KGI to perform a technology evaluation for selenium removal in the existing WWTP to 0.5 ppb. In addition, KGI's scope also included to evaluate alternatives to KGI was responsible for developing alternatives to remove selenium in a cost effective manner.

KGI was also responsible for evaluating the performance of existing WWTP and design of the proposed improvements. KGI was instrumental in converting the existing activated sludge wastewater treatment plant to an Integrated Fixed Activated Sludge (IFAS) process. The IFAS process not only decreased the capital construction cost by more than 50 percent but also decreased the operations and maintenance cost significantly. In addition, the plant is producing an effluent quality better than the permit requirements on a consistent basis.

A paper titled "Integrated Fixed-Film/ Activated Sludge (IFAS) for Refinery and Petrochemical Wastewater Treatment Plant Upgrades" was presented in 2008 International Water Conference, San Antonio, Texas. The paper documented the design details and treatment performance of the upgraded biological treatment system. In addition, another paper was also published in August/September 2009 Issue of "Industrial Wastewater" magazine.