

Welcome to My World

More Tales from the Files of the Compliance Assistance Unit

OTCO Workshop

July 14, 2020

DEFA Compliance Assistance By the Numbers

- Three Guys
- 88 Counties
- 50,000 miles per year
- 40-60+ WWTPs Annually
- \$0.00

DEFA Compliance Assistance

- Operational Issues
 - Process control
 - Maintenance
- Design Issues
 - Increased process control
 - Workarounds
- Administrative Issues
 - Staffing
 - O, M, and R costs

Maintenance Issues



Welcome to our world



Welcome to our world.

Welcome to our world





Welcome to our world.



Welcome to our world.

A photograph showing a concrete curb on the left side of a dark, polluted waterway. Two blue pipes run vertically along the curb. The ground is covered in brown and yellow leaves, some of which are floating in the water. The water is dark and murky, with some debris visible. The overall scene suggests a neglected or polluted urban environment.

Welcome to our world

**Welcome
to
our
world.**



Operational Issues



Welcome to our world.





Process Control Issues



Cat. No. 24019

Cat. No. 24019

Cat. No. 24019

Cat. No. 24019

RAVEN
%
100
90
1000
900
1.4 LITER









Welcome to our world.



Welcome to our world.



Welcome to our world.



Welcome to our world.

Design Issues

Welcome to our world





Welcome to our world.



Welcome to our world.











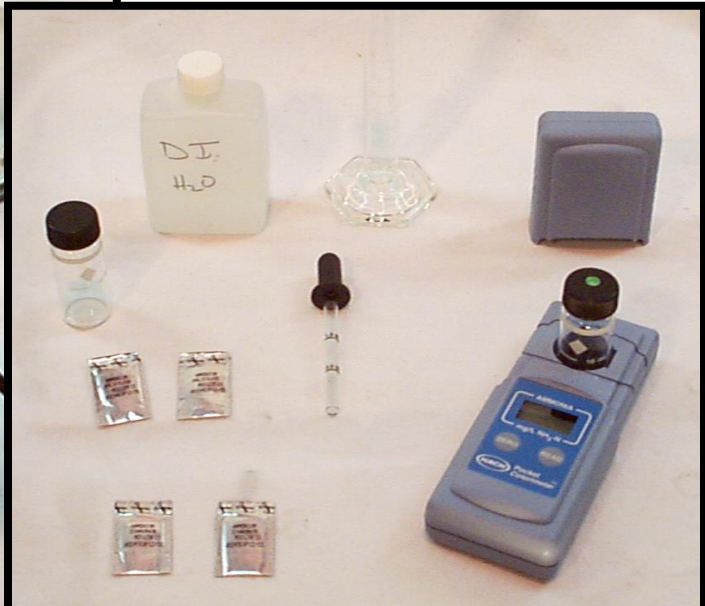


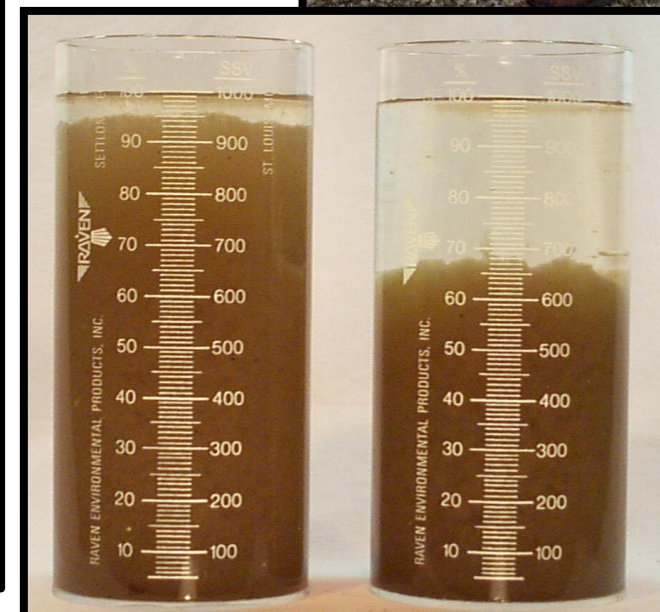
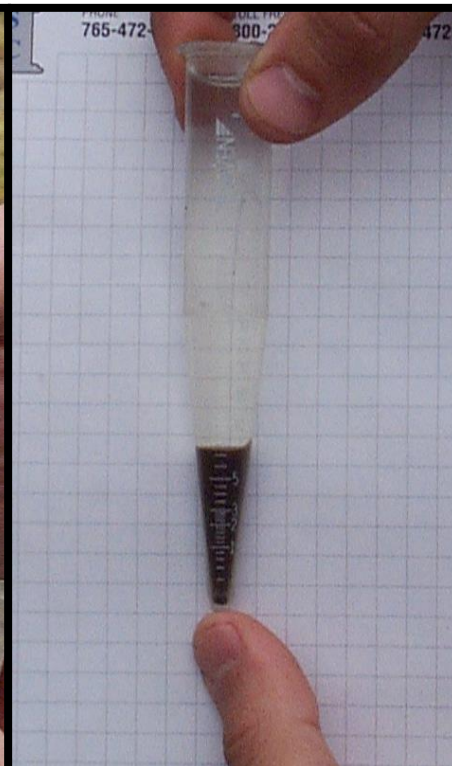
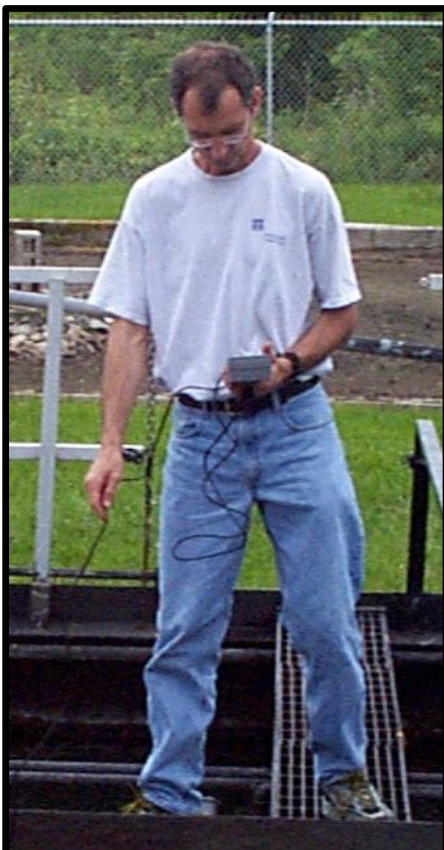


DEFA Compliance Assistance

Process Control

- Cheap, Easy and Effective
- Conversion and Separation
 - Centrifuge
 - Ammonia Test Kit
 - Dissolved Oxygen Probe and meter
 - Settleometer
 - Core Sampler
 - Alkalinity Test Kit







**2 Minute Diluted
Settleometer Test**

Concentration

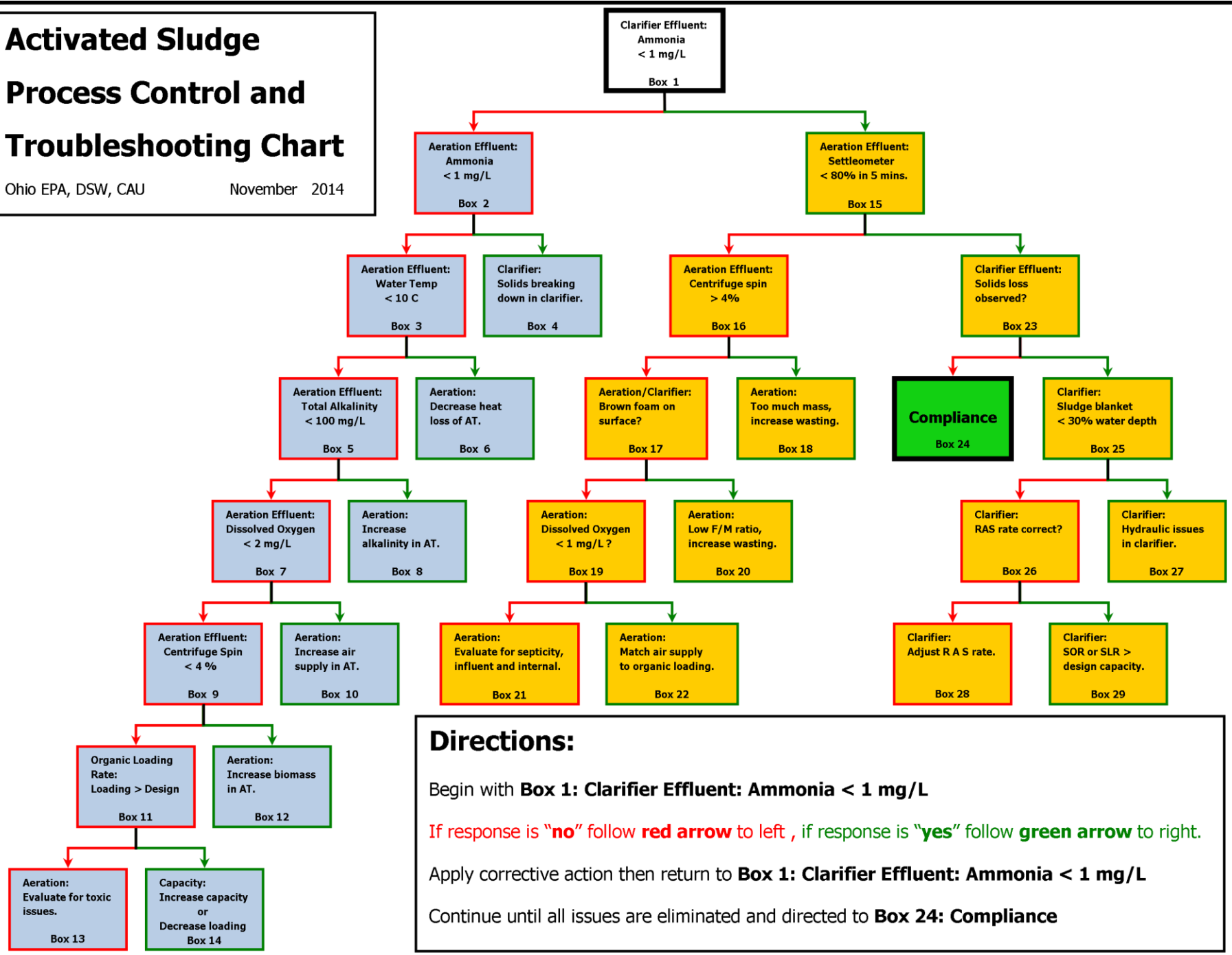
DEFA Compliance Assistance

- Tools to identify:
 - Performance Limiting Factors
 - Need to identify problem immediately
 - Need to implement “correct” corrective action
 - Need to see if the corrective action is working

Activated Sludge Process Control and Troubleshooting Chart

Ohio EPA, DSW, CAU

November 2014



Directions:

Begin with **Box 1: Clarifier Effluent: Ammonia < 1 mg/L**

If response is "no" follow **red arrow** to left , if response is "yes" follow **green arrow** to right.

