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# Waste Not, Want Not: Maximizing High Strength Waste Addition



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# Presentation Outline

## ➤ Background

- Plant Details
- Co-digestion Experimentation
- Biogas Utilization
- Brewery Operations

## ➤ Solution

- Design Goals and Preferences
- Operations Present - Future

**Background:**  
Operations



# Stevens Point WWTP

## ➤ Plant Details

- 4.55 mgd (3 mgd)
- EBPR
  - A/O with RAS Denite
- Anaerobic Digestion
- Service Area
  - 27,000 Population
  - BOD Population Equivalent of 54,000



# Co-digestion Experimentation

- Possible HSW sources?
- How to handle the material properly?
- How much biogas can be produced?



# How Much is too Much?

- Normal Feed Rate 125 lbs VSS/ 1000 cuft digestion
- Over fed at 286 lbs VSS/1000 cuft digestion



# Biogas Utilization

- 180 KW CHP
- Sustainable Results
- Utilization of excess engine heat



# Annual Net Electricity Consumed (kW)

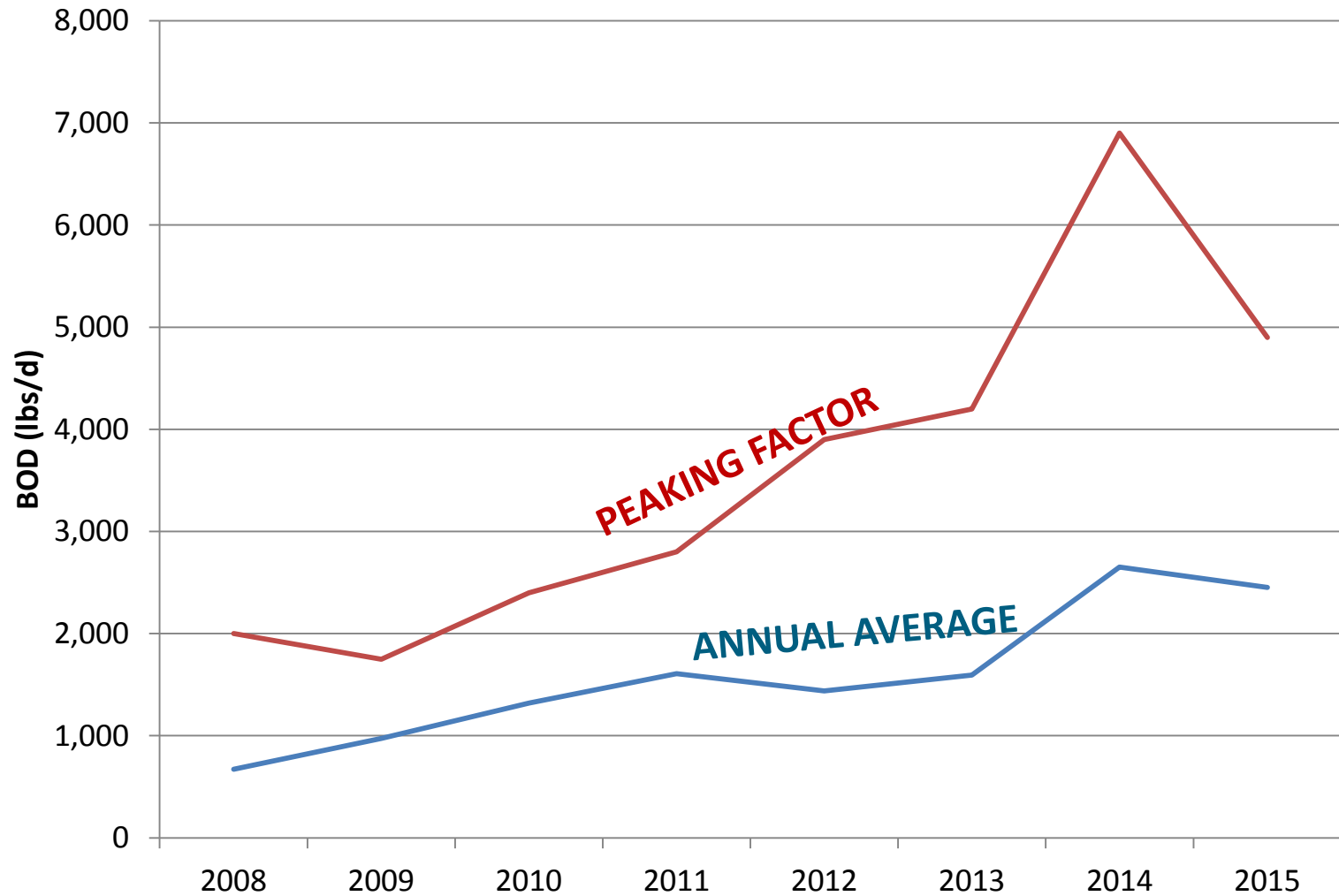


23.5% decrease in annual net electricity consumed 2002 – 2011

98% decrease in annual net electricity consumed 2002-2014



# Brewery Loadings



# Brewery Operations

- Currently producing 130,000 bbls per year
- Plan to double production in the future
- Operational Issues
  - Slug loading
  - Nutrient Deficiencies
  - Blower Demand





