



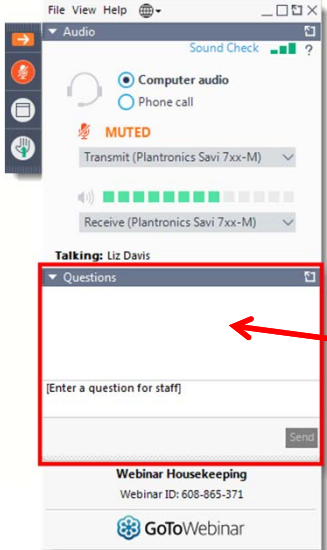
# "What Have Your Bugs Done for You Lately?"

## Optimizing Process Control Parameters to Achieve Process Goals


September 01, 2020 | 1:00 PM to 1:45 PM Eastern

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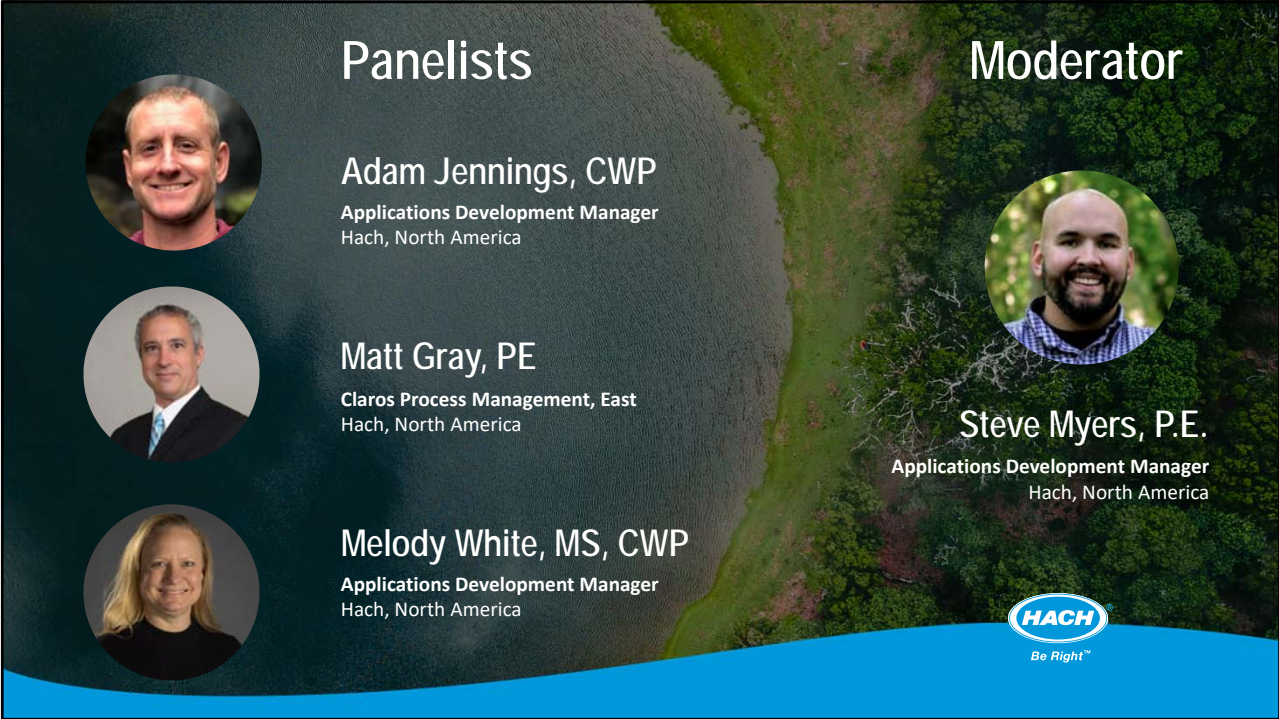
## How to Participate Today



- **Audio Modes**
  - Listen using Mic & Speakers
  - Or, select "Use Telephone" and dial the conference (please remember long distance phone charges apply).
- **Submit your questions using the Questions pane.**
- **A recording will be available for replay shortly after this webcast.**