Apply corrective action then return to **Box 1: Clarifier Effluent: Ammonia < 1 mg/L**

Continue until all issues are eliminated and directed to **Box 24: Compliance**

DEFA Compliance Assistance

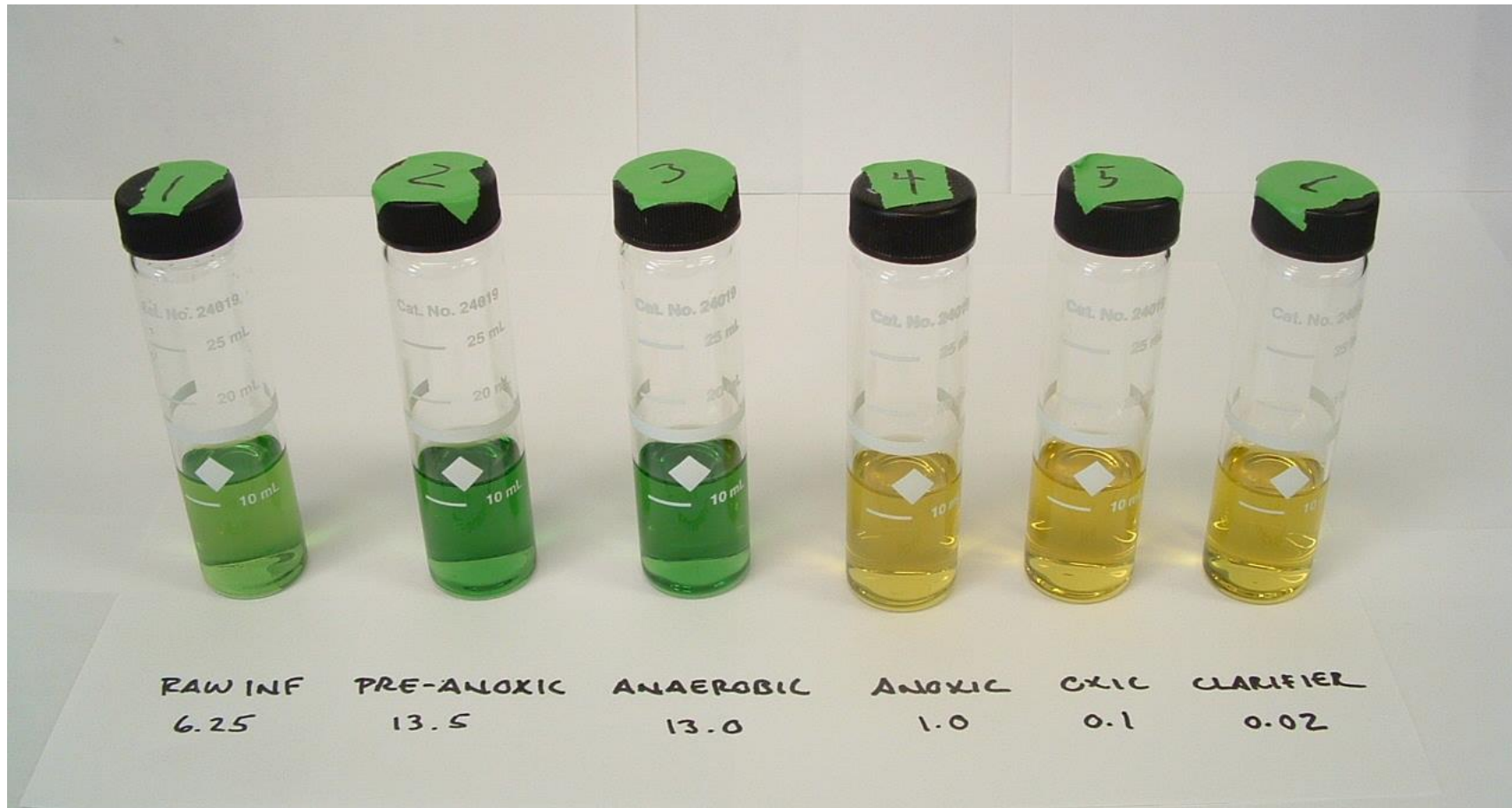
Advanced Process Control

- Nutrient Profiling
- Datasondes
- Microscopy



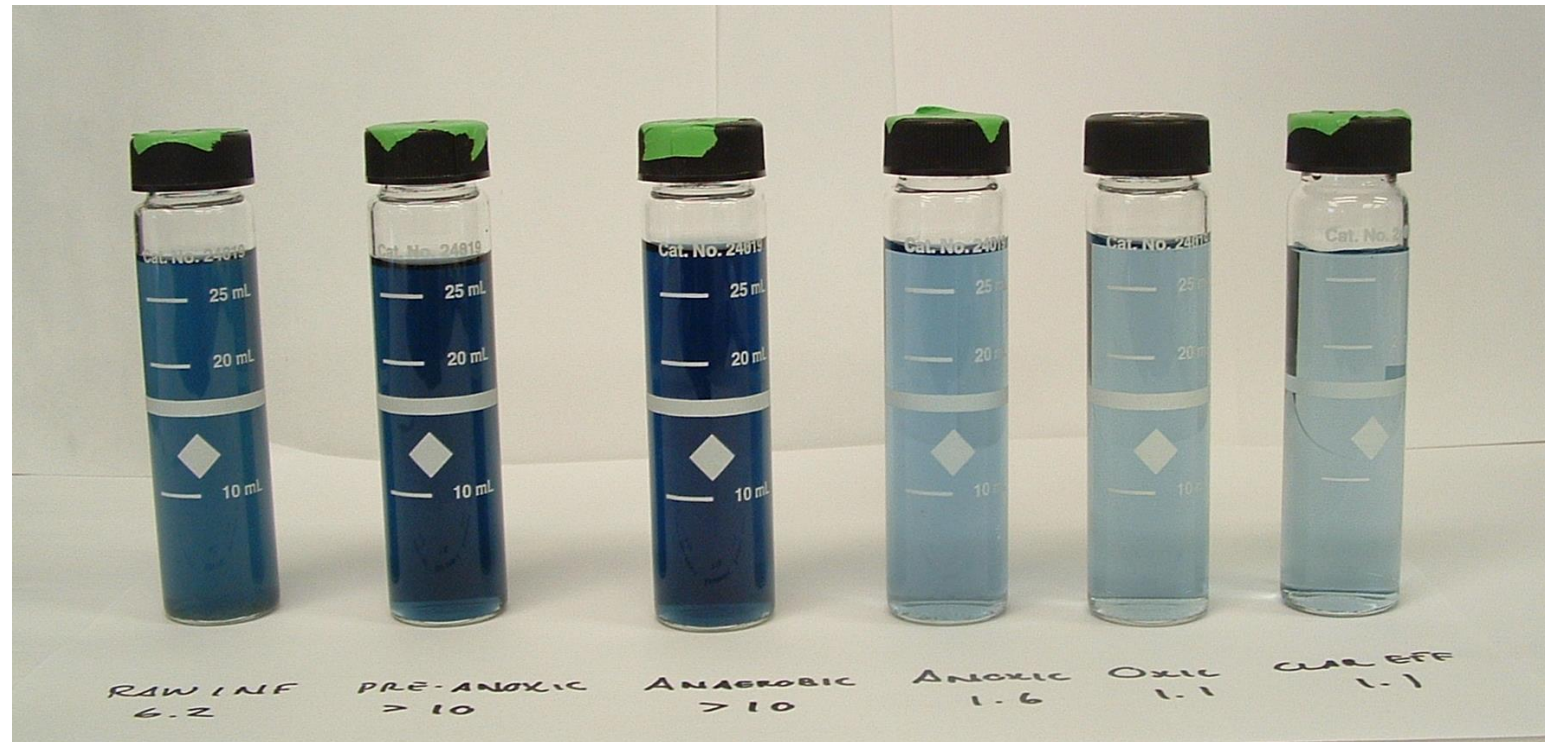
Nutrient Profiling w/ $\text{NH}_3\text{-N}$

