Metropolitan Water District of Southern California

UPDATE RE DELTA MEASUREMENT EXPERIMENT

OCTOBER 24, 2018

DRAFT – Preliminary Data

Experiment Update

Background

Summary of Results (to date)

- Equipment Performance
- Time of Use
- Theoretical Calculations

Strict Compliance

Recommendations

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Background

EXPERIMENT GOALS

Test different types/brands/combinations of meters and data loggers

Test equipment installation considerations

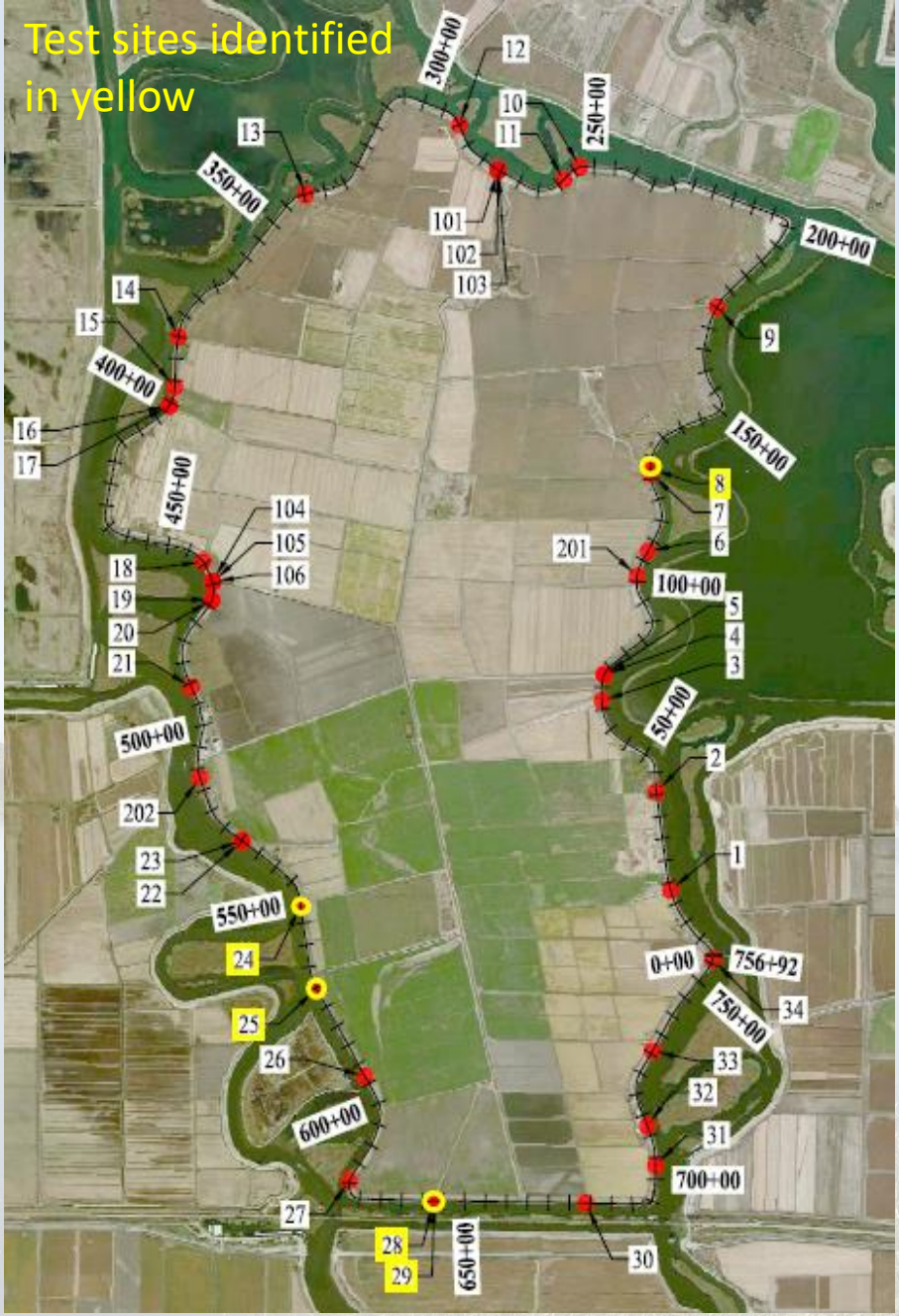
Test telemetry services

Evaluate theoretical calculations of diversions based on head differential and time of use

