Streamflow Gaging and Associated Data Systems for Water Supply Planning

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Overview

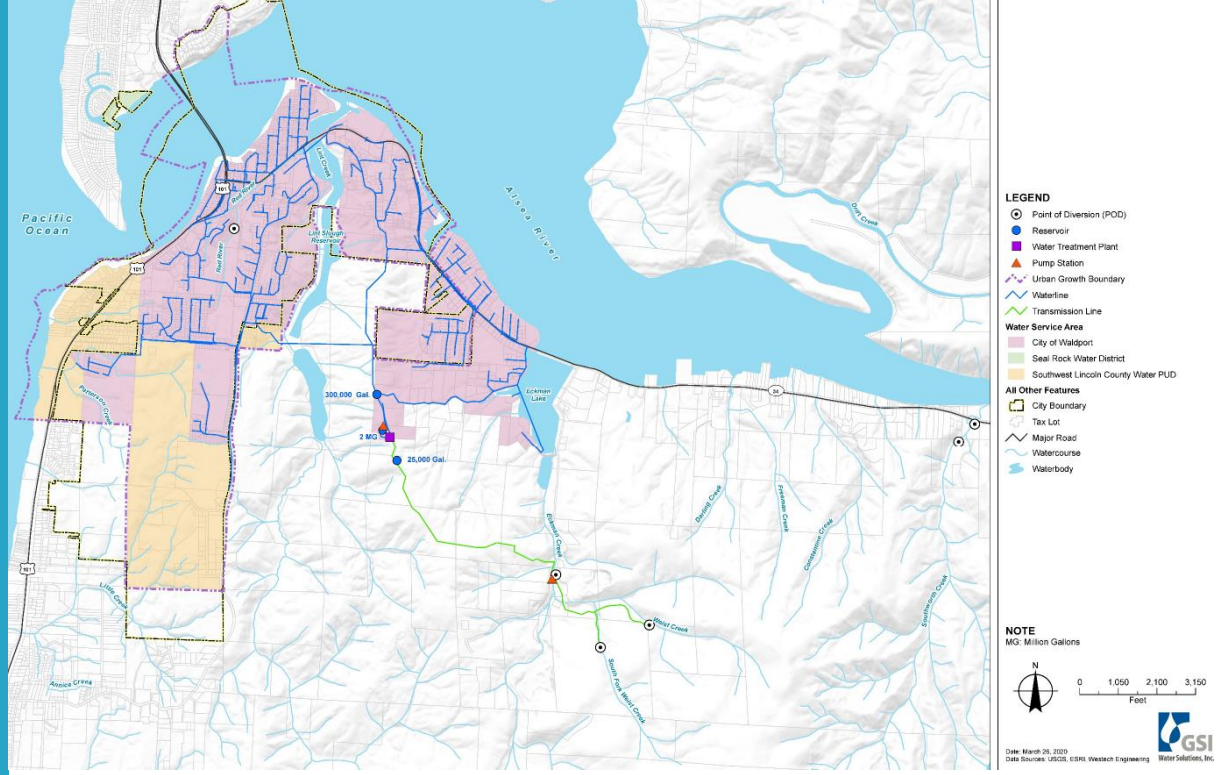
Presentation Outline

- Project background
- Methods
- Results
- Challenges
- Next steps


Portland
Lincoln City
Salem
Newport
Corvallis
Waldport
Eugene
Bend
OREGON
Grants Pass
Medford
Klamath Falls
Crescent City