- Follow the nitrogen



Nutrient Profiling w/PO4

- Ortho Phosphate
 - Anaerobic conditions
 - 10 minute test

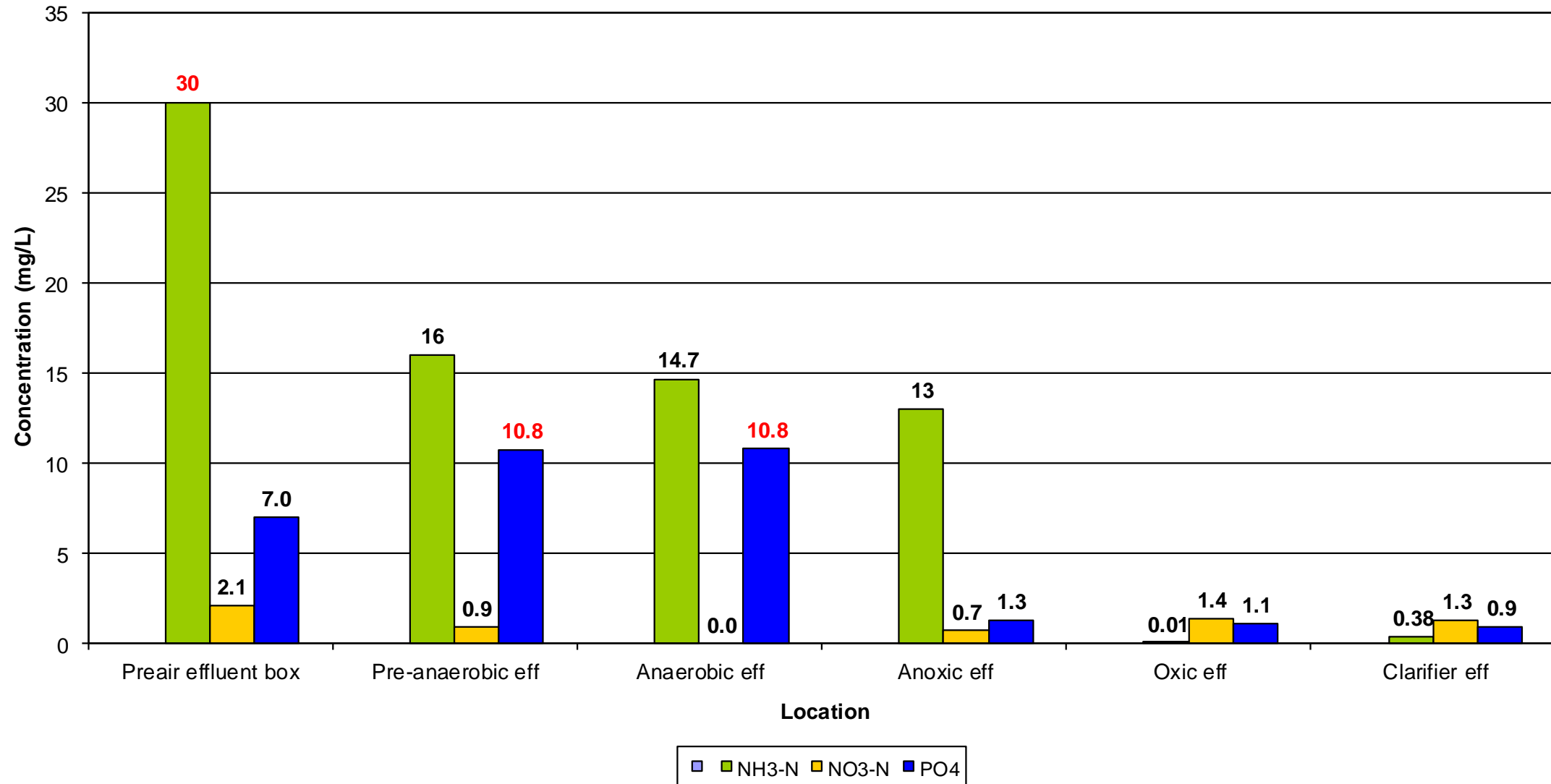


Nutrient Profiling w/ NO_3

- Nitrates
 - 5 minute test



Nutrient Profile
08/24/2004

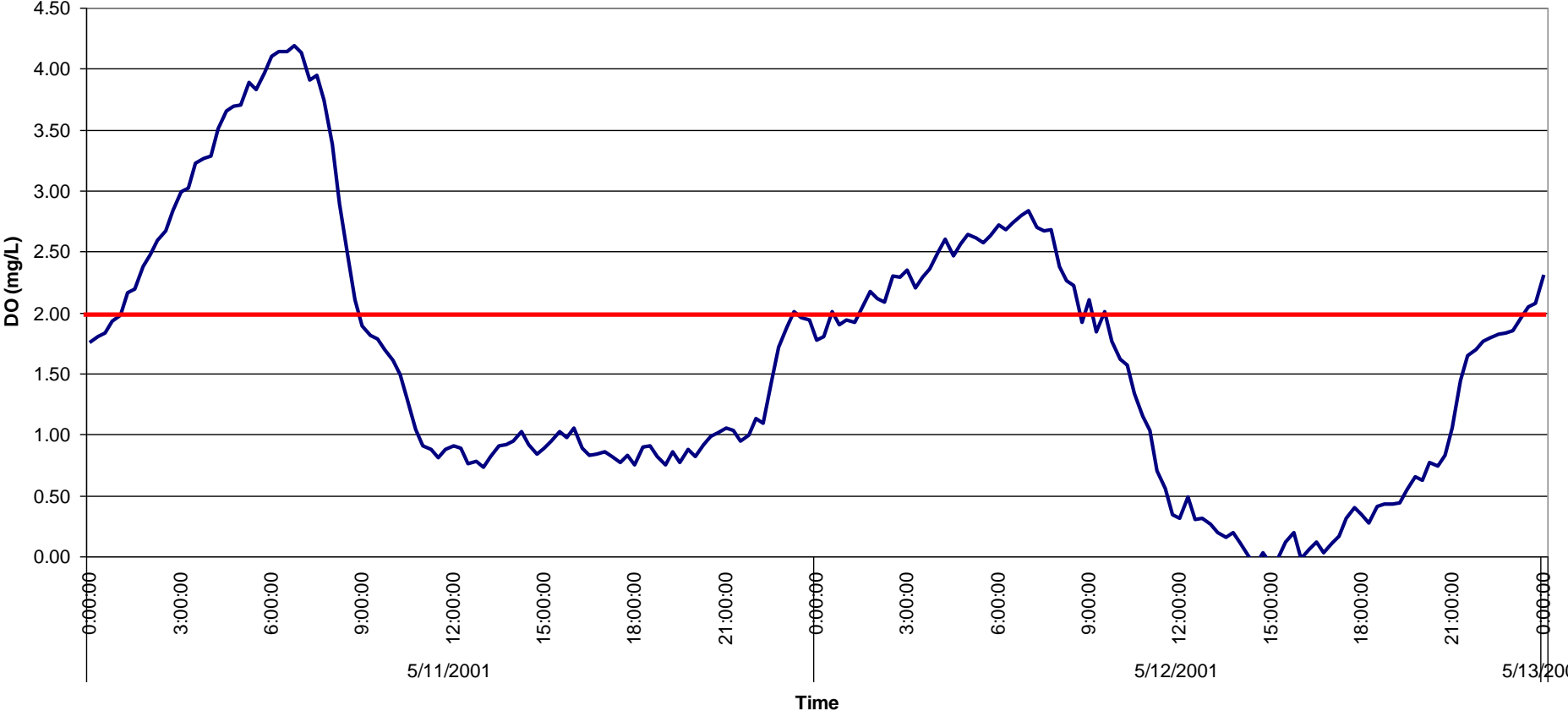


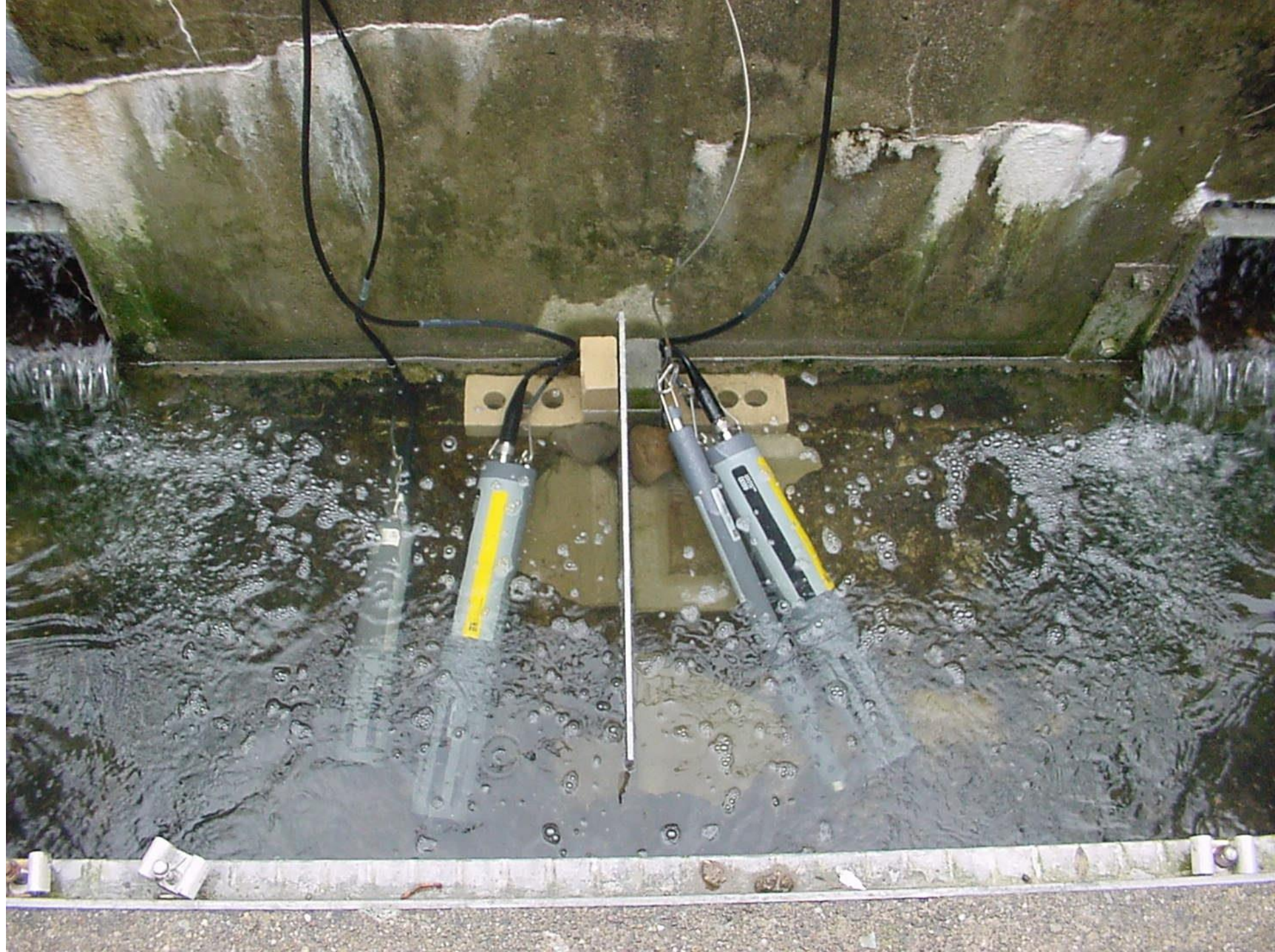
Datasondes: YSI



