

# FLOW MONITORING – LOST DATA

CSO Sewer Overflow & Wet Weather Issues  
2018 Specialty Conference & Workshop Series  
Portland, Maine  
October 30th, 2018

# THE STORY

**Dave Brown – Corporate Accounts Manager, Hach Flow**

20+ Year of Flow Monitoring Experience

Civil Engineer from Ohio University

WEFTEC 2018 Golden Manhole Award

## PRESENTATION FOCUSED ON TRUE STORIES

# LOST DATA – 90% UPTIME IS THE INDUSTRY STANDARD



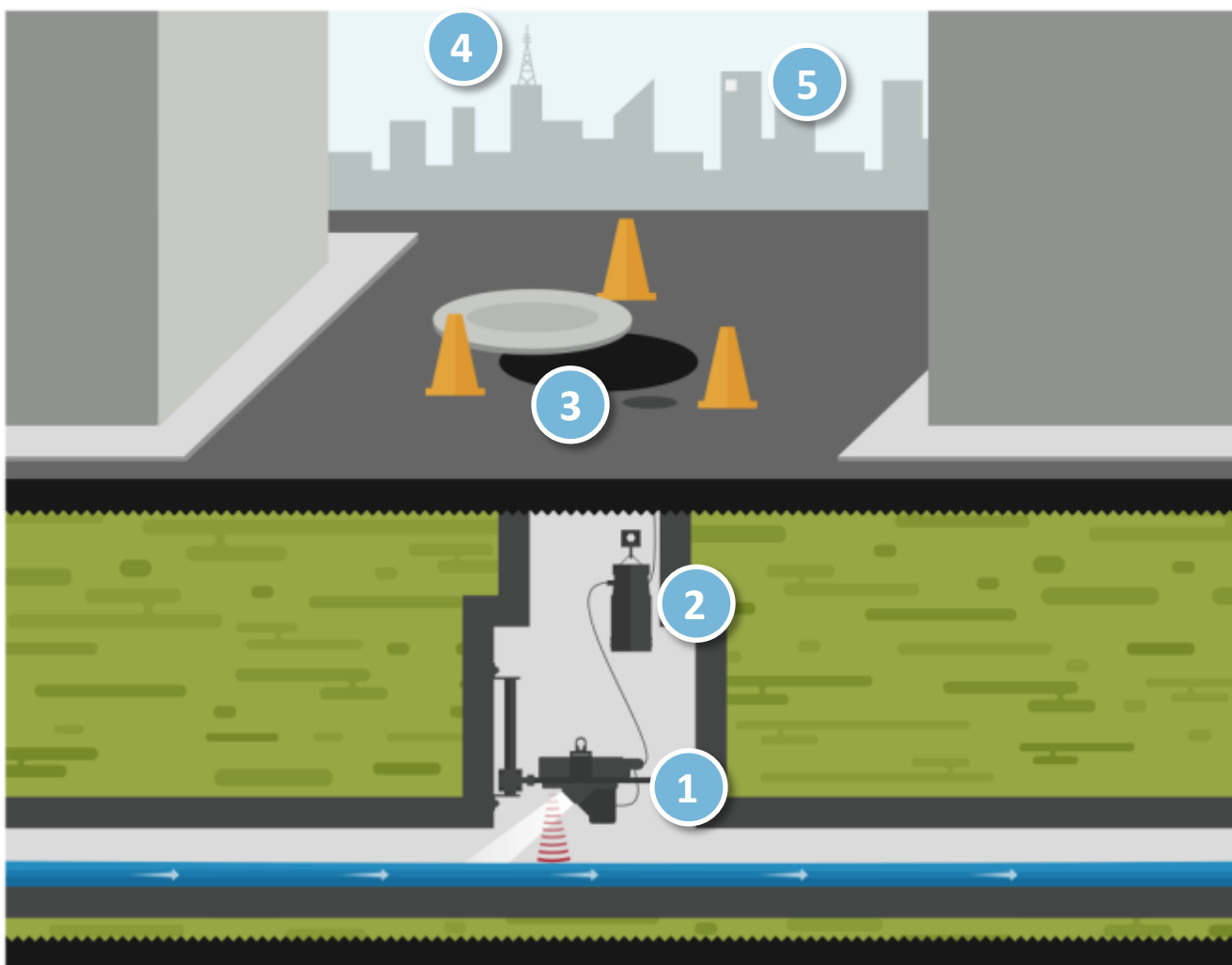
## TIP #1 – FLOW METER INSTALLATION

Installation, Installation, Installation.

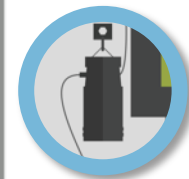
GOOD DATA COMES FROM GREAT  
INSTALLATIONS

