

Industrial

Date Completed:

2010

Construction Cost:

\$90 Million

Client or Owner's Rep:

Mr. Don Phillips, PE
Mr. John Stafford, PE
Sr. Project Managers

Highlights:

- ✓ **Seamless Integration of KGI into EPC Team**
- ✓ **Superpulsator Solids Contact Clarifiers**
- ✓ **Clearwell Design**
- ✓ **Chemical Systems**
- ✓ **PFDs, P&IDs and Hydraulic Calculations**

Photo: Superpulsator®
Type Clarifier

Refinery Surface Water Treatment Plant Motiva Refinery | Port Arthur, Texas

Project Description | The project included improvements to the existing surface water treatment plant in support of a \$6.5 billion overall refinery expansion project. Raw water is obtained from the Lower Neches Valley Authority (LNVA) via Carroll Canal and pumped from the "Scrapper Traps" to No. 8 Reservoir, which then flows to No. 7 Reservoir. The reservoirs allow for the suspended solids to settle. No. 7 and No. 8 Reservoirs provide storage and surge capacity in the event of supply interruption from the LNVA. Raw water is then pumped from No. 7 Reservoir into the clarifiers, where a polymer coagulant and chlorine are added. The clarifier and polymer action cause the suspended solids to precipitate out of the raw water. Chlorine is added for biological control. Clarified water flows by gravity to the filters to remove smaller suspended solids (Turbidity <0.2 NTU).

Services Provided | KGI was a sub-consultant to Englobal Engineering, Inc. The overall EPC contractor was Bechtel/Jacobs JV. KGI was responsible for assisting the team in developing FEL2 and FEL3 packages including preparation of Material Requisition Packages of major equipment. During detailed design, KGI assisted in review of P&IDs, HAZOP, hydraulic calculations, review of piping drawings and development of operating procedures. Some of the major improvements included:

- Three 8,000 gpm Clarifier Raw Water Pumps.
- Two (2) Rapid Mix and Splitter Box for Clarifiers
- Four (4) Infilco Superpulsator type solids contact type clarifiers and associated appurtenances.
- Clarified Water Well with two (2) 12,000 gpm Clearwell Transfer Pumps.
- Six (6) 1,350 gpm deep bed gravity filters and associated appurtenance.
- 450,000 gallon Filtered Water Clearwell with three (3) 3,000 gpm pumps.
- Chemical Systems - Sodium Hypochlorite and Polymer Systems.