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**Panelists**


**Adam Jennings, CWP**  
Applications Development Manager  
Hach, North America

**Matt Gray, PE**  
Claros Process Management, East  
Hach, North America

**Melody White, MS, CWP**  
Applications Development Manager  
Hach, North America

**Moderator**

**Steve Myers, P.E.**  
Applications Development Manager  
Hach, North America



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**Why Biomass Management?**

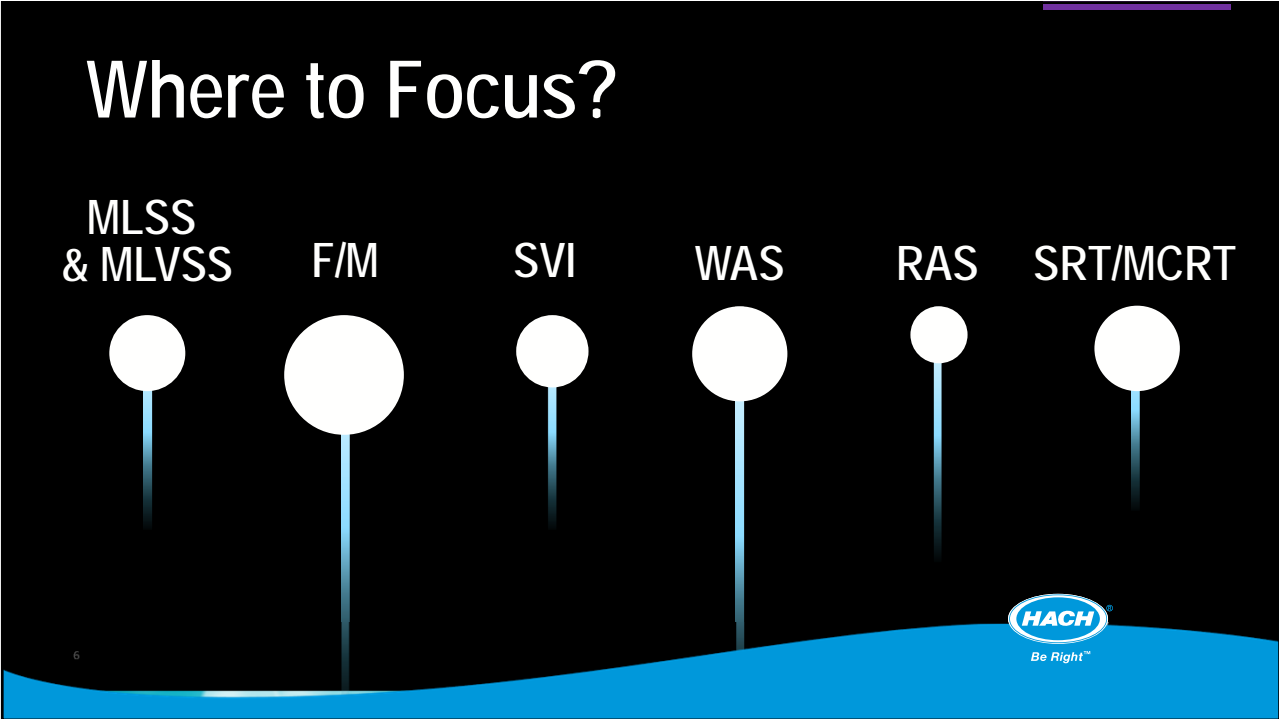


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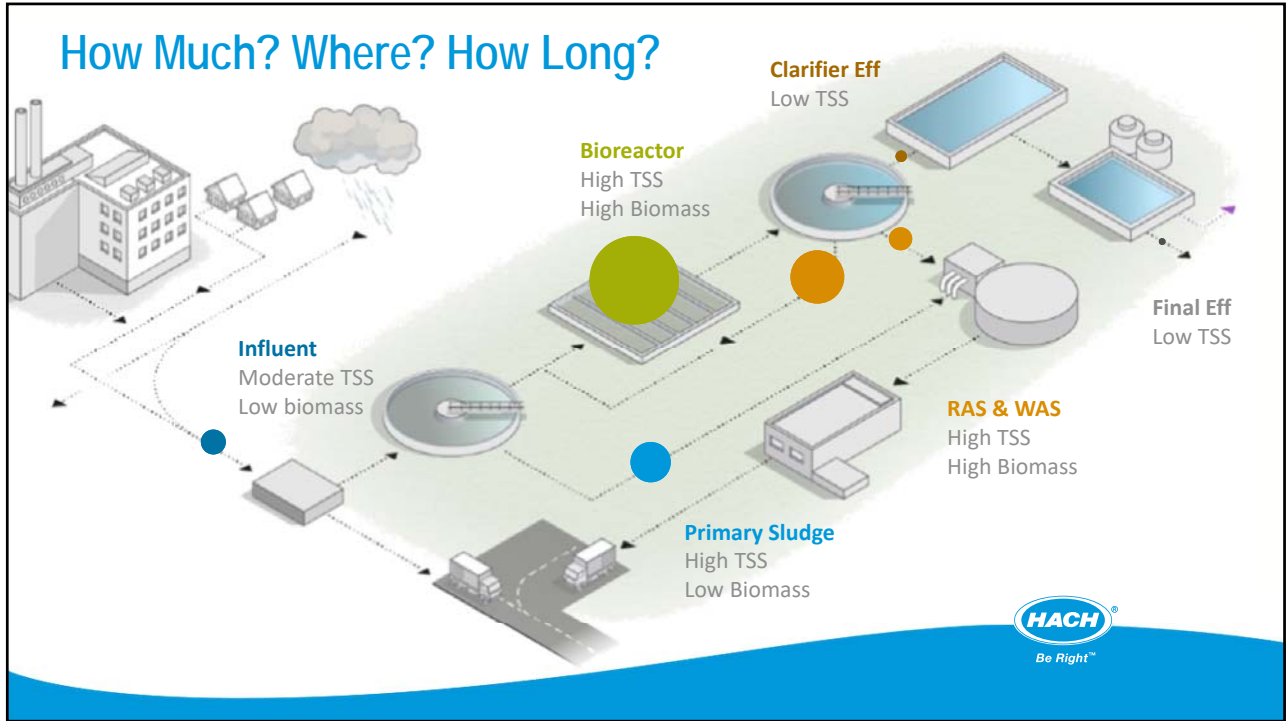
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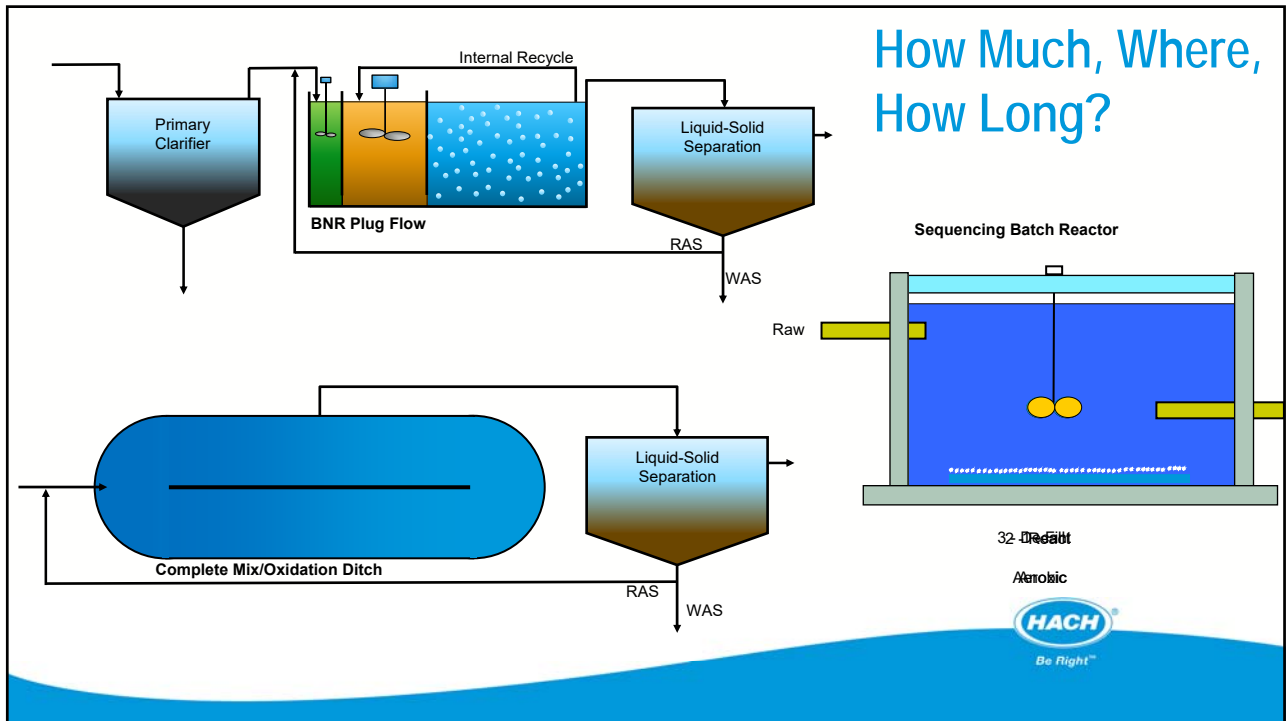
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### 1 Benchtop