BACON ISLAND TEST SITES

Siphon No.	Meter	Data logger	Telemetry	Water Level	Location
8	Mace insertion ultrasonic	Mace	Mace	Mark 1 Ultrasonic	Discharge
24	Seametrics insertion mag	WildEye	WildEye	Mercoid Pressure Transducer	Channel
25	McCrometer saddle mag	Mesotech	n/a	n/a	n/a
28	McCrometer insertion mag	WildEye	WildEye	Mercoid Pressure Transducer	Channel & discharge
29	McCrometer propeller	Seametrics	n/a		

Siphon Nos. 24 and 28 also have pressure sensors installed in the siphon pipes. Water level measurement equipment is shared at Siphon Nos. 28 and 29.



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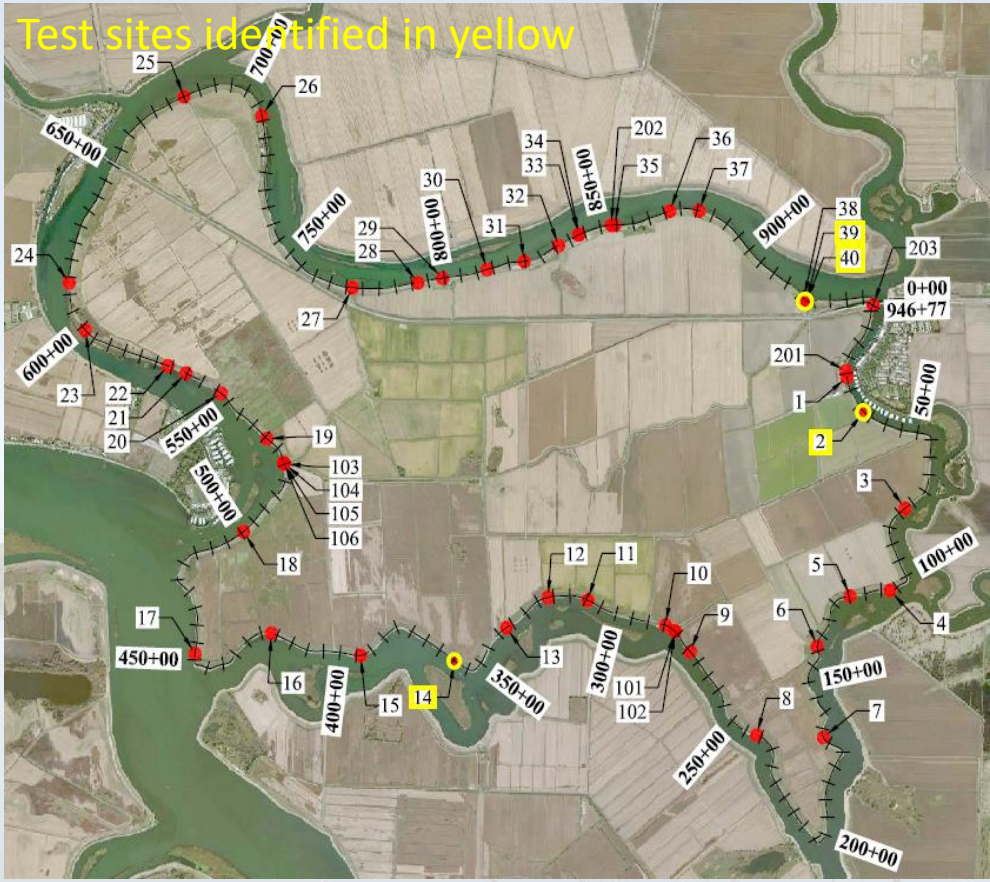
BOULDIN ISLAND TEST SITES

Siphon No.	Meter	Data logger	Telemetry	Water Level	Location
2	Seametrics flange mag	Seametrics	n/a	Global Water Pressure Transducer	Discharge
14	McCrometer insertion mag	Mesotech	n/a	Mercoid Pressure Transducer	Discharge
39	Mace insertion ultrasonic	Mace	Mace	Mark 1 Ultrasonic & In-Situ Pressure Transducers	Channel (Mark 1) & discharge (In-Situ)
40	Seametrics insertion mag	Mesotech	n/a		

Channel water level measurement equipment is shared at Siphon Nos. 39 and 40.