Background

Waldport Water System



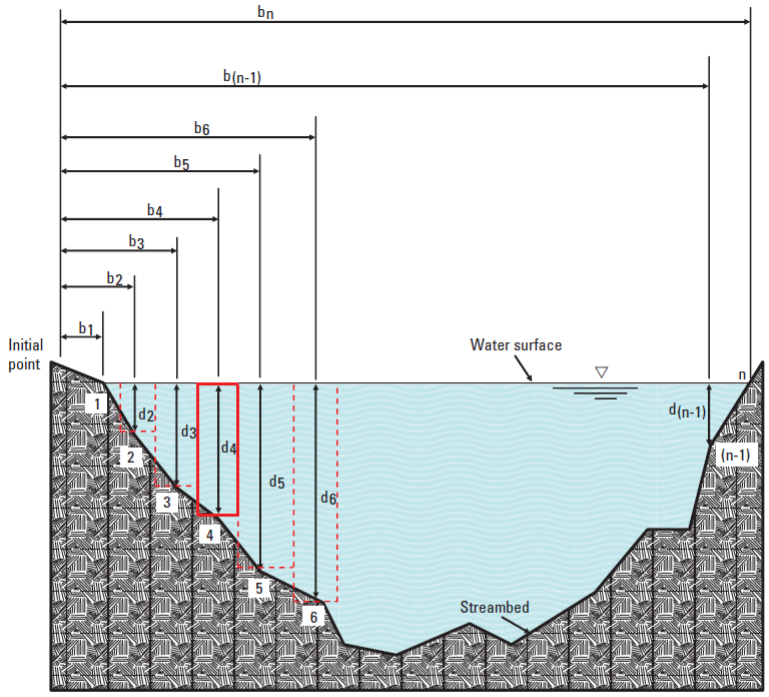
- Eckman Creek
- North and South Weist Creeks
- Southworth Creek (undeveloped)

Project Need

Future water demand	• Customer demand • Emergency intertie SW Lincoln County PUD • Regional planning efforts
Constraints	• Water availability • Fish persistence bypass target flow