**Solution:**  
Design

# Solution

## ➤ Design Goals and Preferences

- Tank Size
- Tank Shape
- Tank Material of Construction
- Tank Placement
- Tank Mixing
- Digester Feed Pump
- HSW Receiving
- Coatings
- Odors
- Brewery separation/handling



# Solution

## ➤ Design Goals and Preferences

- Tank Size ✓ 40,000 gal
- Tank Design ✓ Circular/Concrete/Below Grade
- Tank Mixing/Pumping ✓ Pump&Nozzle/Rotary Lobe
- HSW Receiving ✓ Basic
- Coatings ✓ Fiber-Reinf. Polyamine Epoxy
- Odors ✓ Smells like Beer
- Brewery source separation/handling ✓ Contracting/tools

# Solution

## ➤ Operations Present – Future

- Brewery to pump “the good stuff” through forcemain
- Transfer ASAP, or risk concrete-like deposits
- Buffer slug loads at WWTP receiving tank and mix
- Blend other HSW or sludge
- Hold volume, store for weekend/holiday
  - Save 14-15 hrs/wk running scum pump
- Passive overflow to headworks

# New System

Flushing Water

1800 gal  
316L SST

Multiple  
Suctions



Air Diaphragm  
Pumps

Cleanouts

# New System

Flushing Water

Drive-on Lid  
for Vac-Truck

Access Road  
and Fence



Rock Trap

Sanitary Drain



# New System

Digested  
Sludge Transfer

Brewery Line

Ball Check  
Valve = OK

Chopper Pump

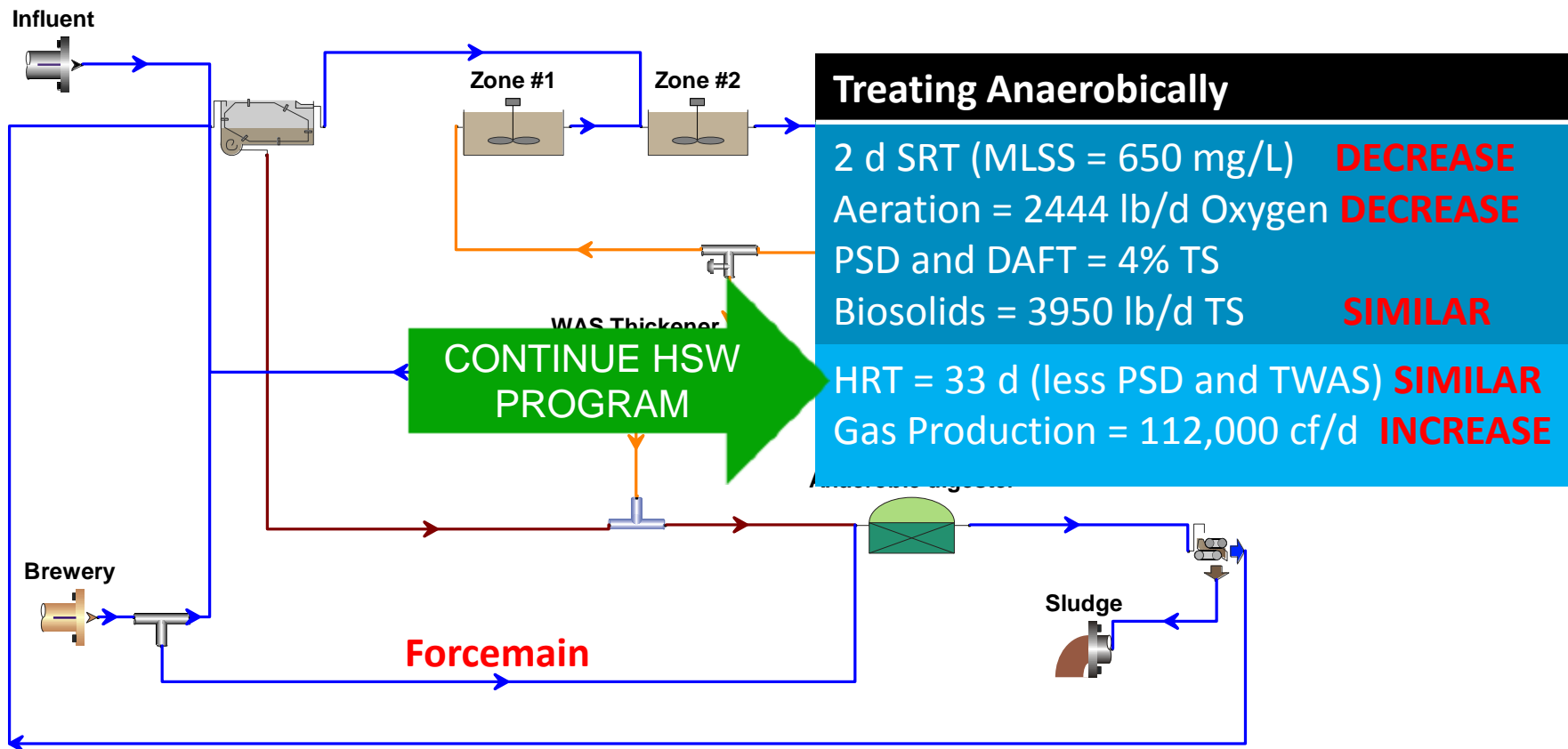
Cleanouts





# Operational Data - Results

## ➤ After (Biowin Simulation)



# Questions



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