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Summary of Results

EQUIPMENT PERFORMANCE - METERS

9 permanent meters with data loggers

- Replacement/additional equipment needed at 7 sites
- Data gaps at 8 sites
- Calibration issues at 5 sites
- Power supply issues at 7 sites
- Status: 8 sites currently recording data

Portable meter tests conducted to compare data

- Raised accuracy questions

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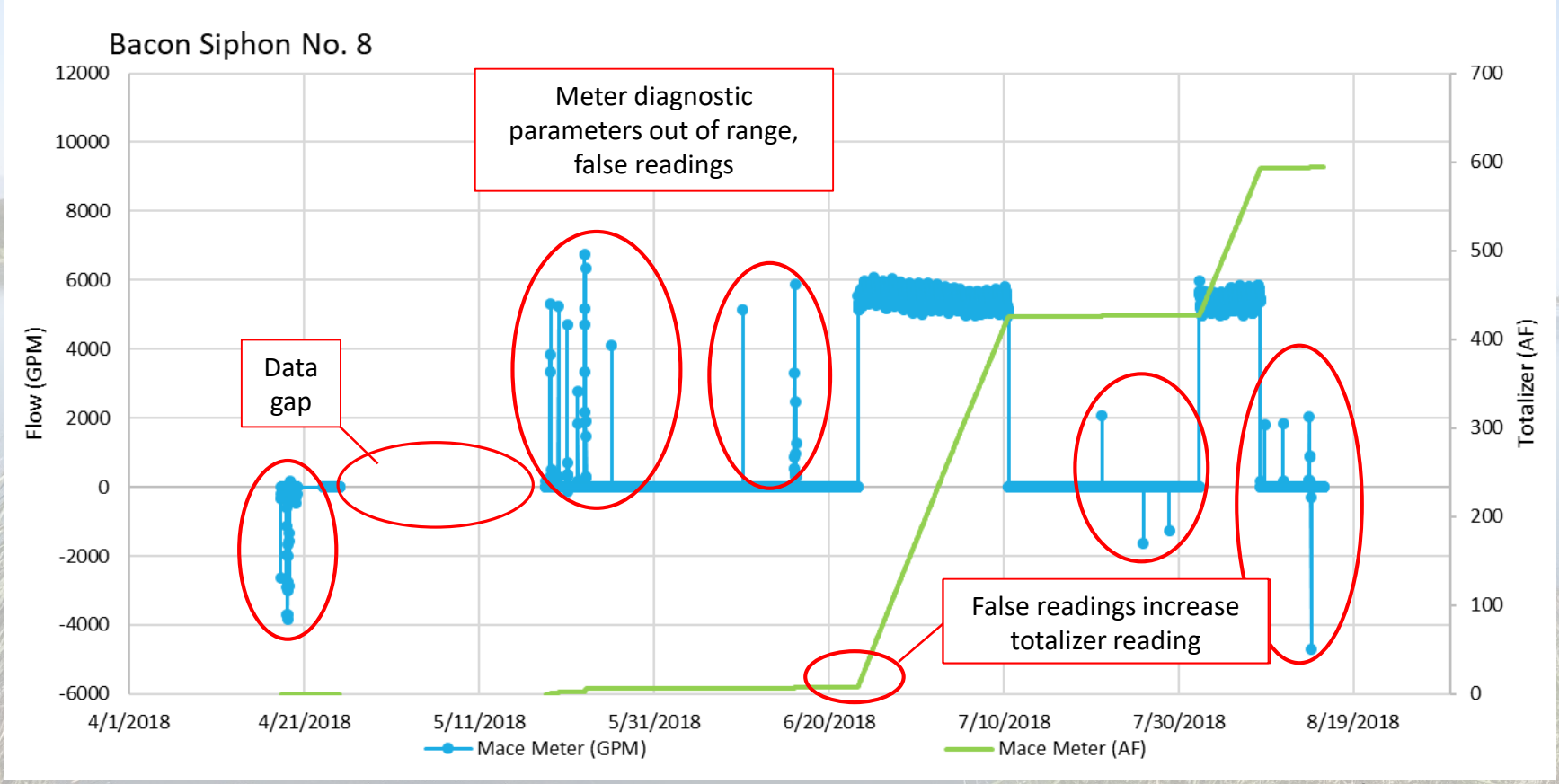
Summary of Results