Methods

Rating Curve Development Via Midsection Method

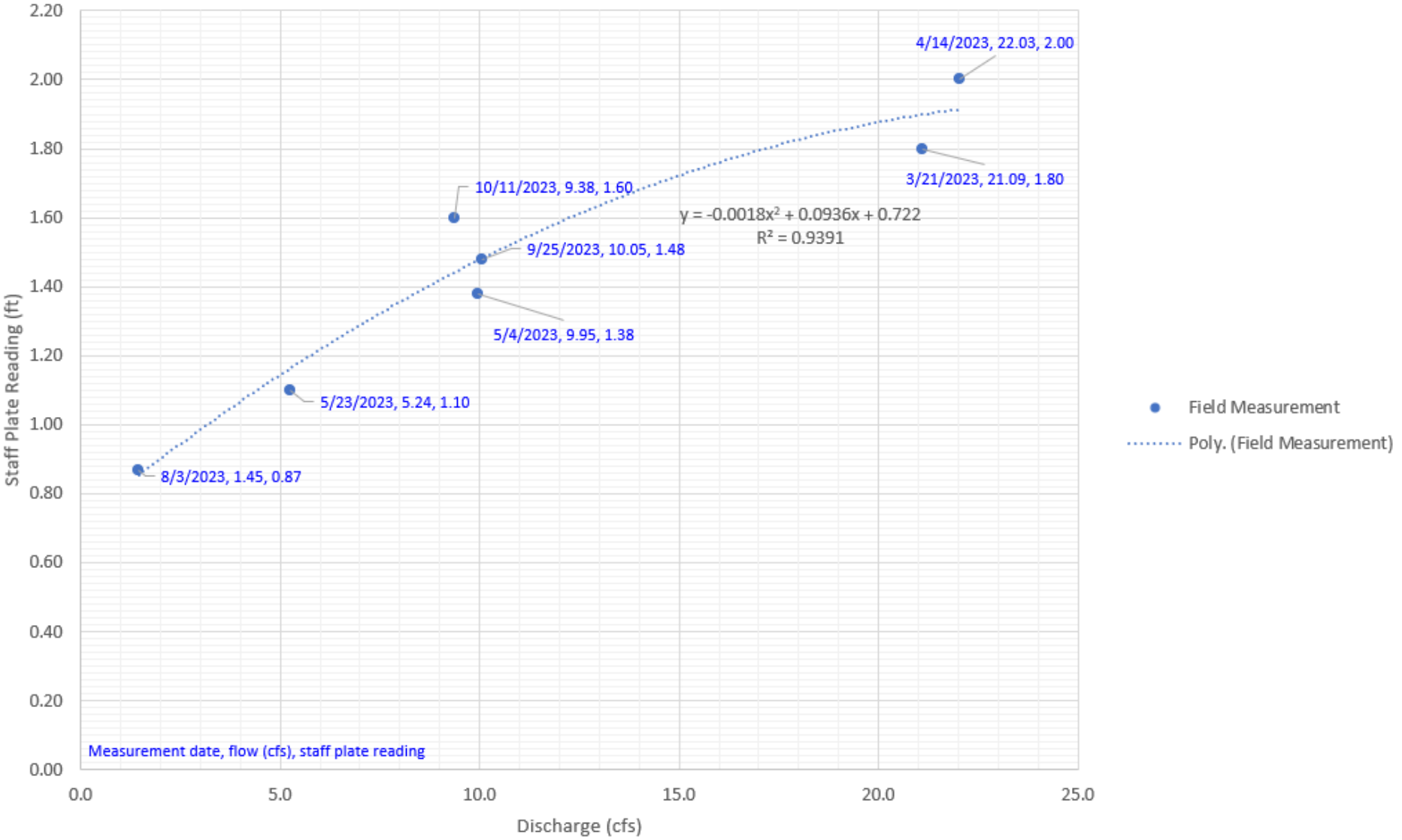


EXPLANATION

1, 2, 3,..... n	Observation points
b_1, b_2, b_3..... b_n	Distance, in feet, from the initial point to the observation point
d_1, d_2, d_3..... d_n	Depth of water, in feet, at the observation point
- - - - - - - - - - - -	Boundary of partial sections; one heavily outlined discussed in text

Figure 1. Definition sketch of the current-meter *midsection* method of computing cross-section area for discharge measurements.