**DO SITE RECONNAISSANCE?**  
**REVIEW THE HYDRAULICS?**  
**CHOOSE THE RIGHT SENSOR?**

# SITE RECONNAISSANCE?



What sensor  
acquires data



Wireless-enabled  
logger stores data



Antenna transmits  
data

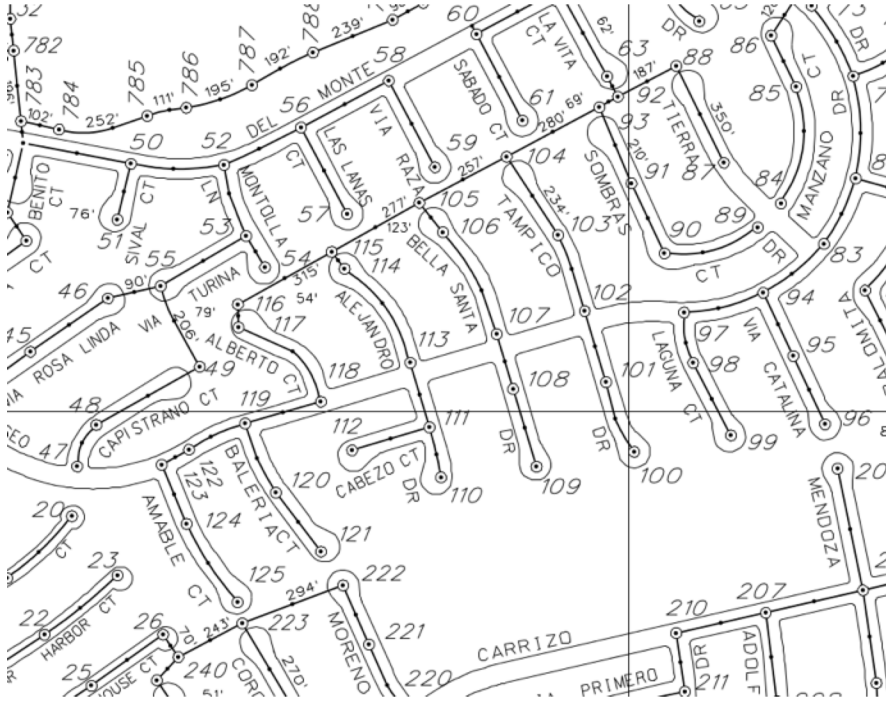


Cellular service  
directs data to a  
hosting server



Data is accessible  
off the server from  
anywhere via the  
web

