



WISCONSIN

Energy Best Practices Guide: Water & Wastewater Industry Best Practice Manual

Presented by: Joseph Cantwell

September 1, 2020

What is Focus on Energy?

Wisconsin utilities' statewide program for energy efficiency and renewable energy



- Created in 2001 by Act 141 Wis. Stat. § 196.374(2)(a)
- Funded by rate payers of state's investor-owned and participating municipal & co-op utilities
- Provides financial and technical support to undertake projects that otherwise would not be implemented.

About Us



- **FOCUS ON ENERGY**® empowers the people and businesses of Wisconsin to make smart energy decisions with enduring economic benefits. Since 2001, Wisconsin's energy efficiency and renewable resource program has stayed true to that mission statement. On behalf of 107 Wisconsin electric and natural gas utilities, Focus on Energy's information, resources and financial incentives benefit all Wisconsinites by implementing energy efficiency and renewable energy projects that otherwise wouldn't happen, or in some cases years sooner than scheduled.

Introduction

- The objective of the Best Practice Manual was to provide information and resources to assist the W/WW industry to identify, assess and implement energy efficiency and renewable energy opportunities
- Provide information in a format that anyone can understand
- Developed because research did not identify an existing document to provide similar information
- Utilized as a tool to deliver the program and assist in implementation of the program
- Manual accepted because a committee of consultants, equipment suppliers, regulatory and program representatives were involved- actually a letter from the WDNR urging its use was obtained

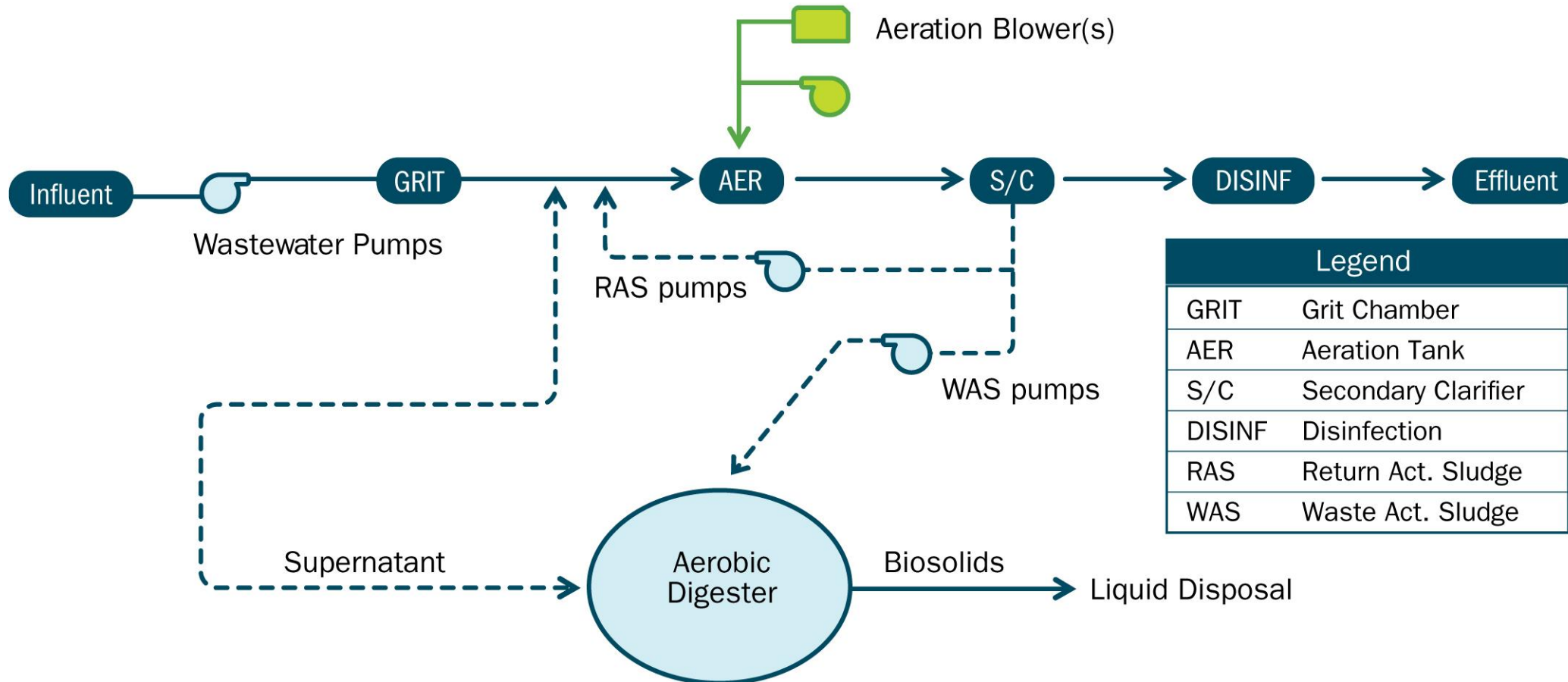
Why Energy Efficiency at W/WW

- Water /Wastewater systems need to provide service continuously
- Wastewater treatment systems are generally biological systems thus they operate 8760 hours/year – no time off - vacation – holidays
- Operating 8760 hours compared to a 40 hour work week 2080 hours/year provides: $8760/2080 = 4.2$ more time for savings