EQUIPMENT PERFORMANCE - METERS



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Summary of Results

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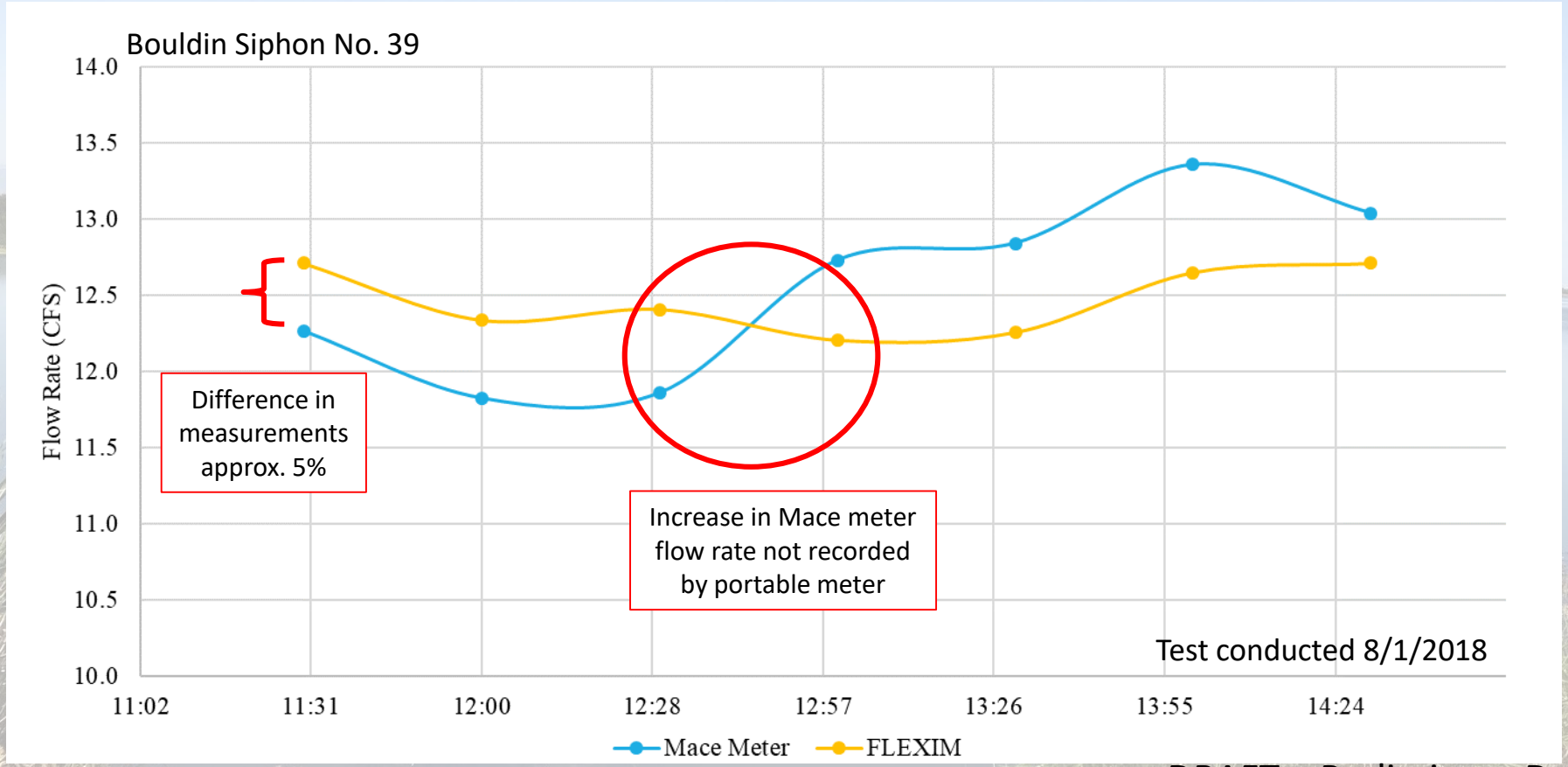