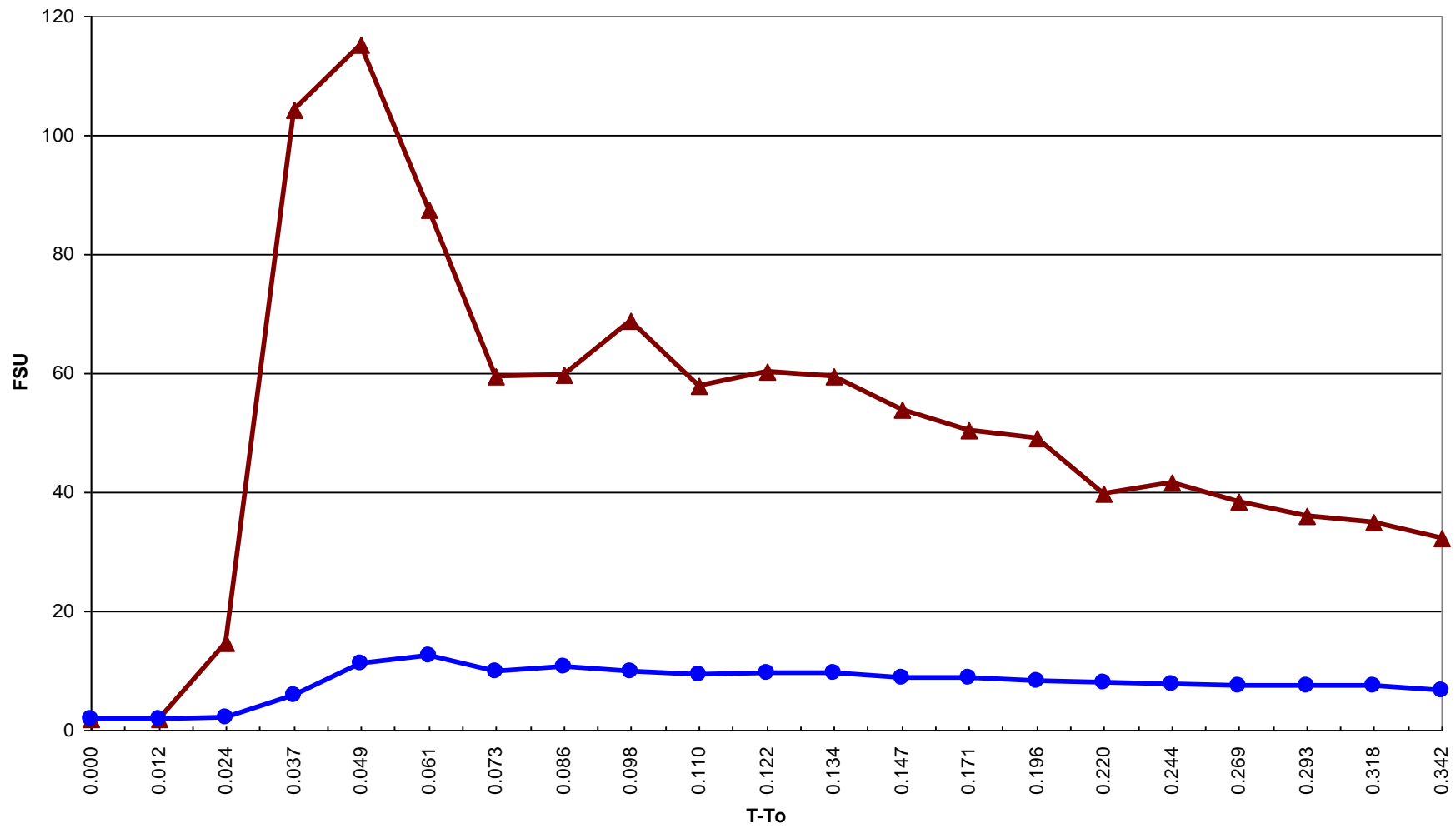


**Dissolved Oxygen Profile
Pleasant Valley Regional Sewer District**







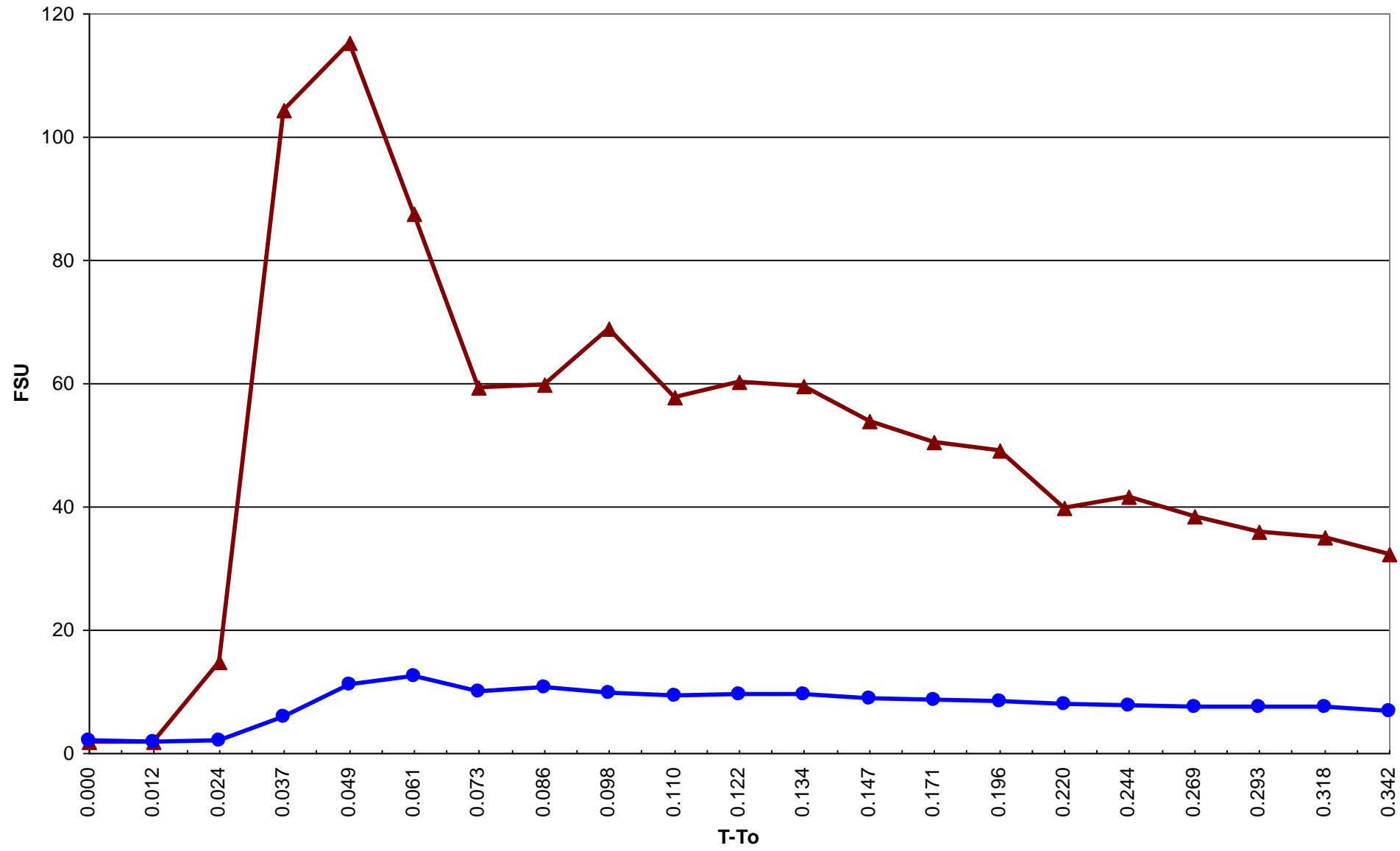


Clarifier 3 Clarifier 4

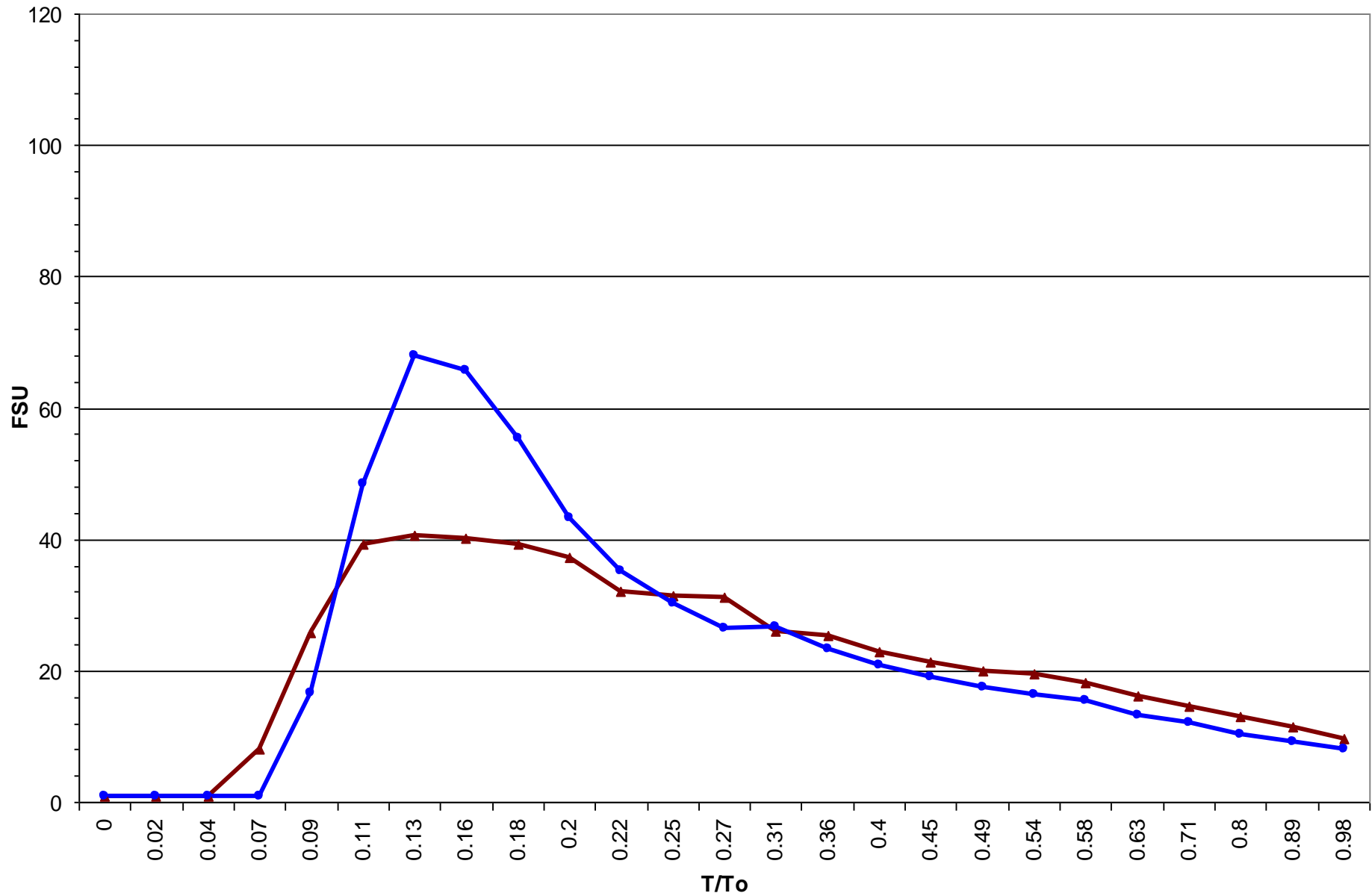








Clarifier 3 Clarifier 4

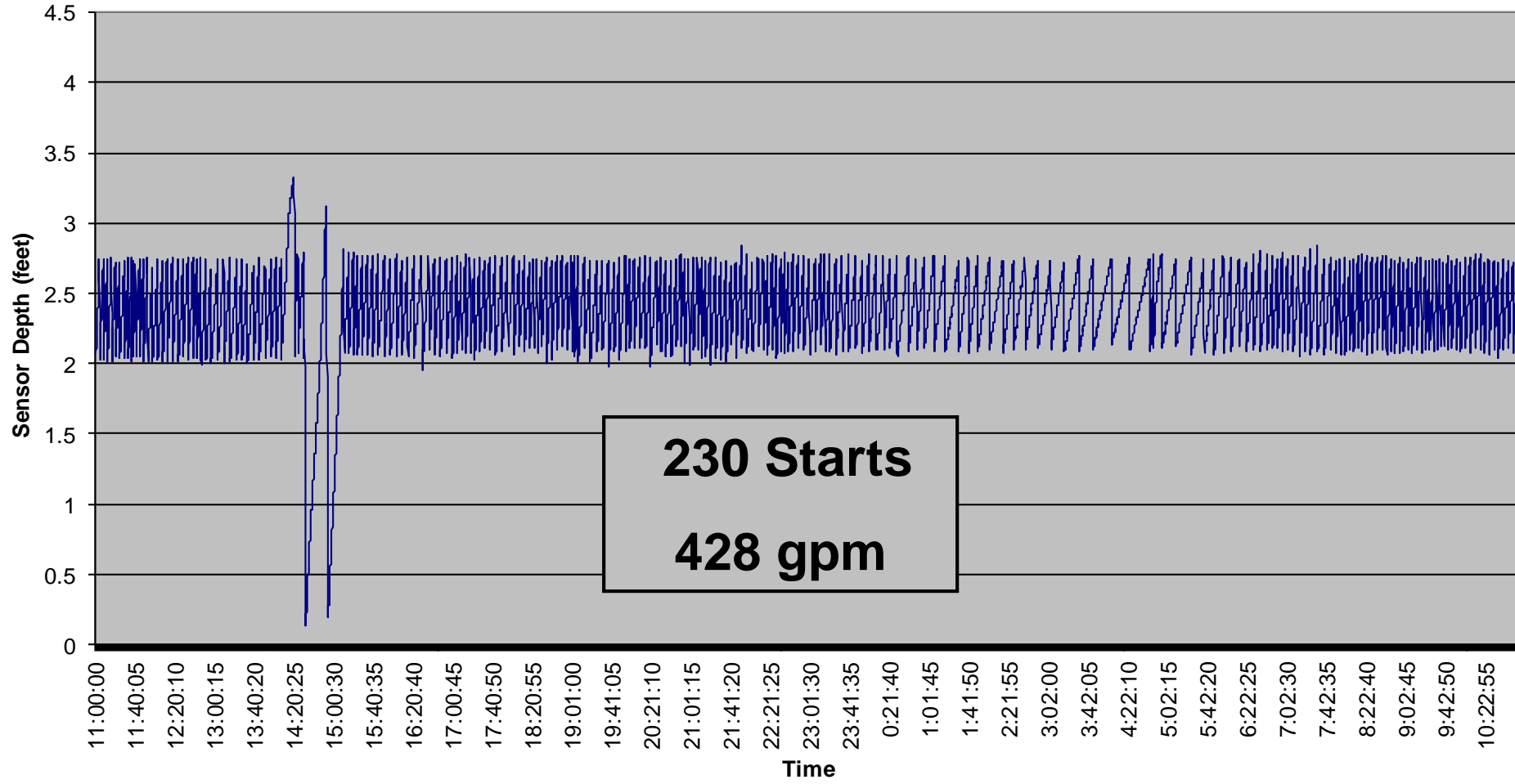


Clarifer 3 Clarifer 4

Dataloggers: Onset “HOBO”