Portable

TSS – Gravimetric  
VSS  
Solids “Health” – ATP  
Portable

**HACH**  
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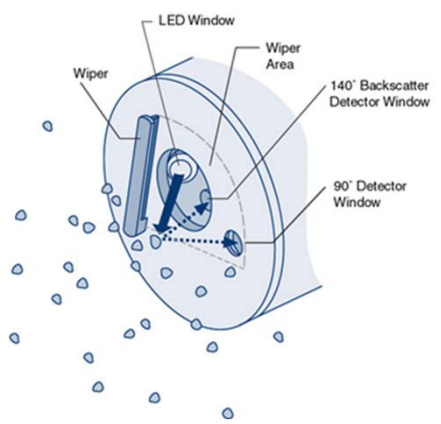
## 2 Online Suspended Solids/Density Meters

Immersion  
In-line

## Solids Measurements & Health



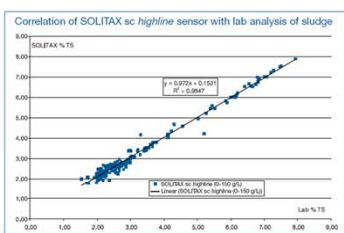
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## Light Scatter Detection for Solids & Turbidity

### Infrared/Scattered Light Photometer

- 1 LED light source transmits a beam of infrared light into the sample stream at an angle of 45° (860 nm)
- 2 A pair of photoreceptors detects scattered light at 90°
- 3 A backscatter photoreceptor is used to accurately measure suspended solids. It is positioned at 140° to the transmitted beam and detects light scattered in high-solids sample streams.