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Summary of Results

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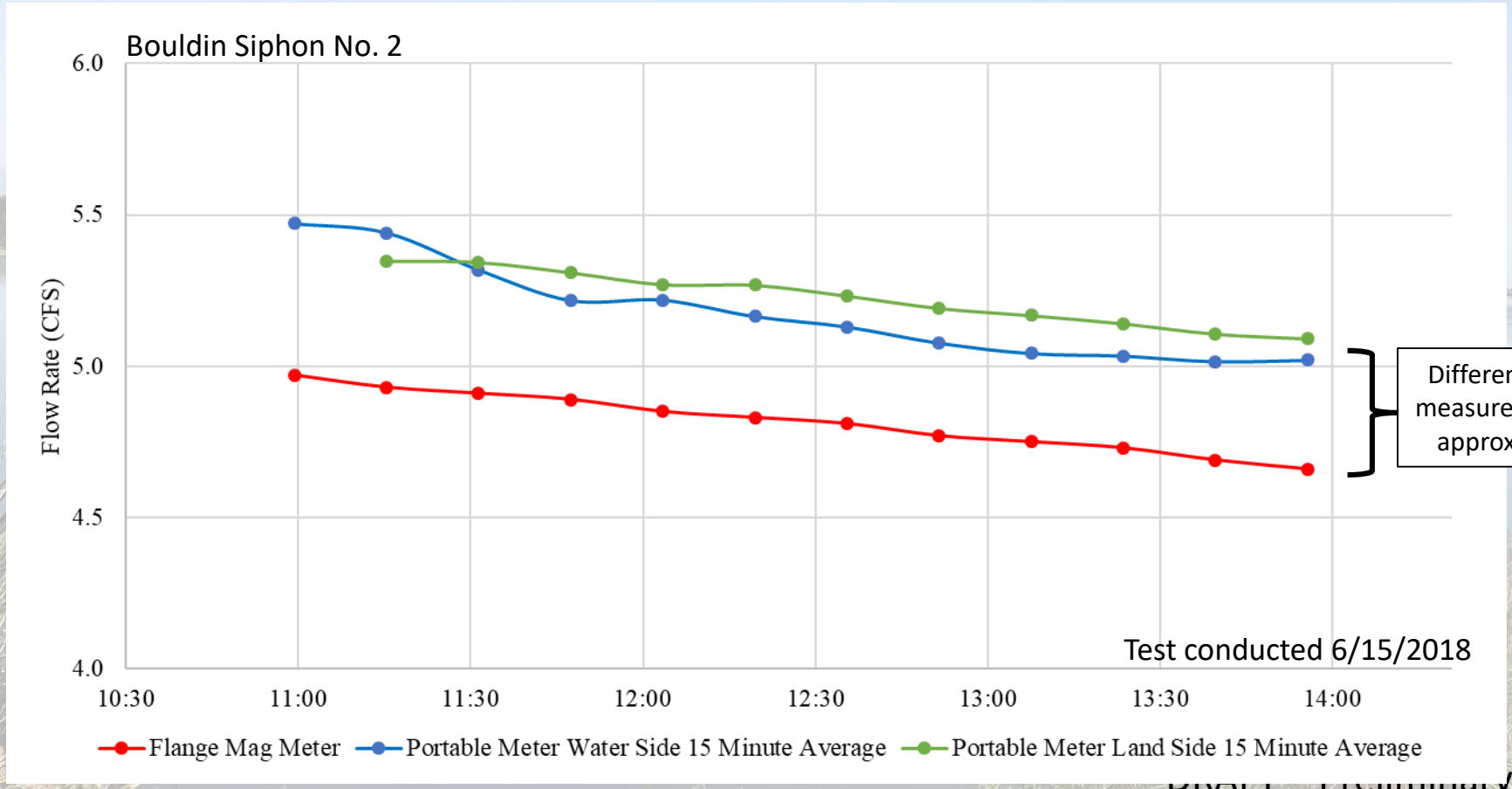

