

## Designing & Building Septic Systems for Unusual Businesses: A Microbrewery

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## Characteristics of an Unusual Business For Onsite Wastewater Disposal

- High Wastewater Flows
- High Strength Wastewater
- High Suspended Solids
- Combination of Above

In the case of a Microbrewery, all three of the previous characteristics are encountered



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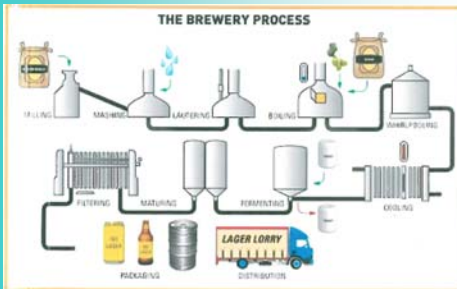
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## Brewery Process



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## Brewery Wastewater Volume

Based on industry studies:

Larger Brewery's tend to be more efficient

~2-4 gal Water per 1 gal Beer

- Microbrewery Brewery's

~5-9 gal Water per 1 gal Beer

What do these flows include?

- 1) Brewing Operation
- 2) Cleaning of Brewing Equipment
- 3) Cleaning of Brewery (packaging, floors, etc.)



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## Brewery Wastewater Characteristics

Typical ranges of untreated brewery wastewater:

- BOD 600 – 5000 ppm
- TSS 200 – 1500 ppm
  - pH 3 – 12
- Nitrogen 30 – 100 ppm
- Phosphorus 30 – 100 ppm



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## Brewery Wastewater Characteristics

•Effluent from Brewery processing steps:

- Cleaning/ Washing – high volume of water but low organics
- Fermentation and filtering – high BOD but low volume this amounts to about 3% of total wastewater volume but 97% BOD
- pH highly variable depending on source water and cleaning agents



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## Brewery Design Parameters

Throwback Brewery  
North Hampton, NH

Existing conditions:  
3 Barrel Brew System  
3 to 4 Brew' s /week  
~ 15,000 gpy Beer produced  
~ 106,000 gpy ww produced (294gpd)  
Ratio of water to beer 8.5 to 1



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## Brewery Design Parameters

Throwback Brewery  
North Hampton, NH

Proposed Expansion:  
15 Barrel Brew System  
3 Brew' s/wk  
~ 70,000 gpy beer produced  
525,000 gpy ww produced (1440gpd)

Future Expansion:  
Increase to 6 brew' s/wk  
~145,000 gpy beer produced  
~ 1,000,000 gpy ww produced (2980gpd)



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## Wastewater Collection System

Breakdown

- Brewery Processes
  - Brewing
  - Washing
  - Fermentation
  - Packaging

All of these processes are collected centrally and sent to pretreatment. The collection system in this brewery is through a floor drain system

- Ancillary Processes
  - Restaurant
  - Kitchen
  - Restrooms



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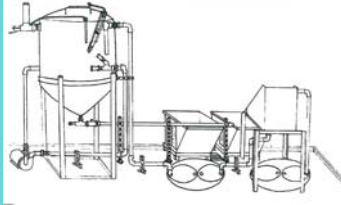
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## Pretreatment

Sample screening and pH balancing



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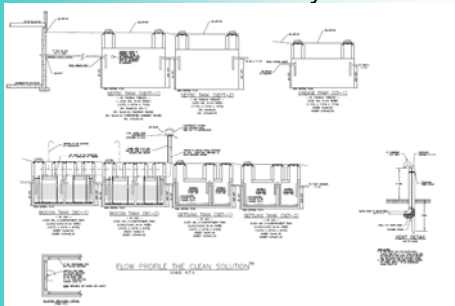
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## Treatment Clean Solutions System



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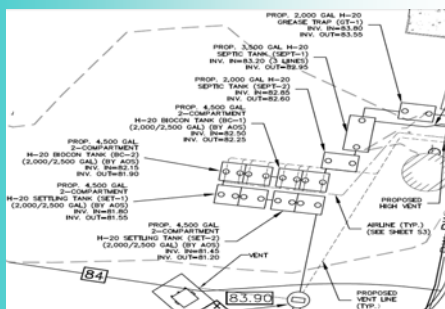
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## Field Schematic



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