# METER LOCATION



# GEORGIA PROJECT - KUDZU



# VIRGINIA PROJECT OR SEWER SUBMARINE?

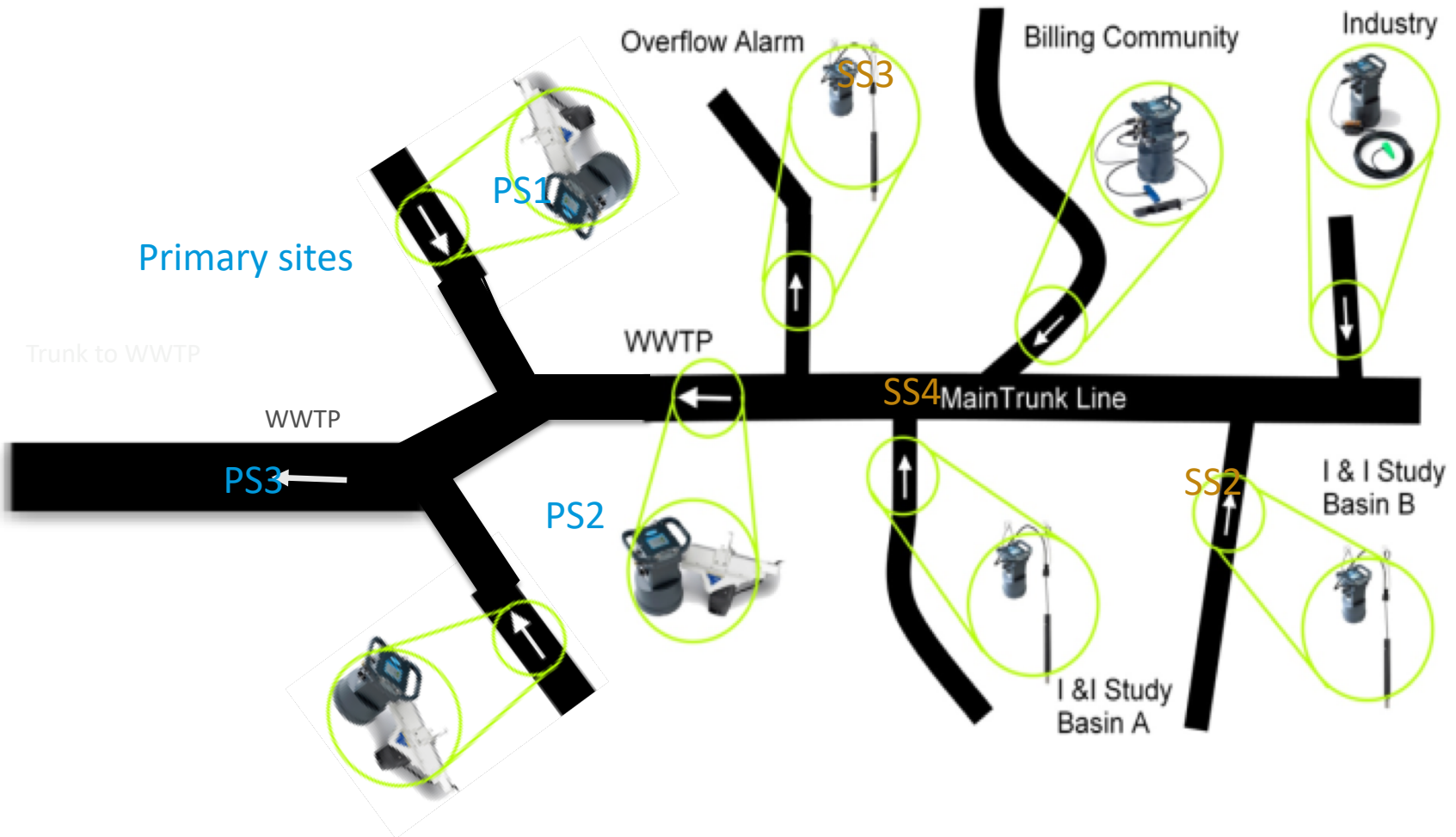


# VIRGINIA PROJECT



**DO SITE RECONNAISSANCE?**  
**REVIEW THE HYDRAULICS?**  
**CHOOSE THE RIGHT SENSOR?**

# REVIEW THE NETWORK AS A WHOLE (FLOW BALANCE)



# GOOD HYDRAULICS – LAMINAR FLOW???



# INSIDE DROP MANHOLE OR LOW FLOW SITUATION?



# NO DEFINED CHANNEL? HUH?



# DEFINED CHANNEL



# MADE A CHANNEL...



# LOOK HOW CLEAN THIS SITE IS?



# MODIFIED BRACKET ASSEMBLY



# DRAW STRAWS IN OHIO



IGMA