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Summary of Results

EQUIPMENT PERFORMANCE – LEVEL SENSORS & TELEMETRY

8 water level sensors installed

- Replacement equipment needed for 2 sensors
- Data gaps with 4 sensors

2 pressure sensors installed

- No equipment or data issues

Telemetry services at 4 sites

- Outages with each service

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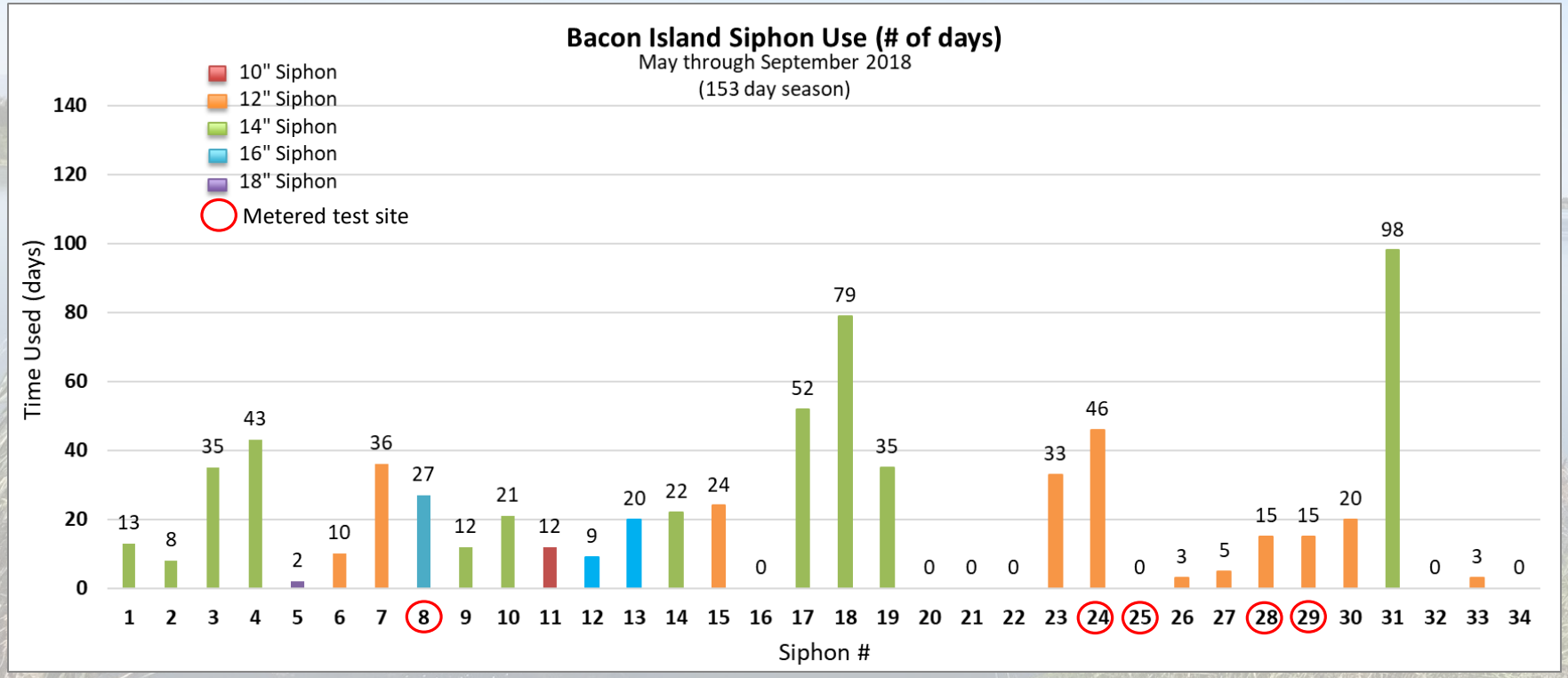
Summary of Results