Rating Curve – Southworth Creek Gaging Station

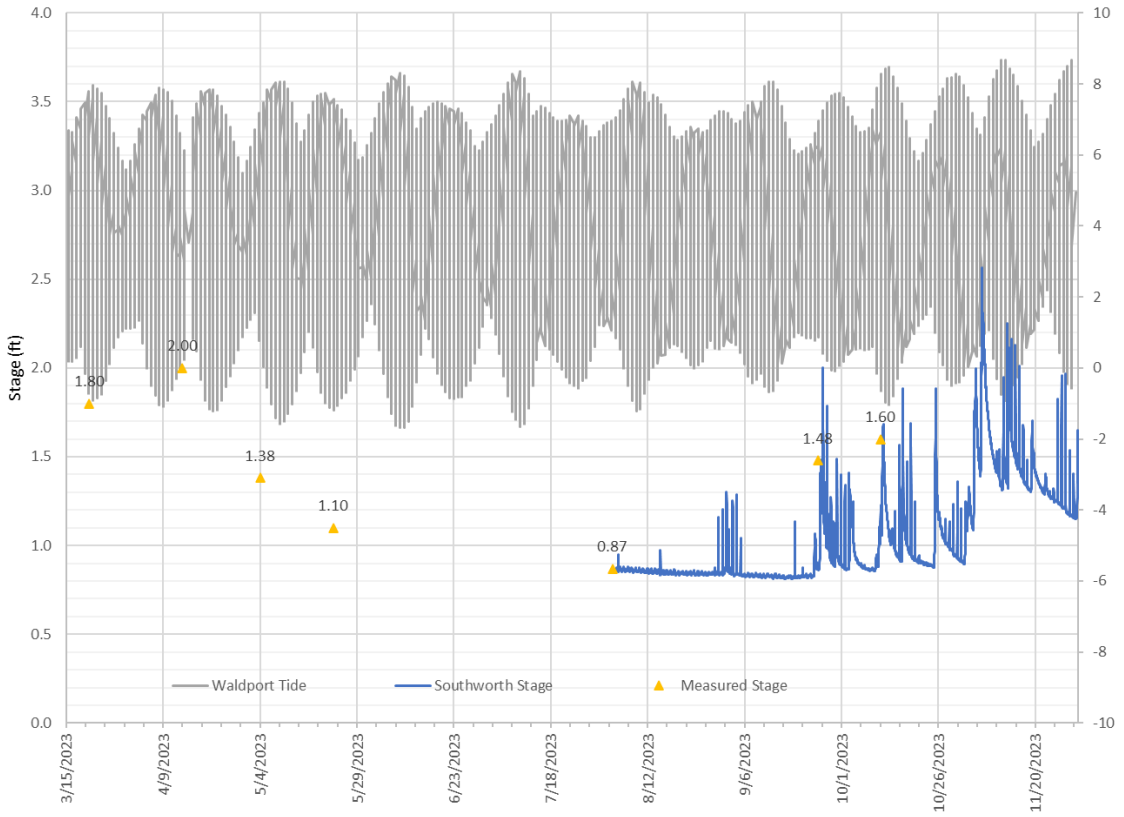


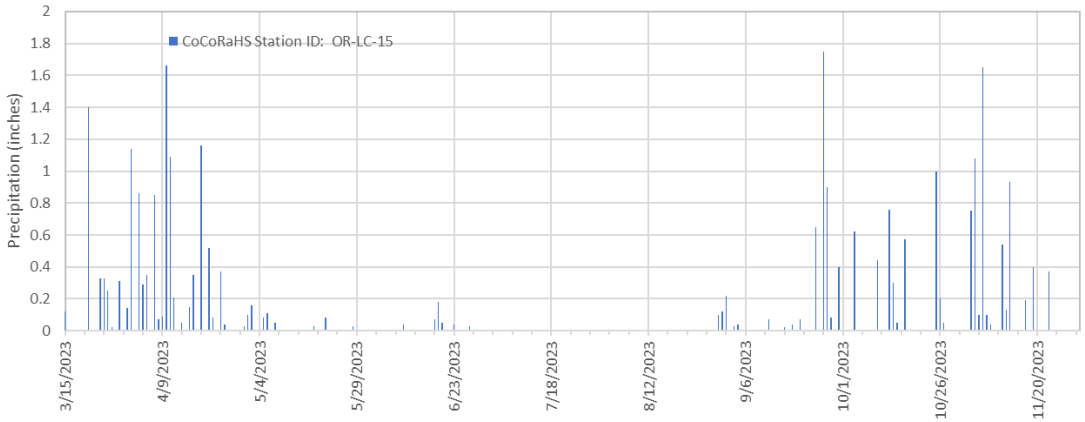
Streamflow Monitoring

- Continuous data logging
- Back calculation using rating curve
- Integration into online platform (hobolink)