**Influent Pump Station
Pump Analysis
24 hours**

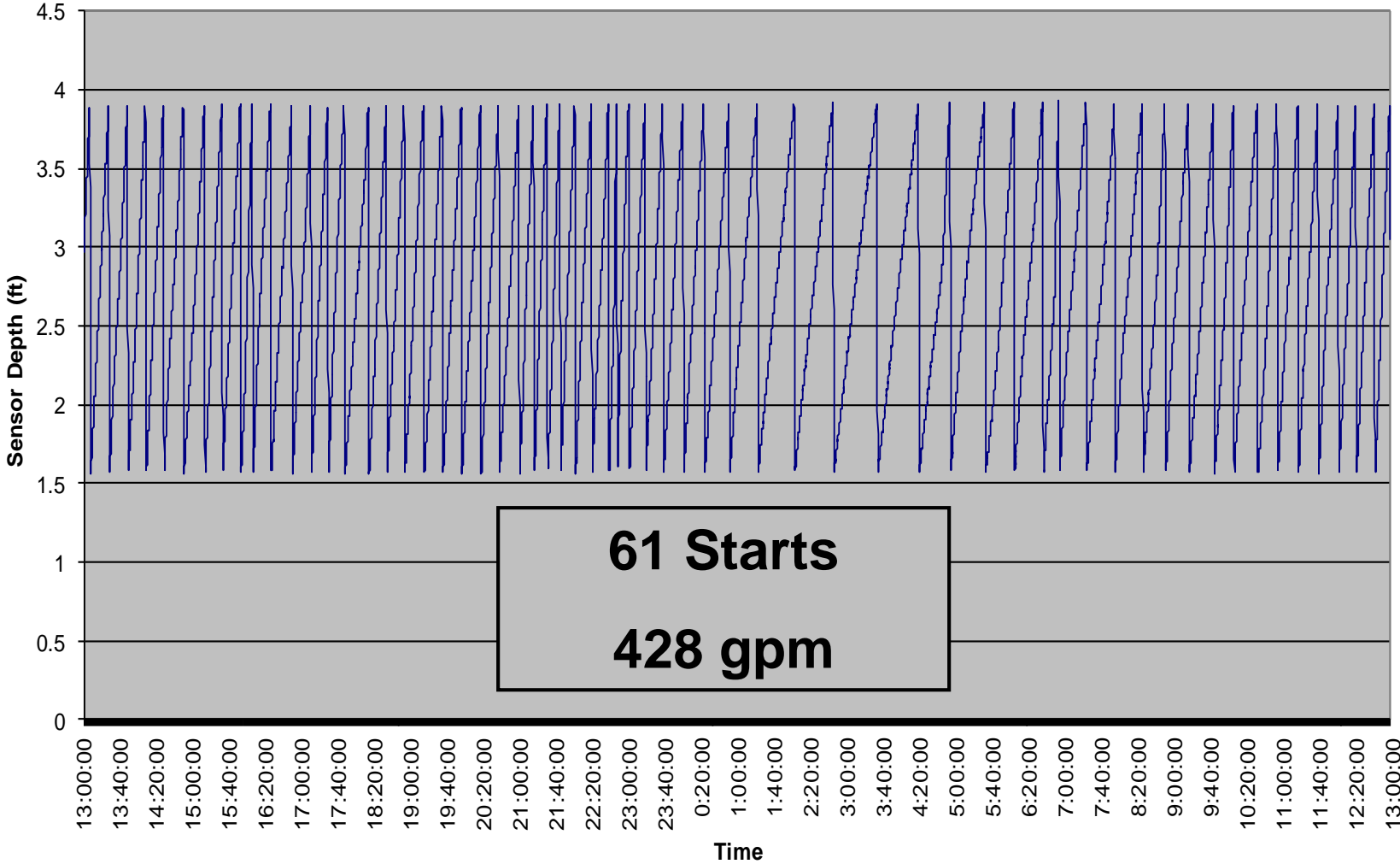


230 Starts
428 gpm

— Sensor Depth (feet)