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# Sludge Blanket Monitoring

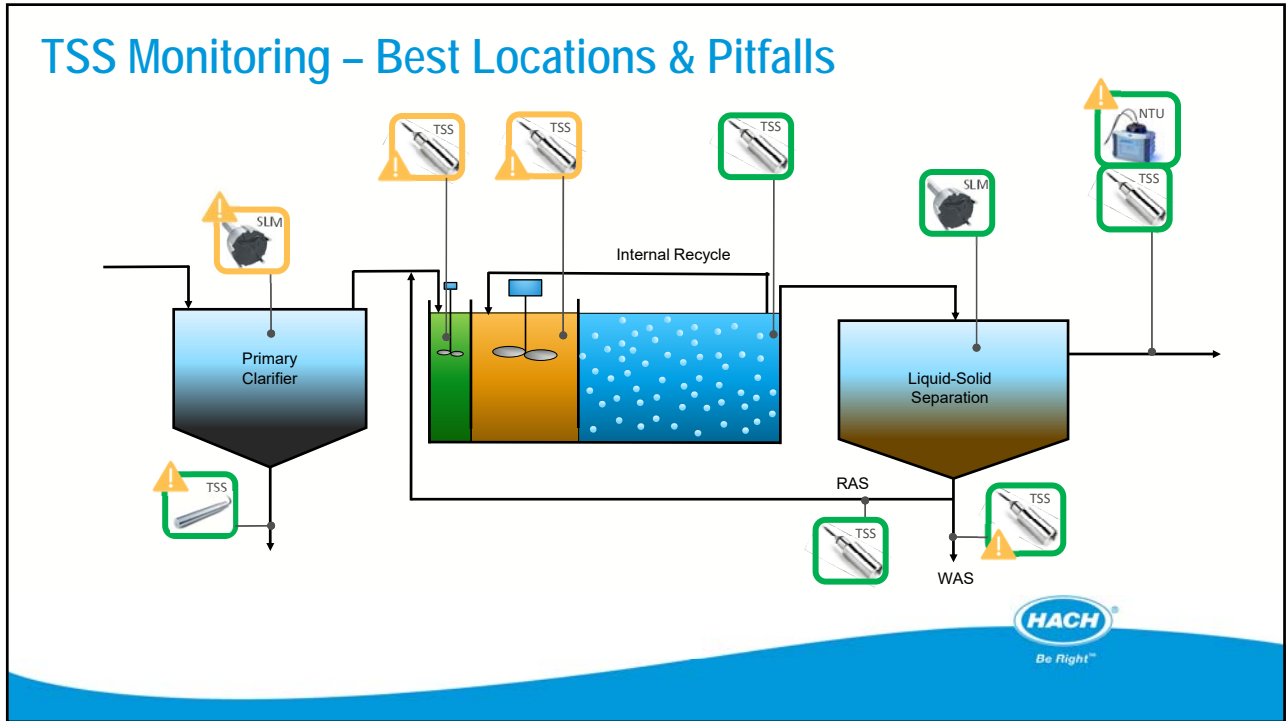
Sludge Blanket

Online Monitoring

HACH  
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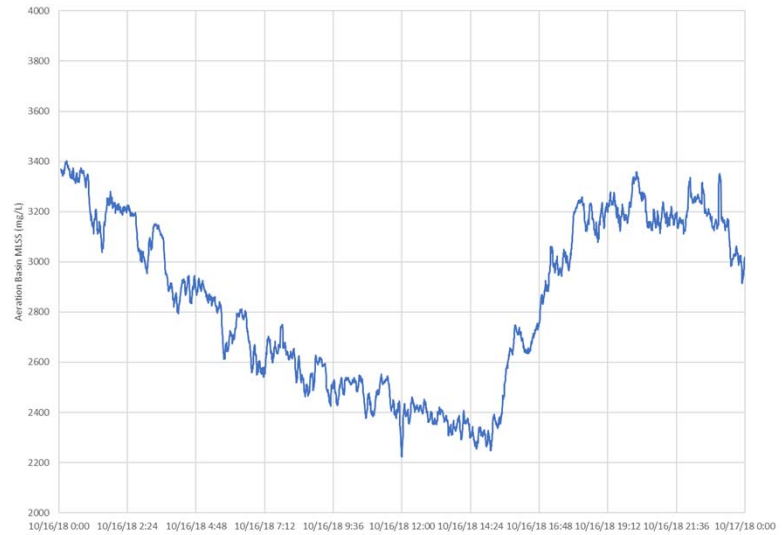
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# What's the problem?



Pick the best time

Example Data - 1 Day of Actual WWTP TSS



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# What's the problem?

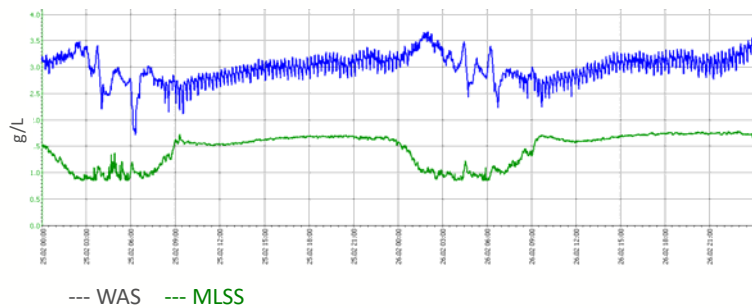


When is the best time to pull a sample?

Is that the best time every day or does it change?