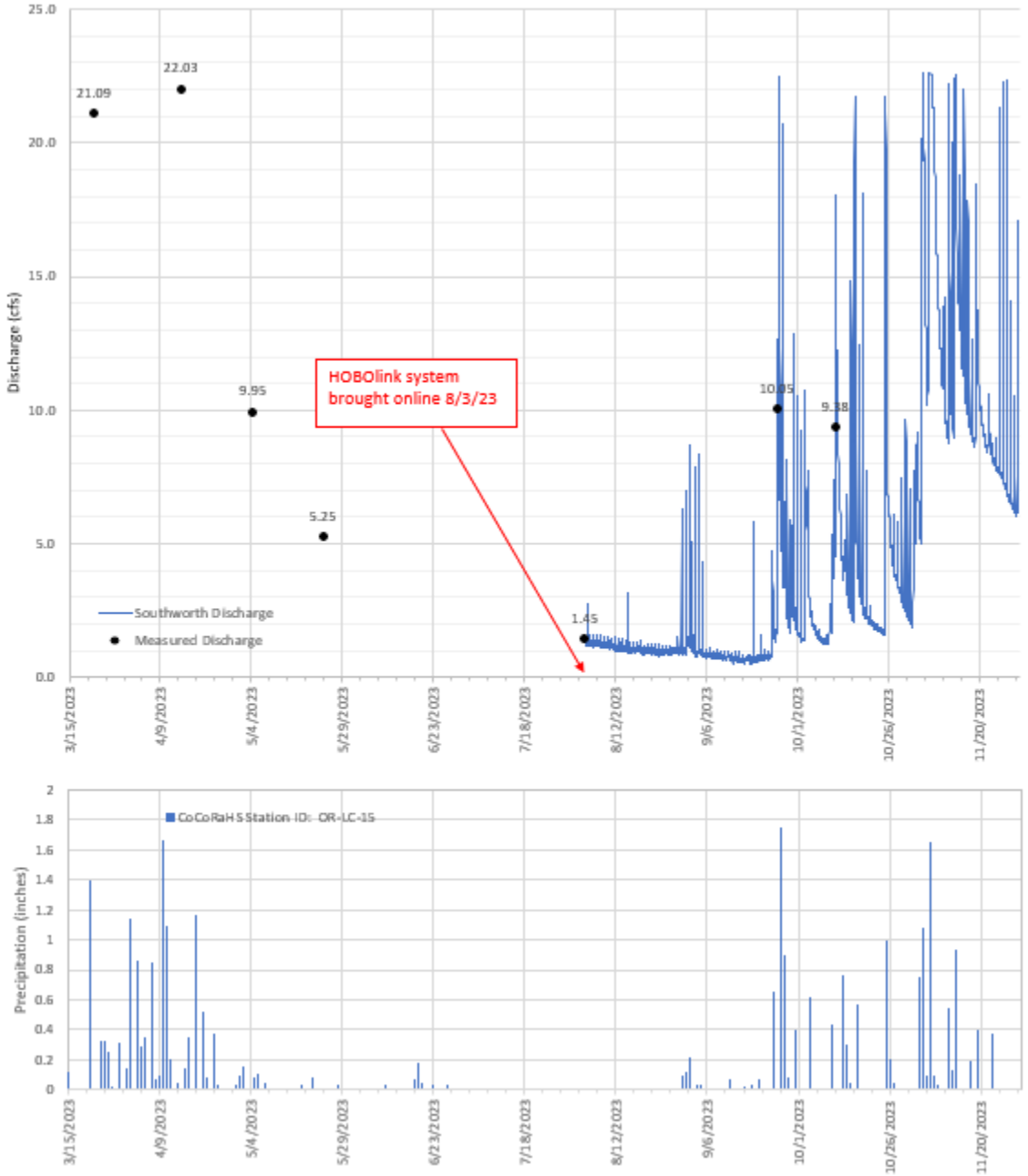
Results

Southworth Creek Stage Data





Southworth Creek Stage Data



Water Availability and Bypass Flows

Measurement Date	Stage (Water Level)	Measured Discharge (cfs)	Rate Available to Divert (cfs)
7/13/2021	0.78	2.03	0.93
8/10/2021	0.73	1.34	0.24
9/9/2021	0.72	1.26	0.16
10/7/2021	0.75	1.35	0.25
11/16/2021	1.63	23.60	1.50
3/23/2022	1.33	16.07	1.50
5/6/2022	1.80	33.80	1.50
6/1/2022	1.17	10.50	1.50
7/7/2022	1.00	6.79	1.50
8/9/2022	0.80	2.83	1.50
8/31/2022	0.75	2.25	1.15
3/21/2023	1.80	21.09	1.50
4/14/2023	2.00	22.03	1.50
5/4/2023	1.38	9.95	1.50
5/23/2023	1.10	5.24	1.50
8/3/2023	0.87	1.45	0.35
9/25/2023	1.48	10.05	1.50
10/11/2023	1.60	9.38	1.50