Influent Pump Station Analysis

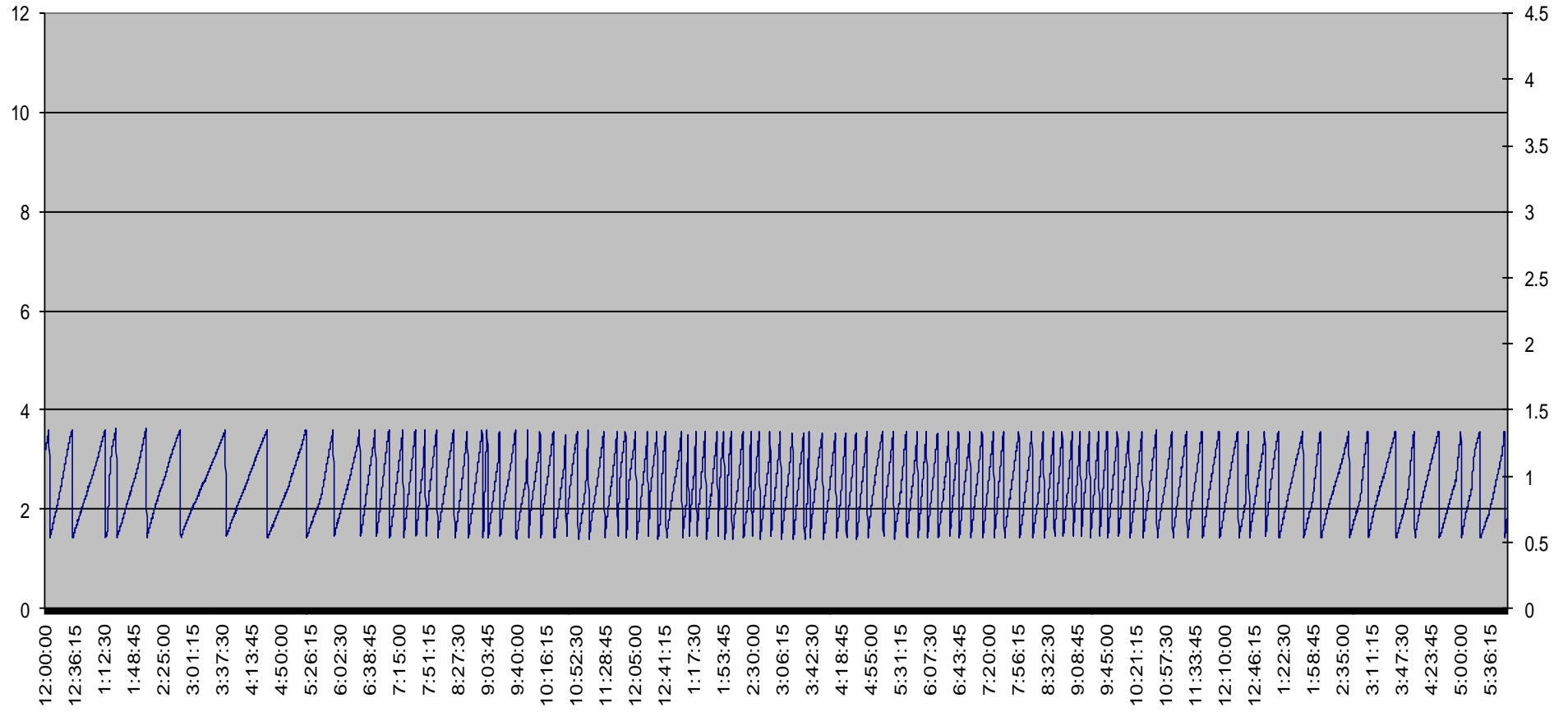
24 hours



61 Starts
428 gpm

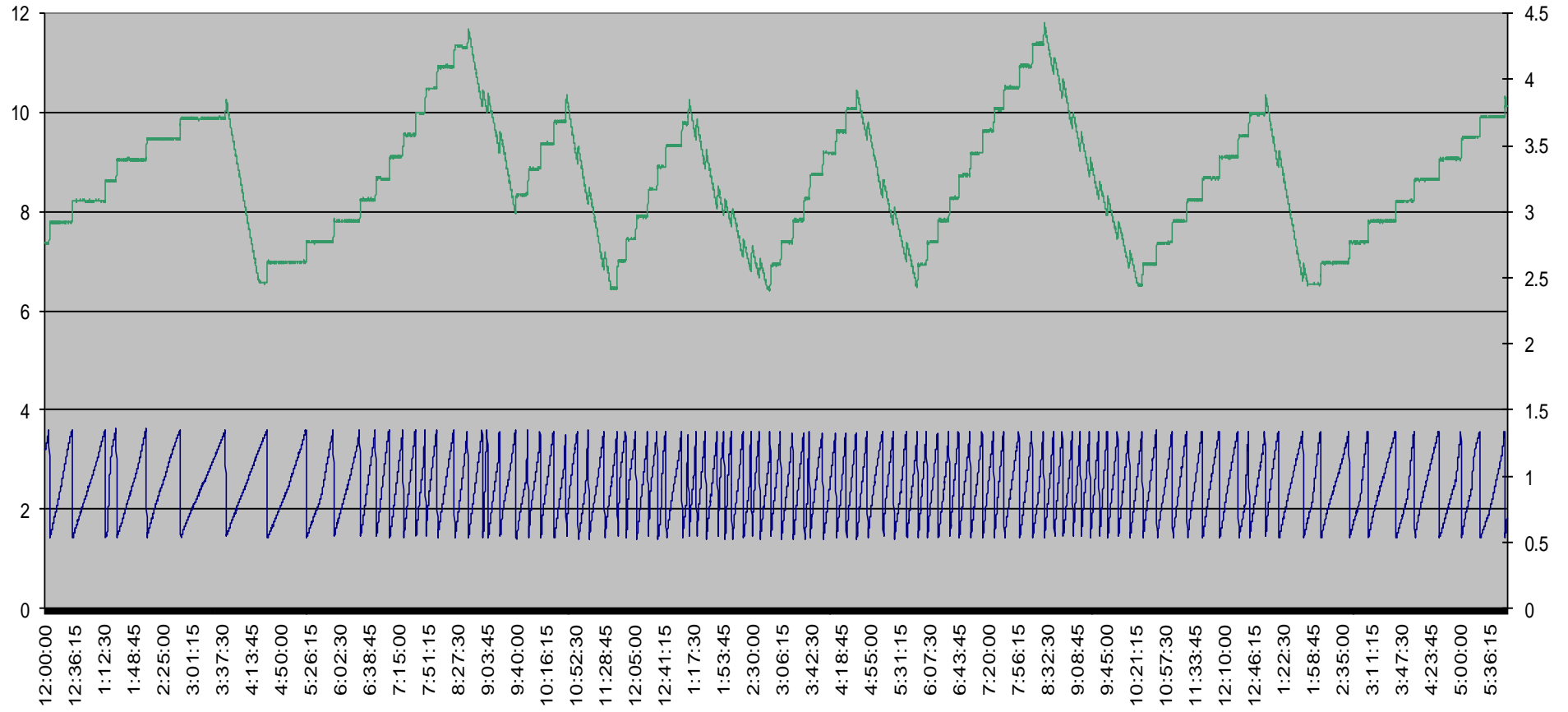
— Sensor Depth, feet

Dynamic Hydraulic Profile August 28-29, 2007



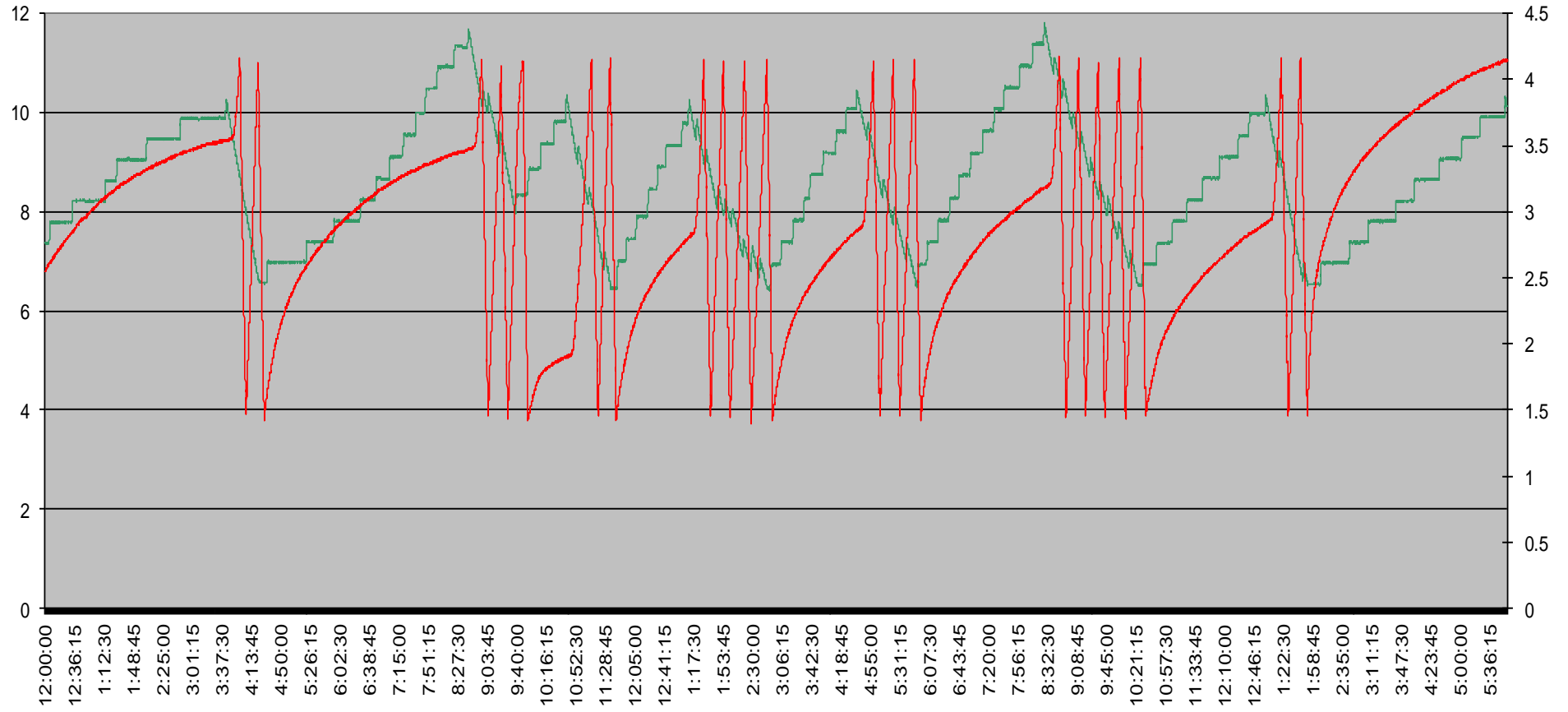
— Influent PS EQ PS Dosing Tank PS

Dynamic Hydraulic Profile August 28-29, 2007



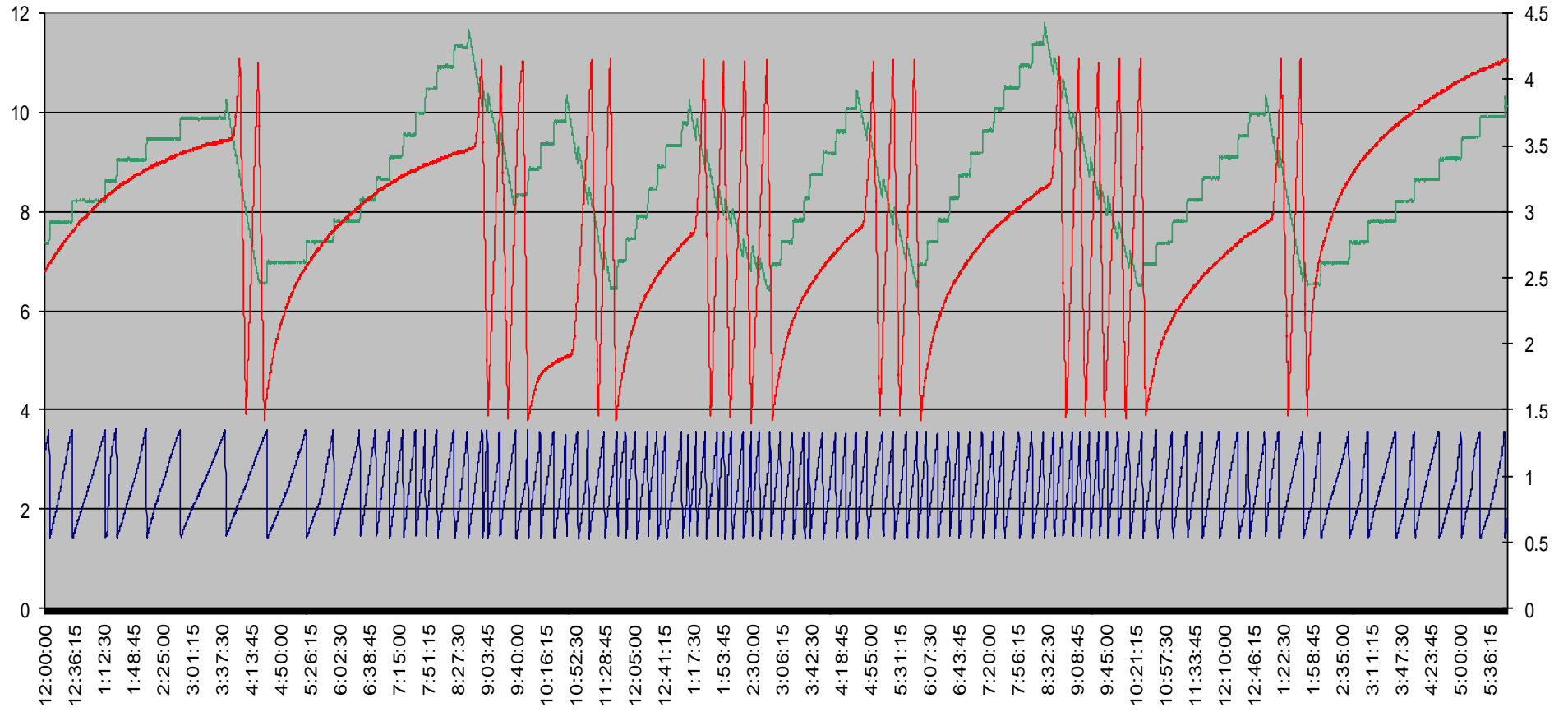
— Influent PS — EQ PS — Dosing Tank PS

Dynamic Hydraulic Profile August 28-29, 2007



Influent PS — EQ PS — Dosing Tank PS

Dynamic Hydraulic Profile August 28-29, 2007



— Influent PS — EQ PS — Dosing Tank PS



MIO/TC 2020 XT



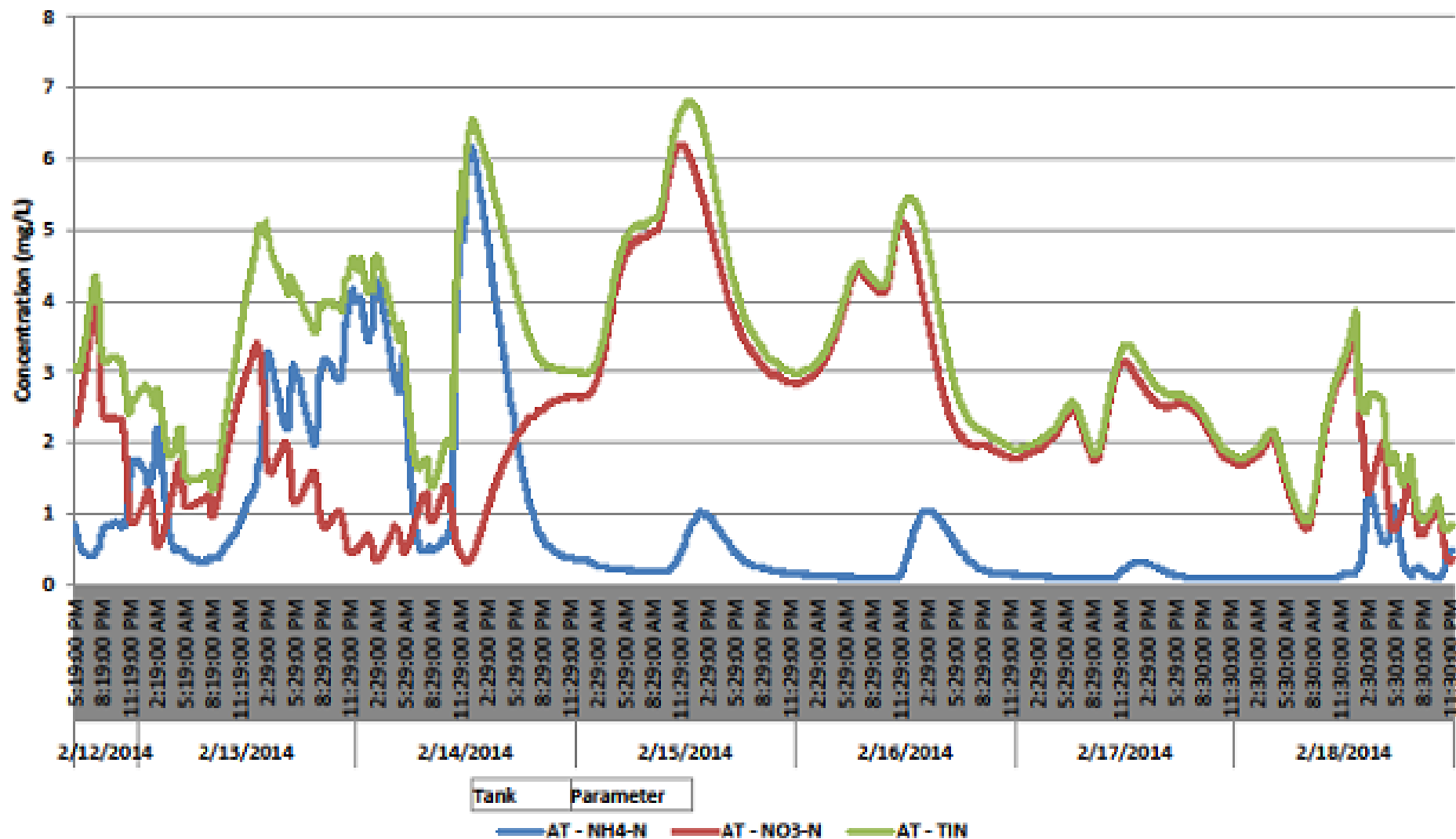
CONTROLLER 24 Apr 2014 14:29

Values: all sensors 020

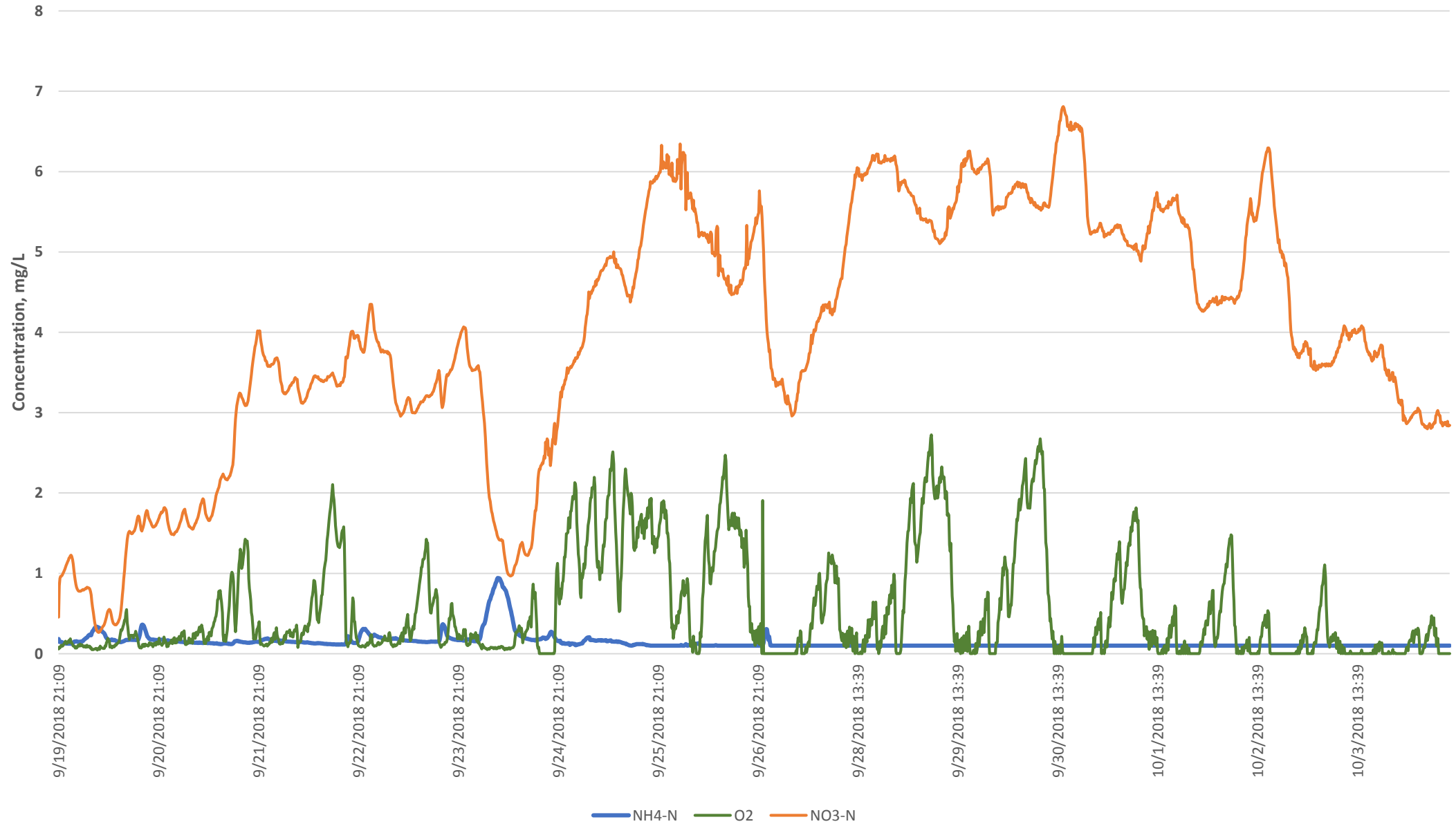
01	0.6 mg/l	O2	16.2 °C	AT DO
02	1.5 mg/l	NH4-N	16.2 °C	AT NH3
03	5.5 mg/l	NO3-N	16.2 °C	AT NO3
04	6.58	pH	16.1 °C	AT pH
05	0.1 mg/l	O2	16.0 °C	AX DO
06	6.7 mg/l	NH4-N	16.0 °C	AX NH3
07	4.0 mg/l	NO3-N	16.0 °C	AX NO3
08	6.78	pH	16.1 °C	AX pH

