

# CASE STUDY

# Mining Truck Axle Mfg



## EQUIPMENT SUPPLIED

2x 50,000 gal EQ Tank  
CPI-RS-45 Oil/Water Separator  
F-6 Flocculator  
Chemical Dosing Equipment  
PCL-30 DAF Unit  
Electrical & Pneumatic Controls  
E-Shaped Maintenance Catwalk

## FACILITY

Caterpillar  
Winston-Salem, North Carolina

## DISCHARGE PARAMETERS

Flow : 50,000 gal in 8 hours  
TSS : 10,800 mg/L  
FOG : 125,000 mg/L  
COD : 146,000 mg/L

## DISCHARGE REQS

TSS : <300 mg/L  
FOG : <100 mg/L

The mining truck axle facility uses various machine oils and lubricants in the manufacturing process. As with many industrial manufacturers, a substantial volume of wastewater is generated from equipment washdown and production floor sanitation. A large volume also comes from cooling water.

Naturally, the wastewater contains high concentrations of oily materials that have to be removed prior to discharge to the POTW. A dual-stage process was implemented to reduce equipment size and minimize chemical usage in the clarification process. An oil/water separator removes free and mechanically emulsified oils and a plate-pack DAF unit removes colloidal solids and chemically emulsified oils with the aid of a coagulant and flocculant polymer. Some of the treated water is processed through an RO system for reuse in the plant.

## DAF SIZING CALCULATIONS

### Hydraulic Surface Loading Rate

$$= \frac{\text{Feed Flow} + \text{Recycle Flow in gpm}}{\text{Effective Surface Area in sqft}}$$

$$= \frac{107 + 75 \text{ gpm}}{\text{x sqft}} = 1 \text{ gpm/sqft}$$

$$= 180 \text{ sqft effective area required}$$

### Solids Loading Rate

$$= \frac{\text{Weight of TSS in Feed in lbs/hr}}{\text{Free Surface Area in sqft}}$$

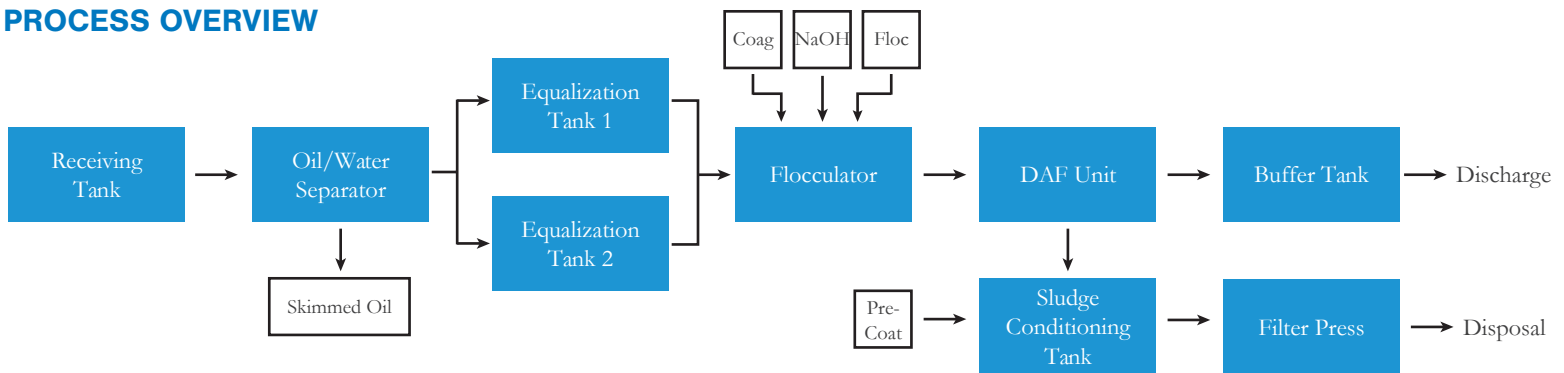
$$= \frac{434 \text{ lbs/hr}}{\text{x sqft}} = 2.5 \text{ lbs/sqft/hr}$$

$$= 172 \text{ sqft free area required}$$

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## PROCESS OVERVIEW



## OTHER SIMILAR PROJECTS

Company	Location	Flow Rate	Company	Location	Flow Rate
Borg Warner	Bellwood, IL	24 gpm	Solar Turbines	DeSota, TX	40 gpm
Cassino Co-Op	Cassino, NSW	330 gpm	Truck Washout	Sioux Falls, SD	65 gpm
Caterpillar	Joliet, IL	330 gpm	Topaz UAE	Dubai, UAE	165 gpm
JD Meagher	Westborough, MA	80 gpm	United Defense	York, PA	80 gpm
CPC	Taipei, Taiwan	4000 gpm	Watco Mechanical	Scottsville, TX	10 gpm

Since its founding in 1973, JWC Environmental has become a world leader in solids reduction and removal for the wastewater industry with its Muffin Monster grinders and Monster Separation Systems for screening, compaction and washing. JWC also solves challenging size reduction and processing problems in commercial and industrial applications through its Monster Industrial division. JWC Environmental is headquartered in Santa Ana, California, and has a global network of representatives, distributors and regional service centers to provide customer support. For more information, visit JWC Environmental at [www.jwce.com](http://www.jwce.com).