Why are there EE opportunities

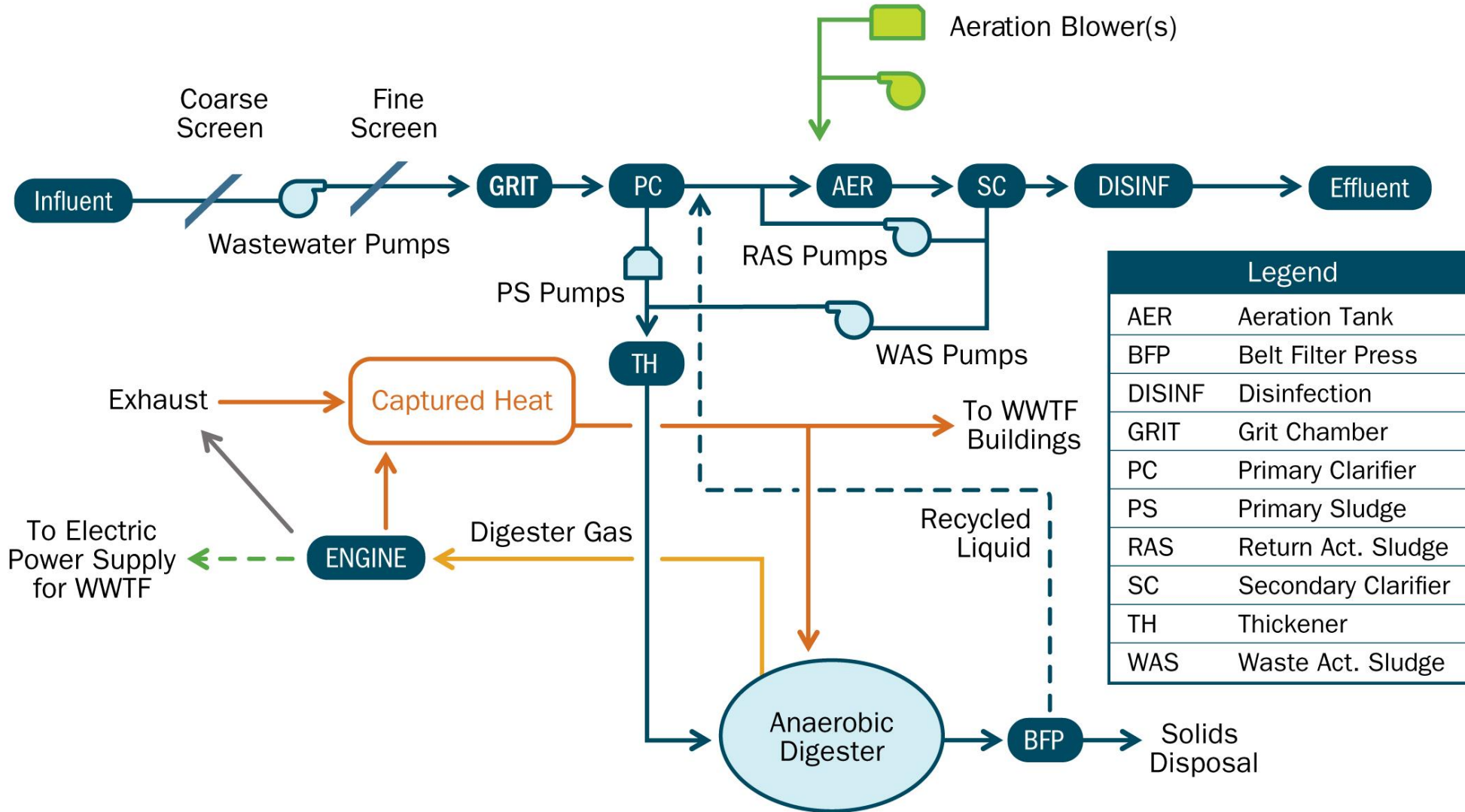
- Facilities sized per codes for twenty year projected flows and loadings
- Capability to meet 20 year projected peak conditions also required
- Redundant equipment required
- Usually assumed all equipment needs to be operated
- Priority to meet water quality standards
- Rarely to never see their energy bills
- Not aware of the information on their energy bill

Small Wastewater System Process Flow Diagram



Legend	
GRIT	Grit Chamber
AER	Aeration Tank
S/C	Secondary Clarifier
DISINF	Disinfection
RAS	Return Act. Sludge
WAS	Waste Act. Sludge

Large Wastewater System Process Flow Diagram



Legend	
AER	Aeration Tank
BFP	Belt Filter Press
DISINF	Disinfection
GRIT	Grit Chamber
PC	Primary Clarifier
PS	Primary Sludge
RAS	Return Act. Sludge
SC	Secondary Clarifier
TH	Thickener
WAS	Waste Act. Sludge

Table of Contents of Manual

- **Introduction**
 - Energy Use in Water Treatment and Distribution Systems
 - Energy Use in Wastewater Treatment and Collection Systems
 - Energy Baseline - Benchmarks
- **Energy Management**
 - Program Development
 - Understanding Goals
 - Building a Program
 - Basic Steps in Building an Energy Management Program
 - Constraints
- **Best Practices**
 - General
 - Water Treatment
 - Wastewater
 - Buildings
- **Appendix**

Basic Steps in Building an Energy Management Program



Appendices

- Baseline Energy Use and KPI
- Understanding Your Electric Bill
- Economic Evaluation Process
- Small Utility Energy Management Checklists
- Additional Resources

Questions – Comments - Contact Information

Joseph Cantwell
Focus on Energy
Leidos Engineering, LLC
Telephone: 262-786 – 8221
Joe.Cantwell@focusonenergy.com