Notice how MLSS and WAS concentrations change over **24 hours!**

Real world data



--- WAS --- MLSS




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**Did you know?** *Accurate & Precise SRT control can:*

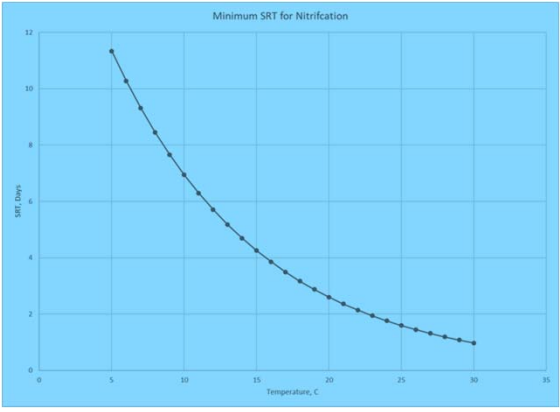
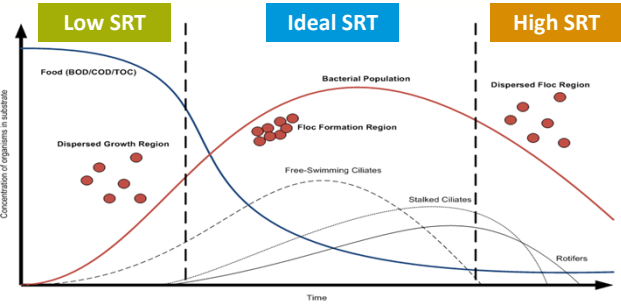

- Increase secondary system capacity up to 30%
- Reduce Aeration Energy Consumption
- Decrease SVI up to 39% while preventing Pin Floc
- Reduce Nocardia and M. parvicella foam
- Avoid of Bio-P Failure
- Stabilize BNR Operations
- Create consistent Solids Yield and Growth Rate
- Increased MLSS stability



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## What is sludge retention time?

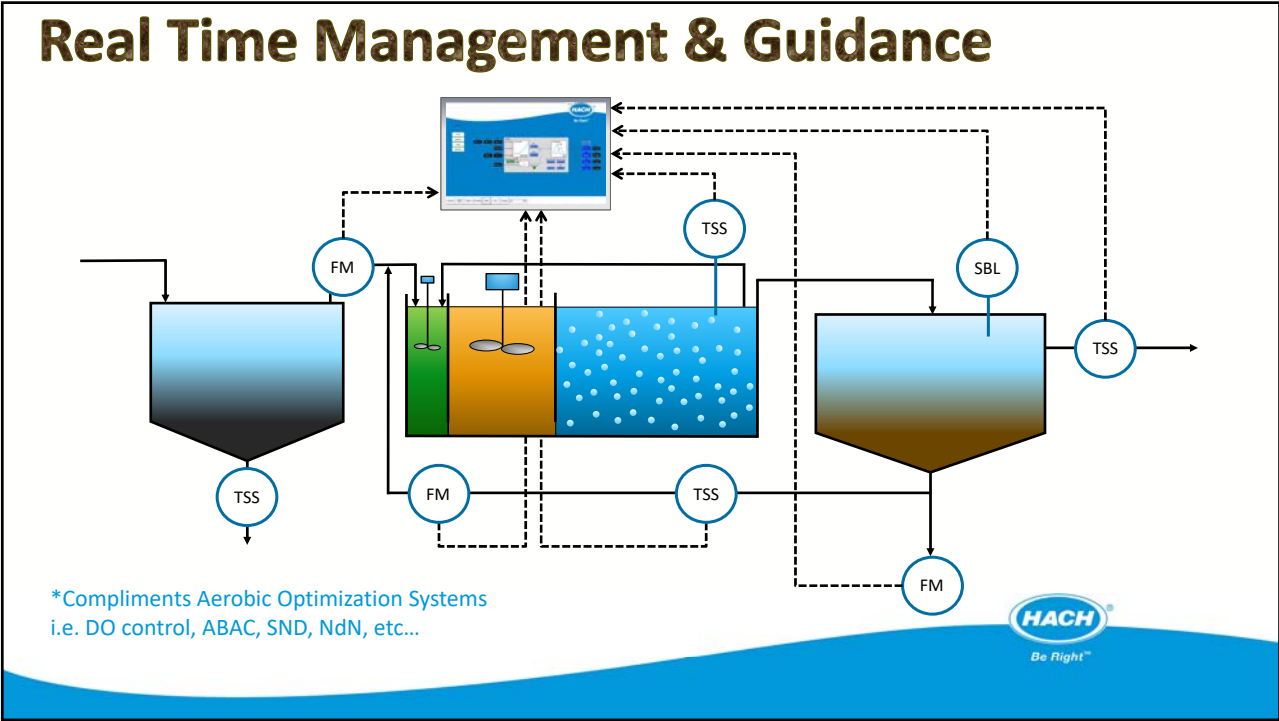
Defines what organisms can grow in the aeration basin

