

# Reducing Wastewater Loading and Improving Water Use Efficiency at August Schell Brewing Company

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UNIVERSITY OF MINNESOTA  
**Driven to Discover<sup>SM</sup>**

# Company Background

- Largest Brewery in MN
- Established in 1860
- 70 Full Time Employees
- 120,000 barrels of beer annually
- 20,000 barrels of root beer annually



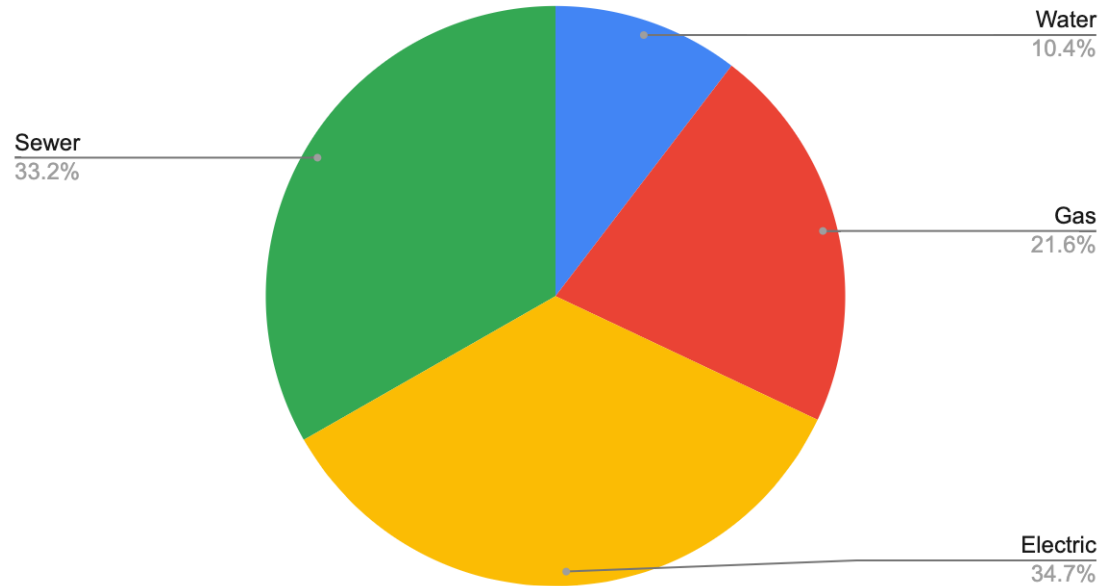
# Project Overview

- Identified major contributors to wastewater loading and options to address them.
- Identified areas to improve water use efficiency
- Investigated phosphorus free cleaning product alternatives

# Project Incentives

- Core values: "We are rooted in tradition, cultivated in innovation"
- Sewer surcharges for BOD, TSS, and phosphorus

2019 Utility Cost Breakdown



# Site Overview

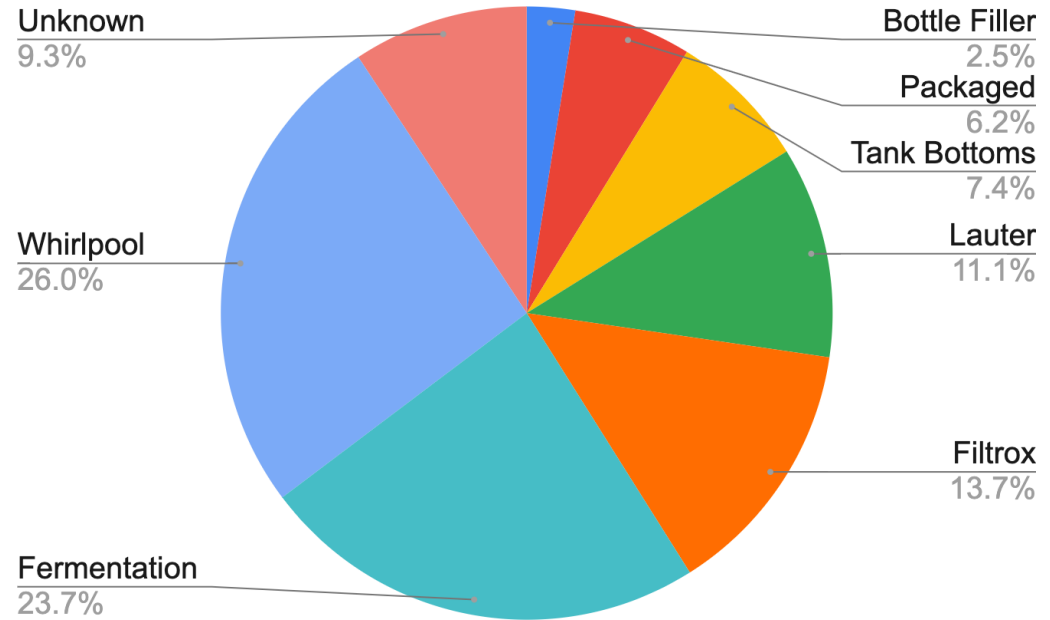
- Odor Control
- Space Constraints
- Dead-end Road



# Approach

## Mass Balance

Waste in = Waste out



# Primary Recommendation: Anaerobic Digestion

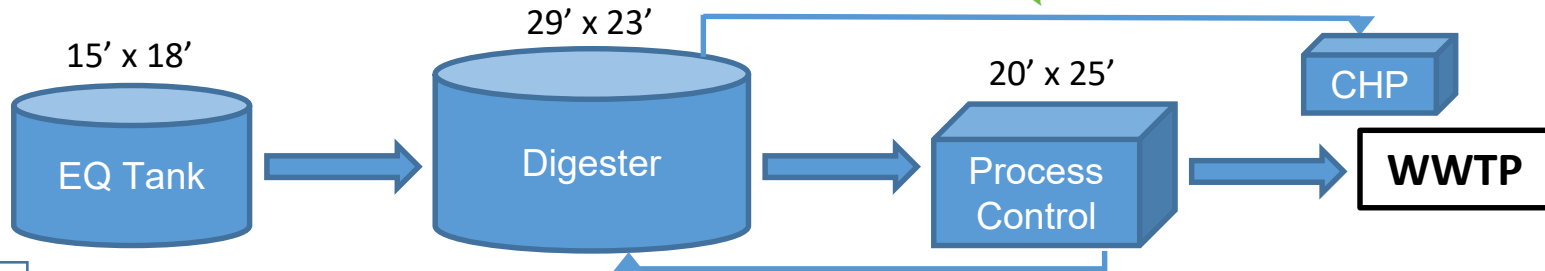
**Waste Reduced:** 99% BOD, TSS, and Phosphorus Removal

**Cost:** \$1.2 million + installation

**Savings:** \$225,000 annually

**Payback Period:** 6-10 years

**Status:** Recommended





# Solutions

Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
Concentrate Waste	210,000 lb TSS & 120,000 lb BOD	\$85,000	\$70,000	1.8 years	Investigating
Biological Treatment	400,000 lb BOD & 230,000 lb TSS	>\$1.2 million	\$225,000	6-10 years	Recommended
Recycle Packaged Product	8,000 lb BOD	>\$4,800	\$4,200	Immediate	Recommended
Brewhouse Sink	200,000 gal water	none	\$1,000	Immediate	Implementing
Filter Backwash	550,000 gal water	none	\$2,700	Immediate	Investigating
Chemical Alternatives	640 lb phosphorus	none	\$1,400	Immediate	Investigating



# Anecdote

**Benefits of a dead-end road?**

**Long lunch due to road construction!**