Next sensor , Display/Options

Scioto Reserve WWTP VARiON Data 2/12 - 2/18 2014

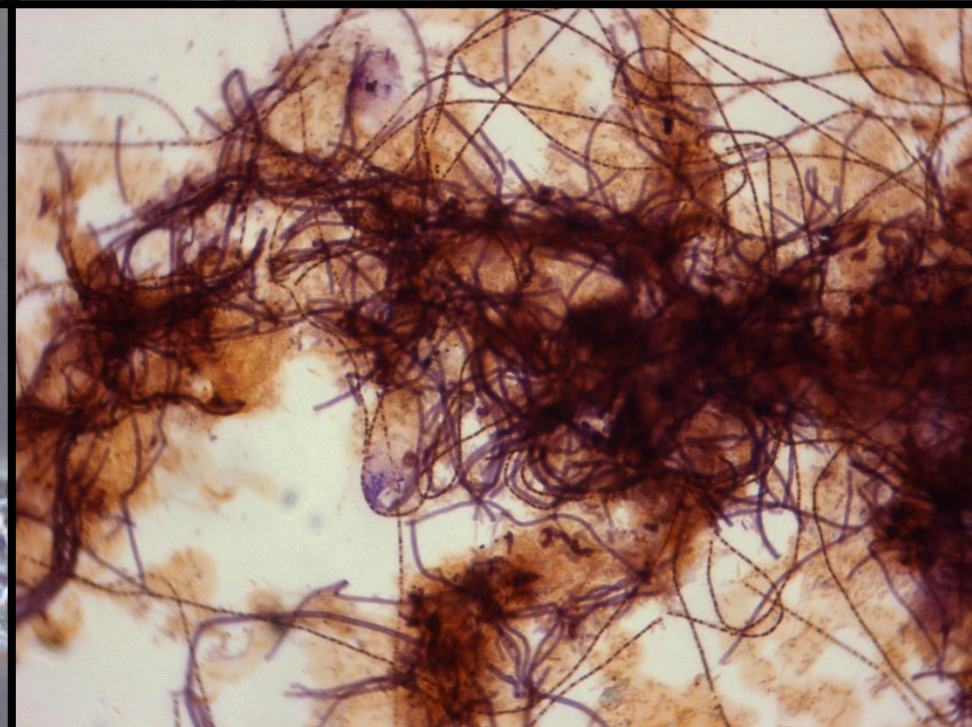
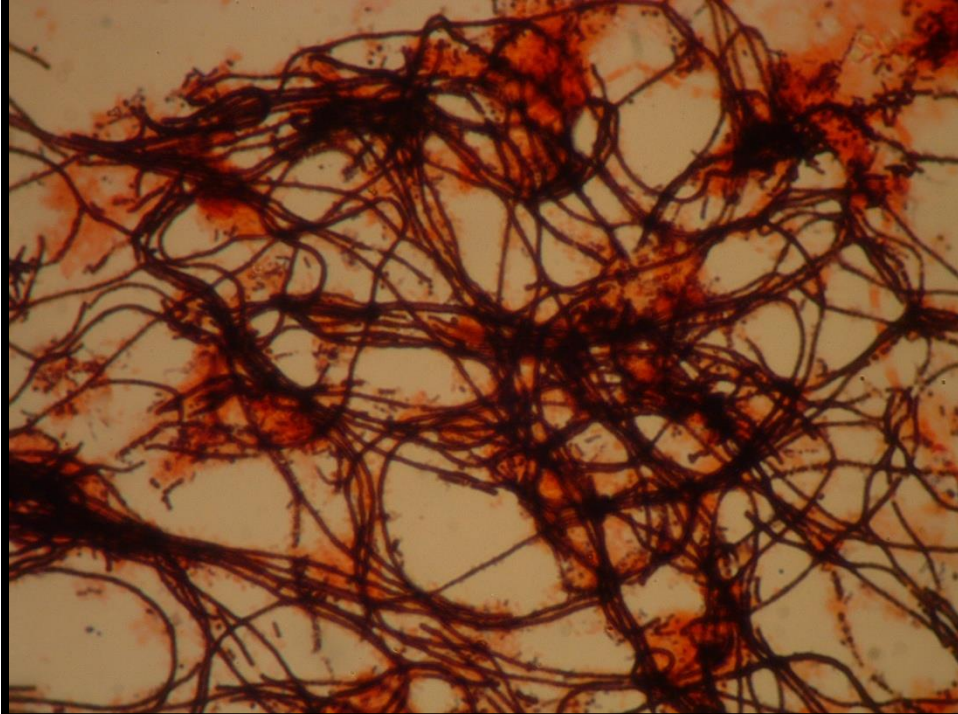


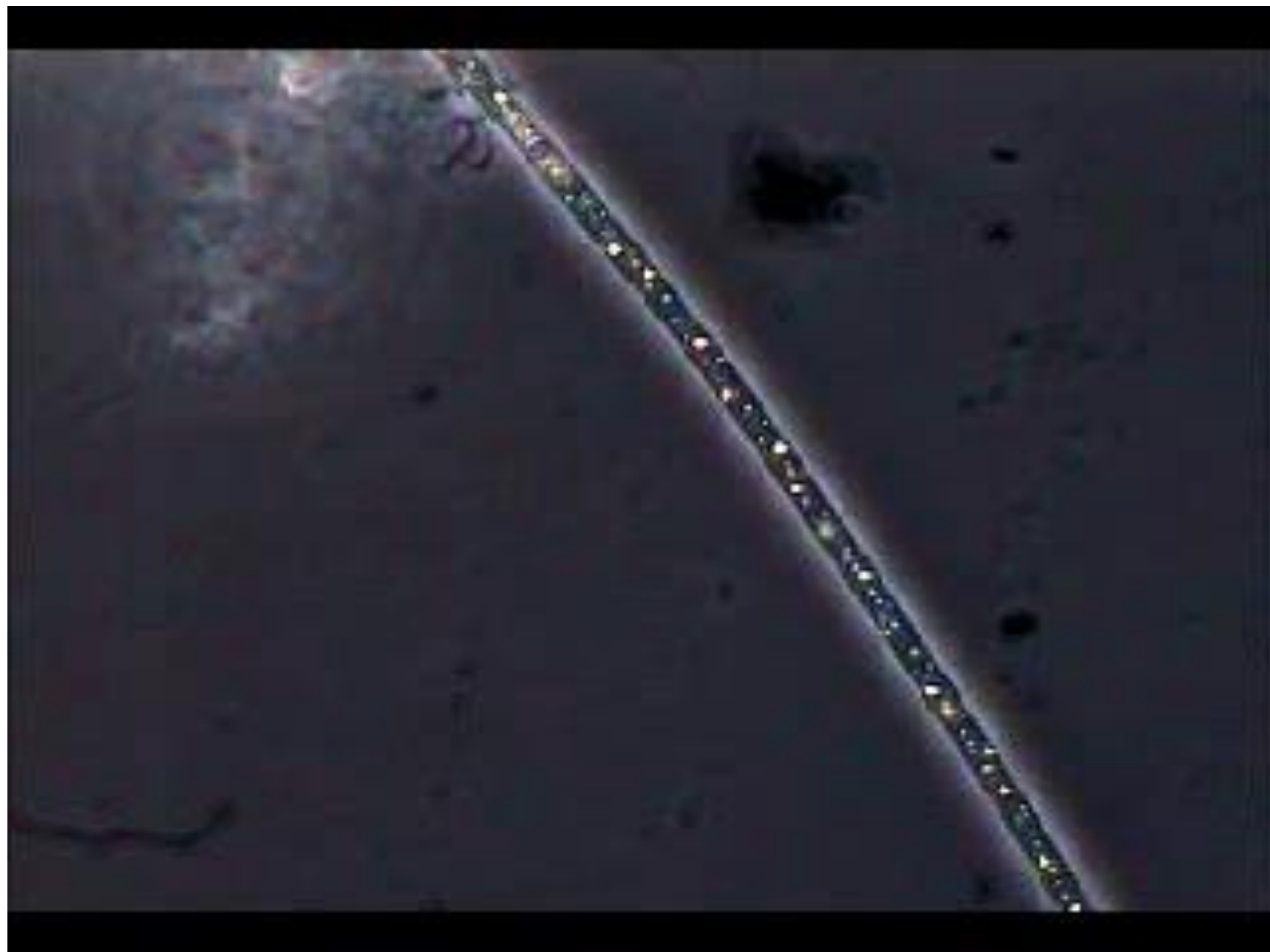
B WWTP
Oxic Tank VARiON
09/19 - 10/04, 2018

















DEFA Compliance Assistance

- Projects
 - Training for operators and health departments
 - Evaluation equipment
 - Experiments