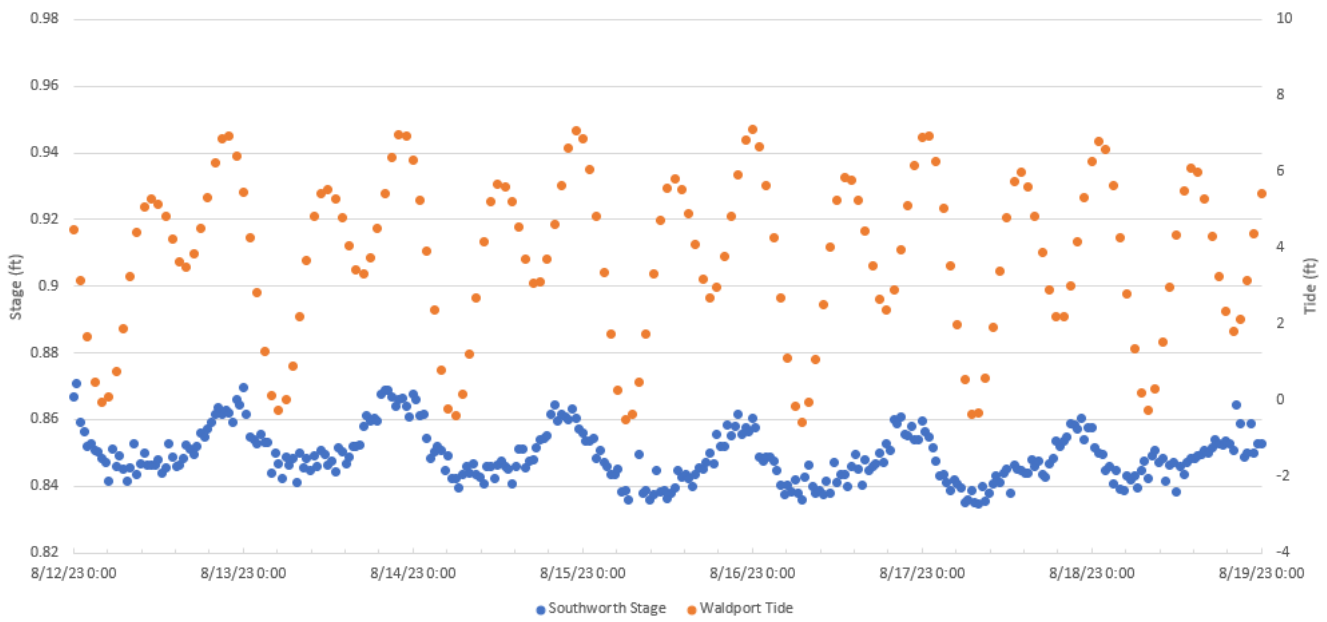
- May 1 – October 31
  bypass flow = 1.1 cfs
- November 1 –April 31
  bypass flow = 5.0 cfs

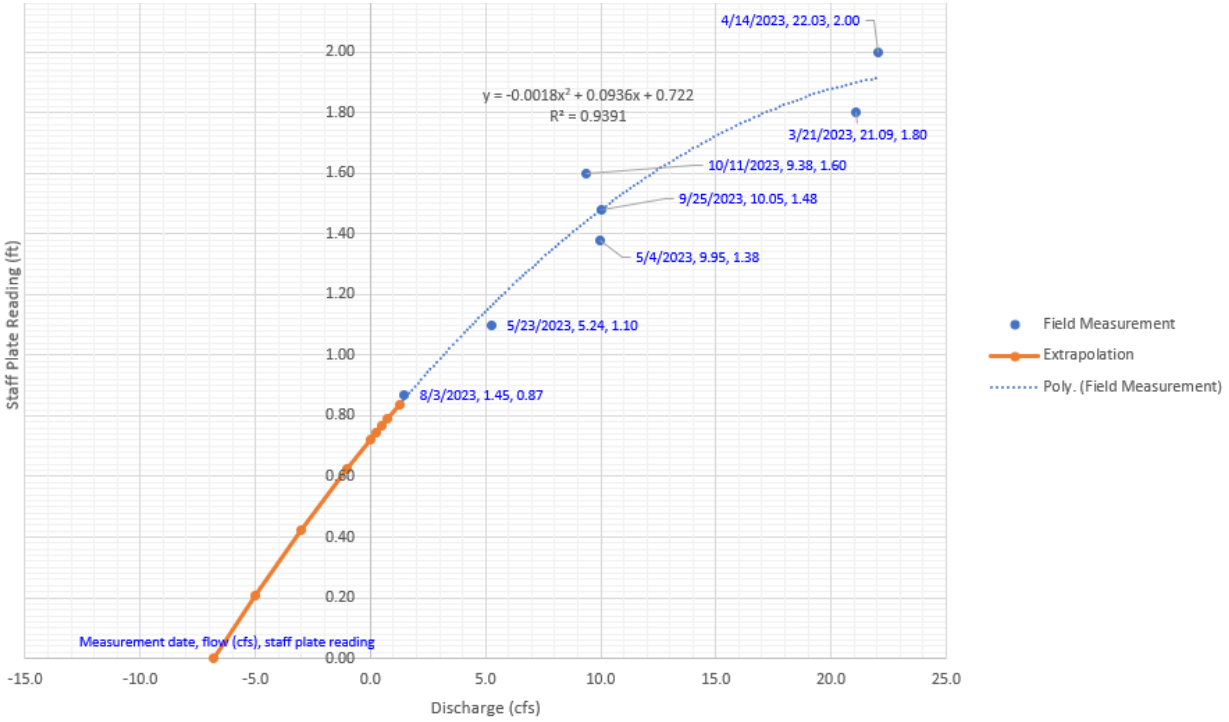
Continuous Data Collection and Online Integration