Be Right™

## MAP SAYS 8" PIPE?



# ANTENNA OPTIONS: MANHOLE LID ANTENNA



Advantage: Ability to communicate in a busy street

# ANTENNA OPTIONS: BURIAL ANTENNA – SLANG “HOCKEY-PUCK”



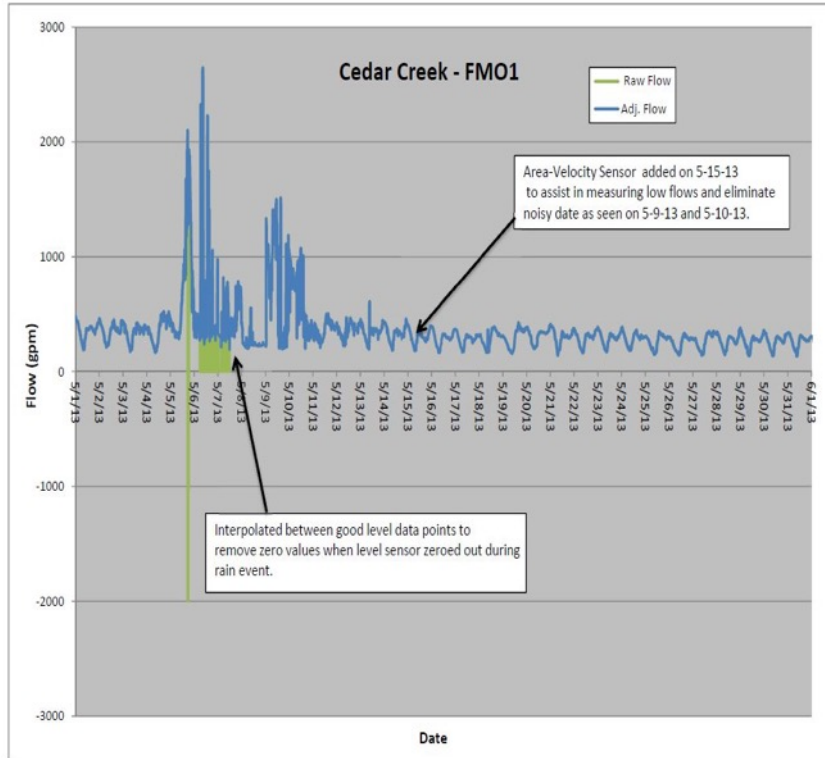
Advantage: Hide the Antenna

# ANTENNA OPTIONS: MINI-WING TIP



Advantages : Extend to a pole and inexpensive to replace

## TIP #2 – PREPARE FOR MAINTENANCE



- Alarms