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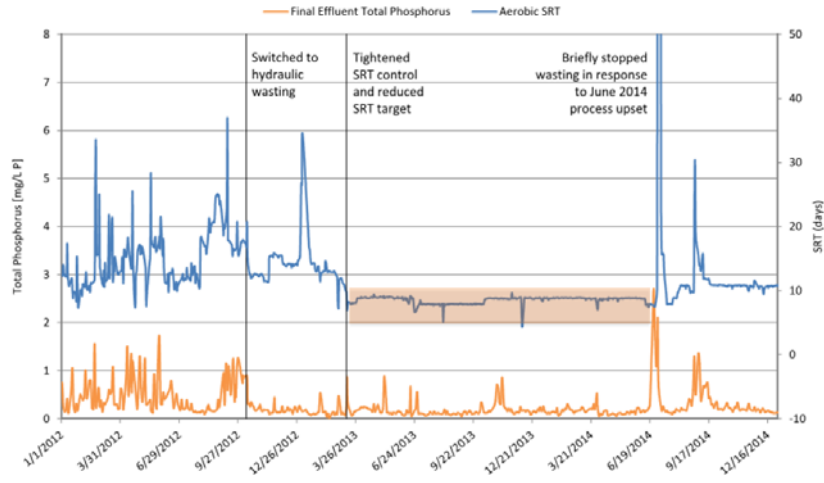


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# SRT impact on TP (bio-p process)



Credit: Pretorius et. al., 2016



## The Connected System

The display shows the following data:

Flow to Digester			
Date	Pci gal	GBT gal	GT gal
10/29/17	79,489	80,266	0
10/30/17	80,399	71,807	0
10/31/17	79,147	89,584	0
11/01/17	68,953	76,581	0
11/02/17	69,350	72,807	0
11/03/17	68,081	82,400	0
11/04/17	68,871	86,093	0
11/05/17	75,821	79,266	0
11/06/17	73,125	80,009	0

Clarifier 1			Clarifier 2			Clarifier 3		
Date	Depth	% Solids	Date	Depth	% Solids	Date	Depth	% Solids
10/29/17	26.0	21.0	3.8					
10/30/17	17.5	20.0	3.8					
10/31/17	24.0	20.0	4.3					
11/01/17	24.0	20.0	4.8					
11/02/17			4.8					
11/03/17	18.0	30.0	4.1					
11/04/17	20.0		5.5					
11/05/17	19.0	20.0	4.6					
11/06/17	22.5	32.5	4.7					

Graphs shown: 'Pci TSS vs Eff TSS (mg/l)' and '% TSS Removal'.

Impacts on Upstream

Impacts on Downstream

Sludge Volume  
Flocculation / Settling  
Chemical Use



**Data Management**

Collect  
Visualize  
WIMS

**Process Management**

Real Time Control  
(multiple modules)

**Instrument Management**

Sensor  
Management  
Prognosis

## Hach's Coverage

*Lab, Process, Service & Water Intelligence*

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# Thank you!

**Adam Jennings, CWP**  
Application Development Manager, NA  
adam.jennings@hach.com  
Cell: 970-473-5504

**Matt Gray, PE**  
Claros Process Management, East NA  
matthew.gray@hach.com  
Cell: 610-717-7569

**Steve Myers, PE**  
Application Development Manager, NA  
smyers@hach.com  
Cell: 801-599-5852

**Melody White, MS, CWP**  
Application Development Manager, NA  
mwhite@hach.com  
Cell: 970-215-9626

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