DEFA Compliance Assistance

- Training for operators and health departments





National Conferences

* WEFTEC

* USEPA

State Conferences

* OTCO

* OWEA

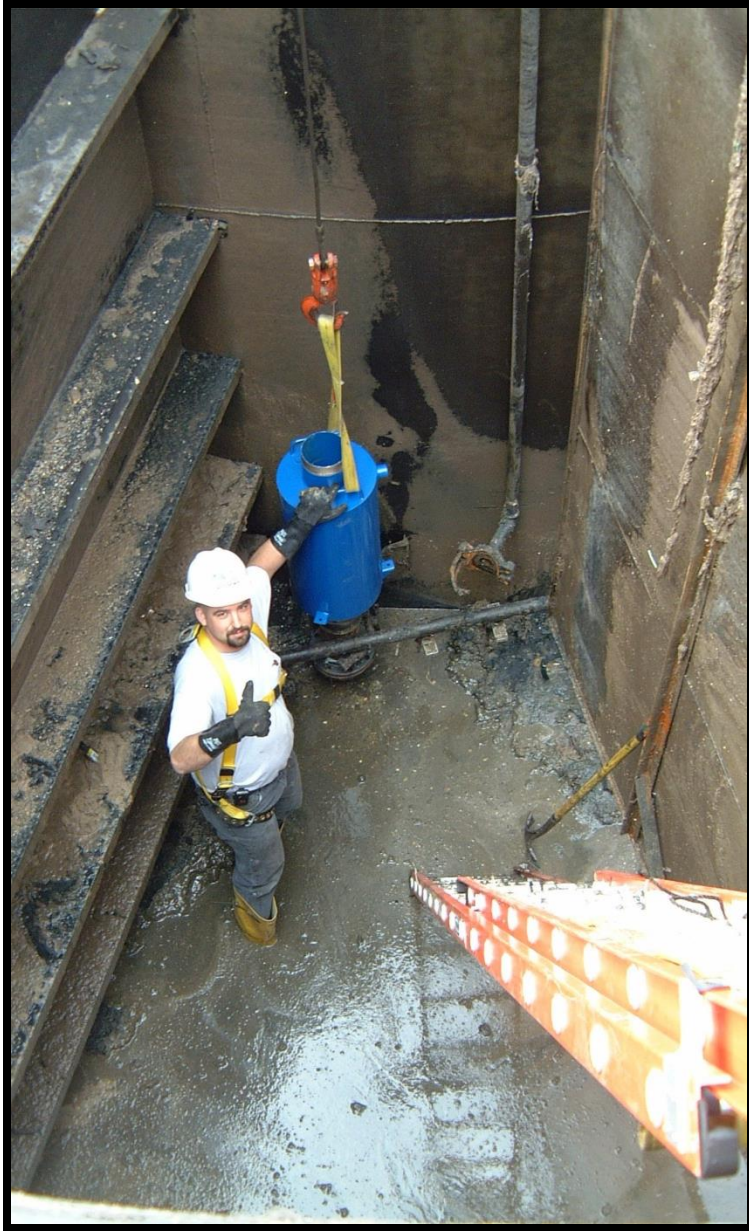
* ORWA



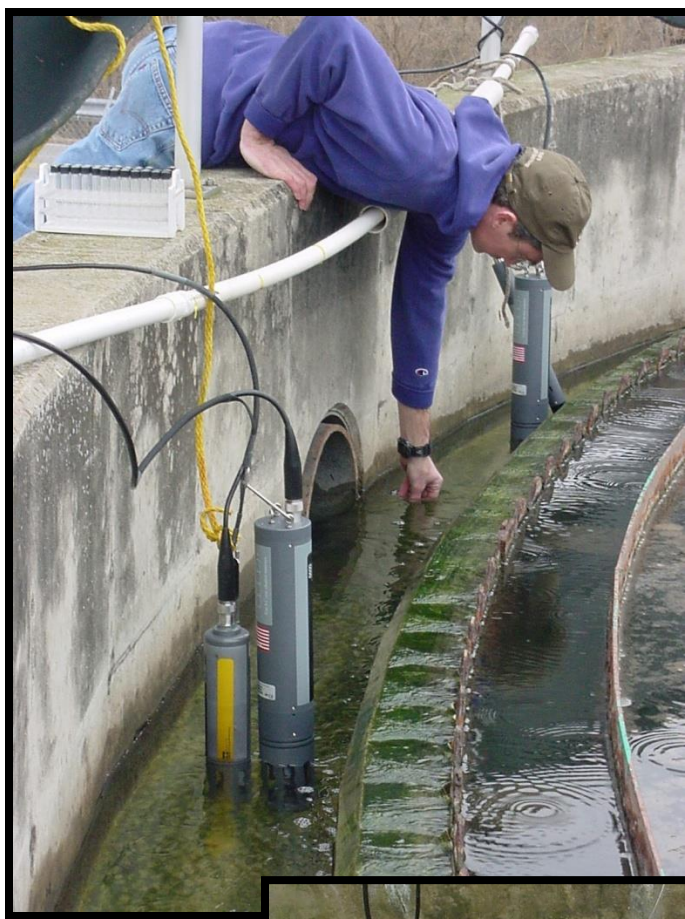


DEFA Compliance Assistance

- Projects
 - Equipment Evaluation
 - Geyser Pump
 - Solar Bee Mixer
 - Rhodamine probes







DEFA Compliance Assistance

- Projects
 - Experiments
 - Cold weather nitrification at lagoons
 - Infiltration / Inflow tools
 - Clarifier studies

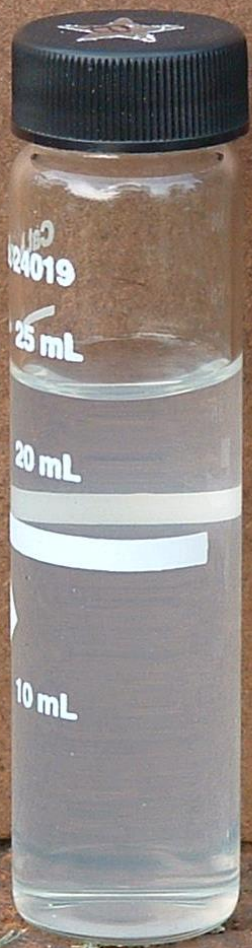




DEFA Compliance Assistance

- Middle Point
 - New collection system
 - Leaked from day one
 - Two consultants, three evaluations
 - Two lawsuits pending from homeowners

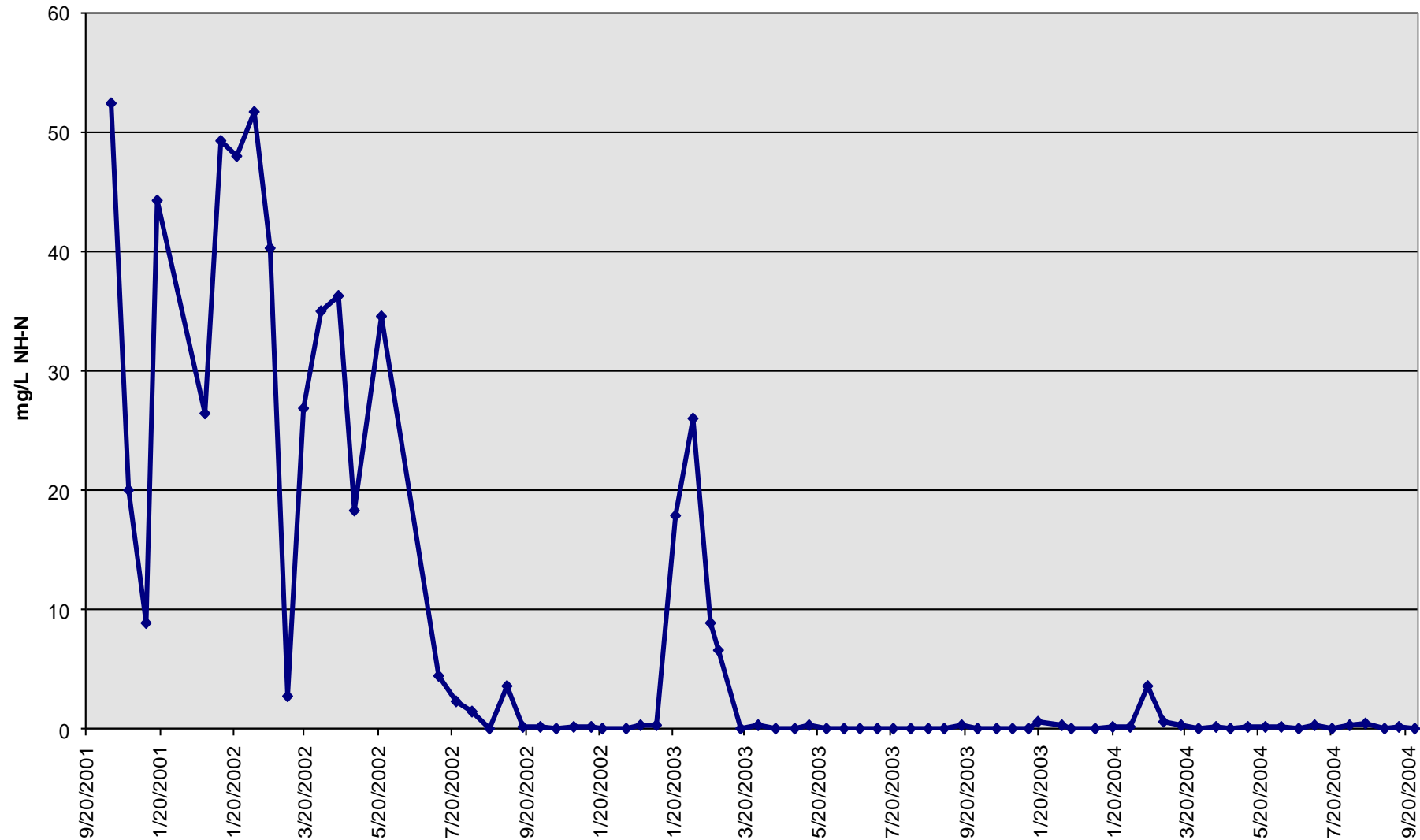




DEFA Compliance Assistance

- SBR System
 - New WWTP and Collection System
 - One-year certification period nearing the end
 - Out of compliance (high effluent ammonia)
 - Loan default?





DEFA Compliance Assistance



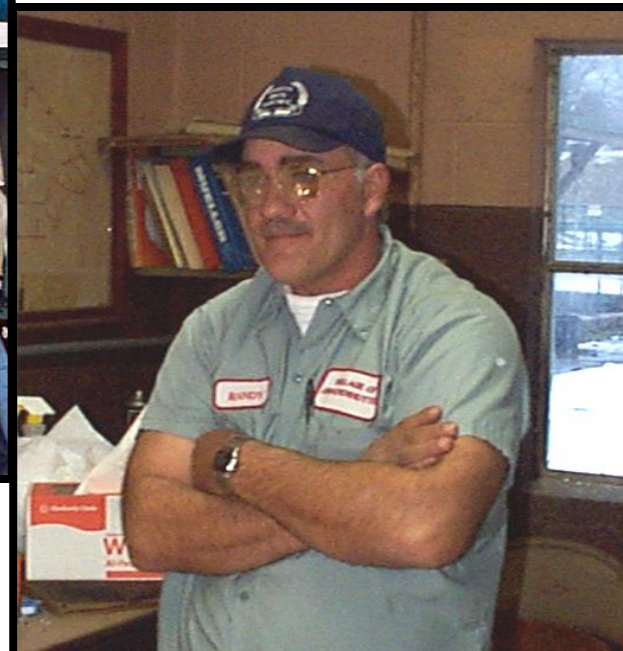
Pickaway Correctional Institution

DEFA Compliance Assistance

- Pickway Correctional Institution
 - Discharge to Darby Creek
 - Major solids loss
 - Consultant proposal est. 2-3 years to implement
 - State Representative directly involved

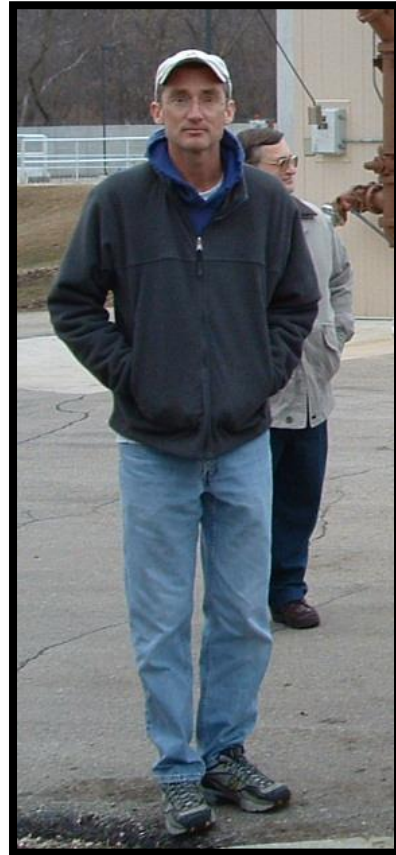
DEFA Compliance Assistance

Welcome to our world.



DEFA Compliance Assistance

(So that's what these guys do.)



QUESTIONS?

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