  - Low Depth
  - Low Battery Voltage
  - High Depth
  - Overflow

## ANOTHER, GEORGIA PROJECT – WIRELESS DATA

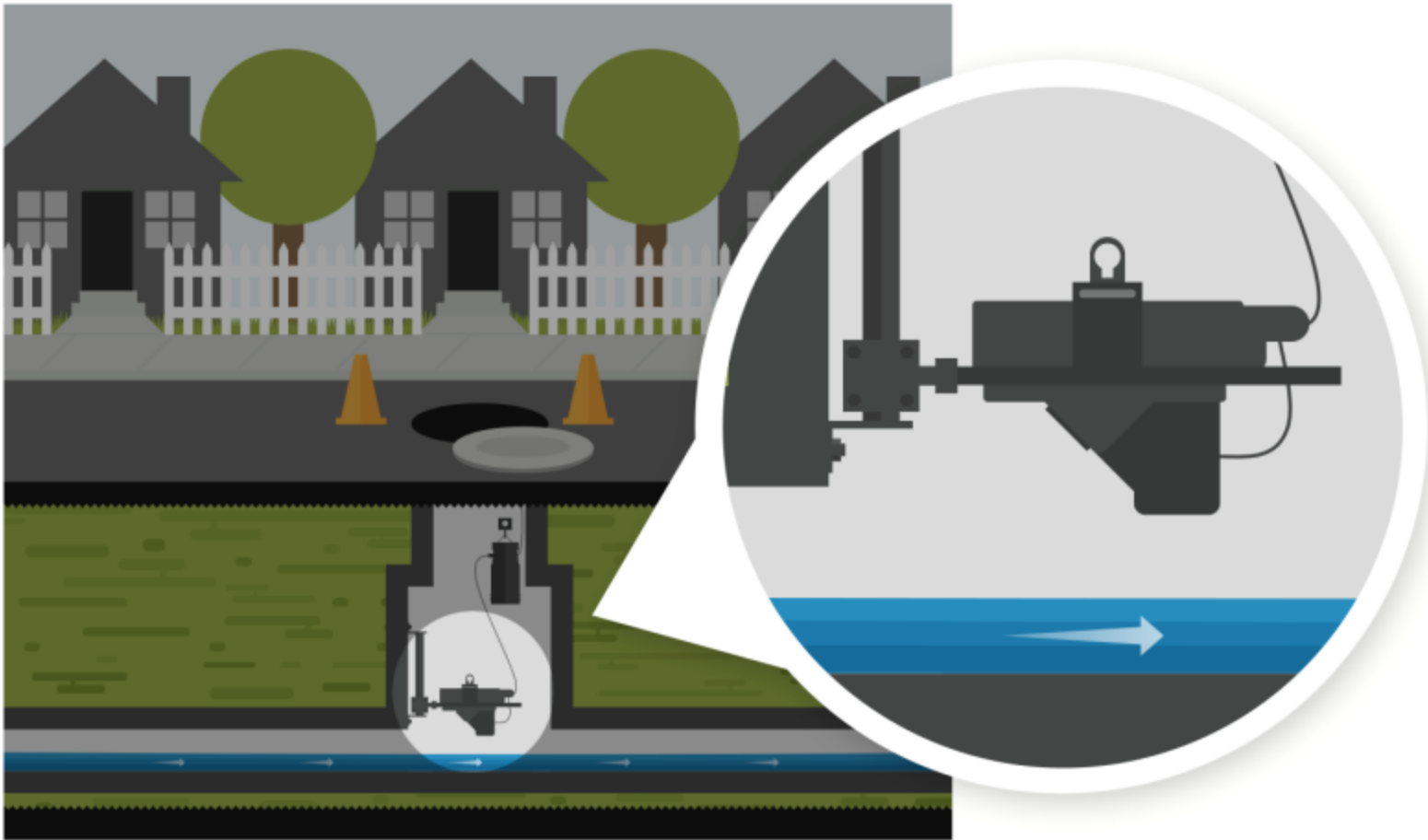


# HACH FLOW LOGGER

- Wireless Option
  - Integrated, reliable cellular modem
- Battery Maintenance + 6V Lantern
- AGAIN USE ALARMS



# ABOVE THE FLOW



The Sensor is installed ABOVE the flow, greatly reducing the likelihood of sensor “fouling” and resulting lost or inaccurate data.