TIME OF USE

Majority of siphons used infrequently for short durations



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Summary of Results

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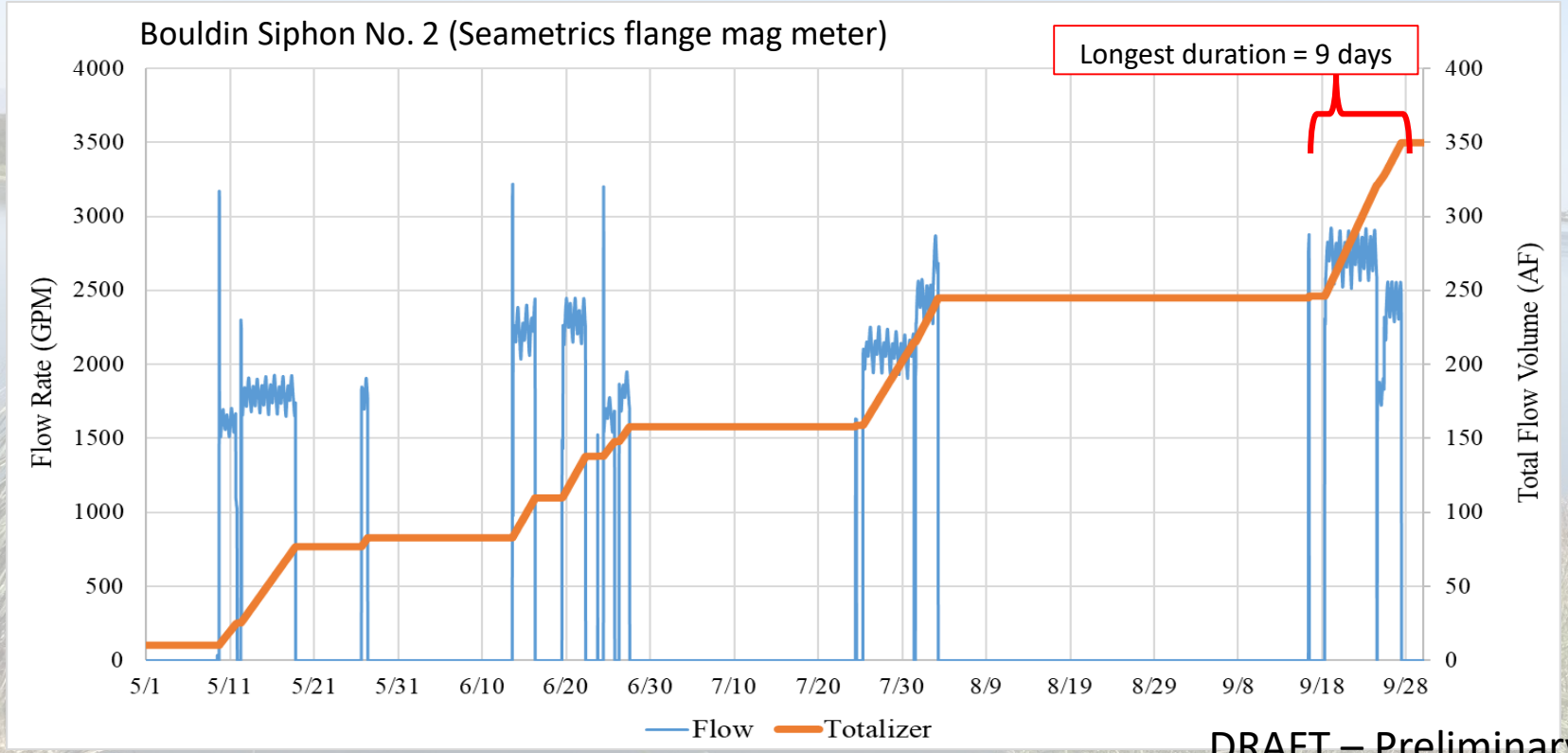

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Summary of Results

THEORETICAL CALCULATIONS

Inventory of specific siphon characteristics

Comparisons of existing gage data with water level sensors

- Differences > 10% when station influenced by multiple channels

Comparisons of farmer siphon logs vs meter data

- Days and run time hours correspond well
- Time of day is inconsistent

Use of equations will require further evaluation

Strict Compliance

FOUR METROPOLITAN ISLANDS

Purchase and install meters with data loggers on 90+ siphons

- Estimated Equipment cost $300,000 to $500,000 capital cost
- Estimated MINIMUM installation cost $500,000 (does not include siphon modification or permitting)
- Some siphons may need to be repaired or replaced due to age or condition
- Permit requirements for waterside work?
- Hire and train staff to maintain equipment and data (O&M cost)

Not feasible by January 1, 2019

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Strict Compliance

POTENTIAL PLAN FOR STRICT COMPLIANCE

Request Additional Time to …

- Develop implementation strategy for active siphons
- Prepare detailed cost analysis and obtain funding
- Purchase and receive equipment
- Obtain necessary permits if required
- Install and certify equipment
  - Water side to comply with manufacturers' specifications
  - May need to modify/repair/replace pipes
- Hire and train staff to maintain equipment and data

Time required – 18-24 months?

Estimated cost TBD

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Strict Compliance

CONSIDERATIONS

Data Accuracy

- Certified devices meeting strict compliance do not guarantee accurate data
- Data gaps and false readings due to equipment issues and environment

Equipment issues are ongoing

Frequency of use at many siphons

Better understand purpose/need/potential use of measured diversion data in Delta

Recommendations

NEXT STEPS

Complete experiment analysis and prepare summary report

Coordinate with Consortium re process

Request Additional Time to continue experiment

- Refine recommendations
  - Continue testing (include winter season)
  - Understand accuracy of installed equipment
  - Continue development of theoretical equations
  - Evaluate alternatives to strict compliance

Questions?

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