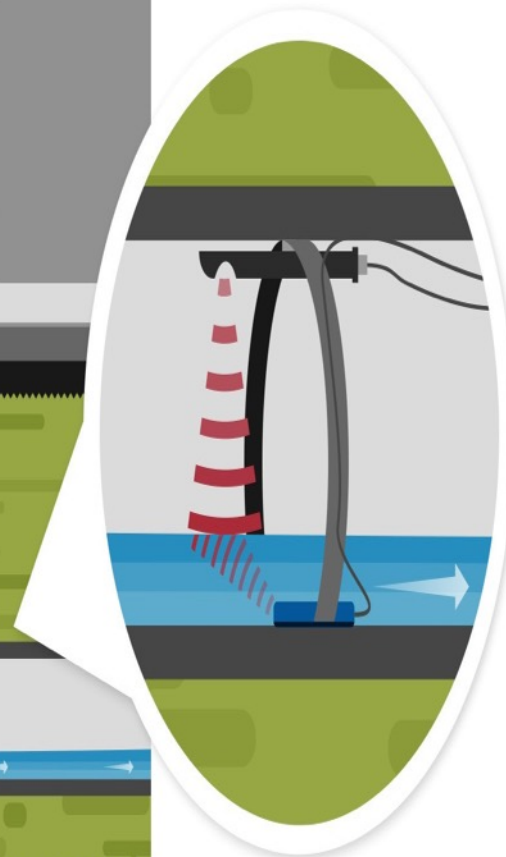
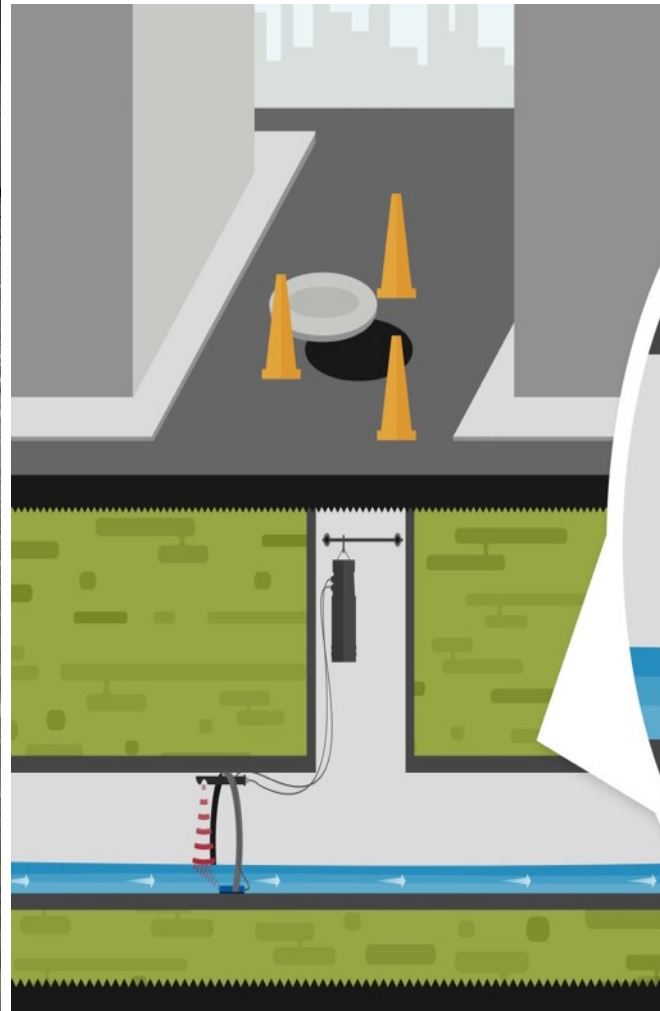
# NO WAY THE SITE SURCHARGED

## Gulfport, Mississippi

- Small Rain Event
- High Level Alarm Sent
- Site Surcharged
- Site Back to Normal?



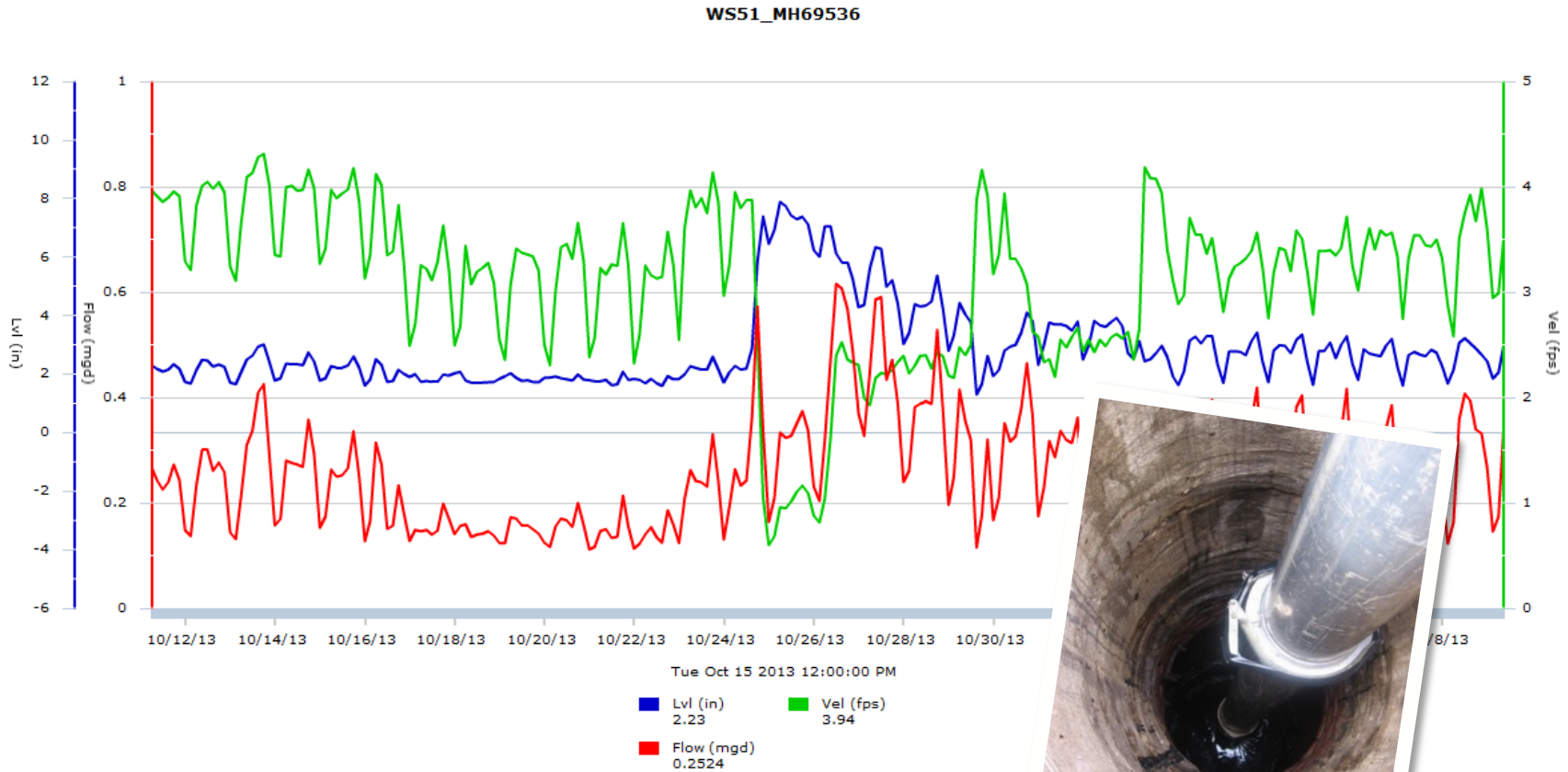
# WETTED SENSOR IN THE FLOW



## ORDER A FEW SPARE SENSORS?



# TEXAS : TIME TO CLEAN THE LINE?!?



# DEBRIS: THE ENEMY OF SUBMERGED MONITORING

## Southeast, Ohio

- Submerged AV sensors
- High velocity problems
- Fouling led to lost data
- Switched to Non-contact meter



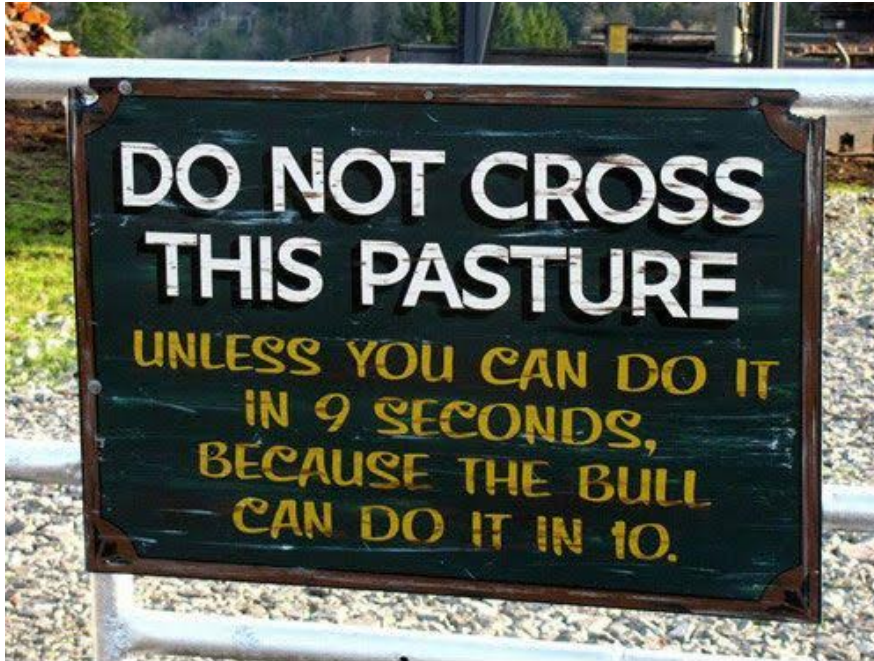
# LEVEL-ALARMING: YOUR FIRST LINE OF DEFENSE

## Arkansas – June 20, 2013

- Hawkins Weir, Site 10
- Lift station lost a leg on its 3-phase power, began to back up
- Received text from flow meter at 6a with level alarm
- Crew was dispatched immediately



# TAKE GOOD NOTES!



more awesome pictures at [THEMETAPICTURE.COM](http://THEMETAPICTURE.COM)



## TIP #3 - RAIN GAUGING

- Wet Weather Rainfall Data to determine Inflow & Infiltration
  - Pinpoint I&I trouble spots
- Built to National Weather Service standards
- Accurately measures rainfall in 0.01" increments
- Simple installation
  - Built-in bubble level
  - Spring-loaded base plate
- Stainless steel debris screen reduces maintenance visits



Rain Gauge Sensor

# RAIN GAUGE #1 - NEAR WEST VA.

Take a ladder!

Takes about 4 hours to get to the site!

Oops, where is Lowe's?



# RAIN GAUGE #2 HAS MINIMAL RAINFALL DATA

Install more than 1 Rain Gauge on an I/I Project

The logger inside the Tipping bucket



# RAIN GAUGE #3 – NO, DON'T INSTALL IT AT THE SCHOOL

Hit by a  
Mower  
Oops!



# RAIN GAUGE #4 BIG RAIN LAST NIGHT, NO RAINFALL DATA?!!



# YEP, I THINK I SEE THE PROBLEM NOW!

Time to extend the metering period!



# QUESTIONS?

## FLOW MONITORING – LOST DATA

**TIP #1 - FLOW METER INSTALLATION**

**TIP #2 - PREPARE FOR MAINTENANCE**

**TIP #3 - RAIN GAUGING (NO SCHOOLS)**

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