- https://hobolink.com/users/26803/devices/112934

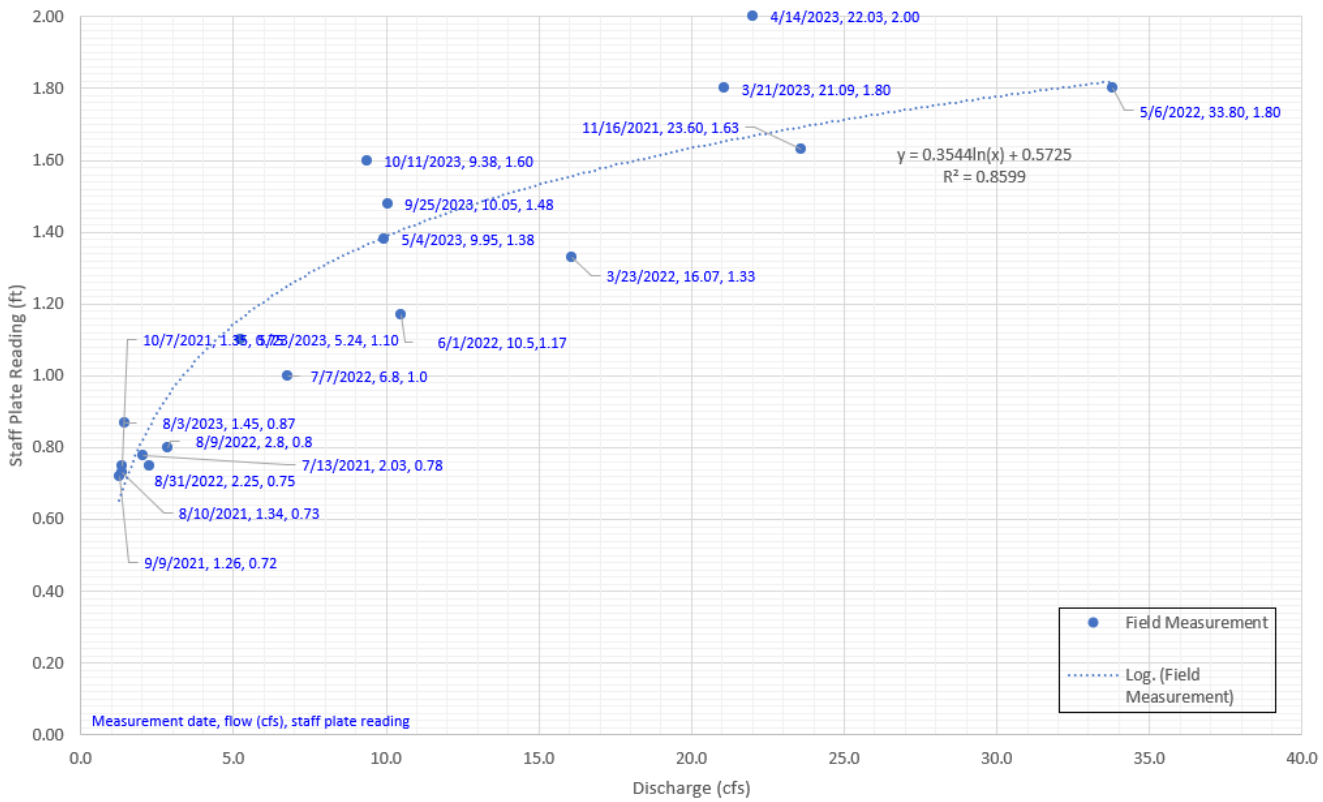
Challenges

Tidal Influence and Rating Curve Bounds





Channel Morphology



Next steps

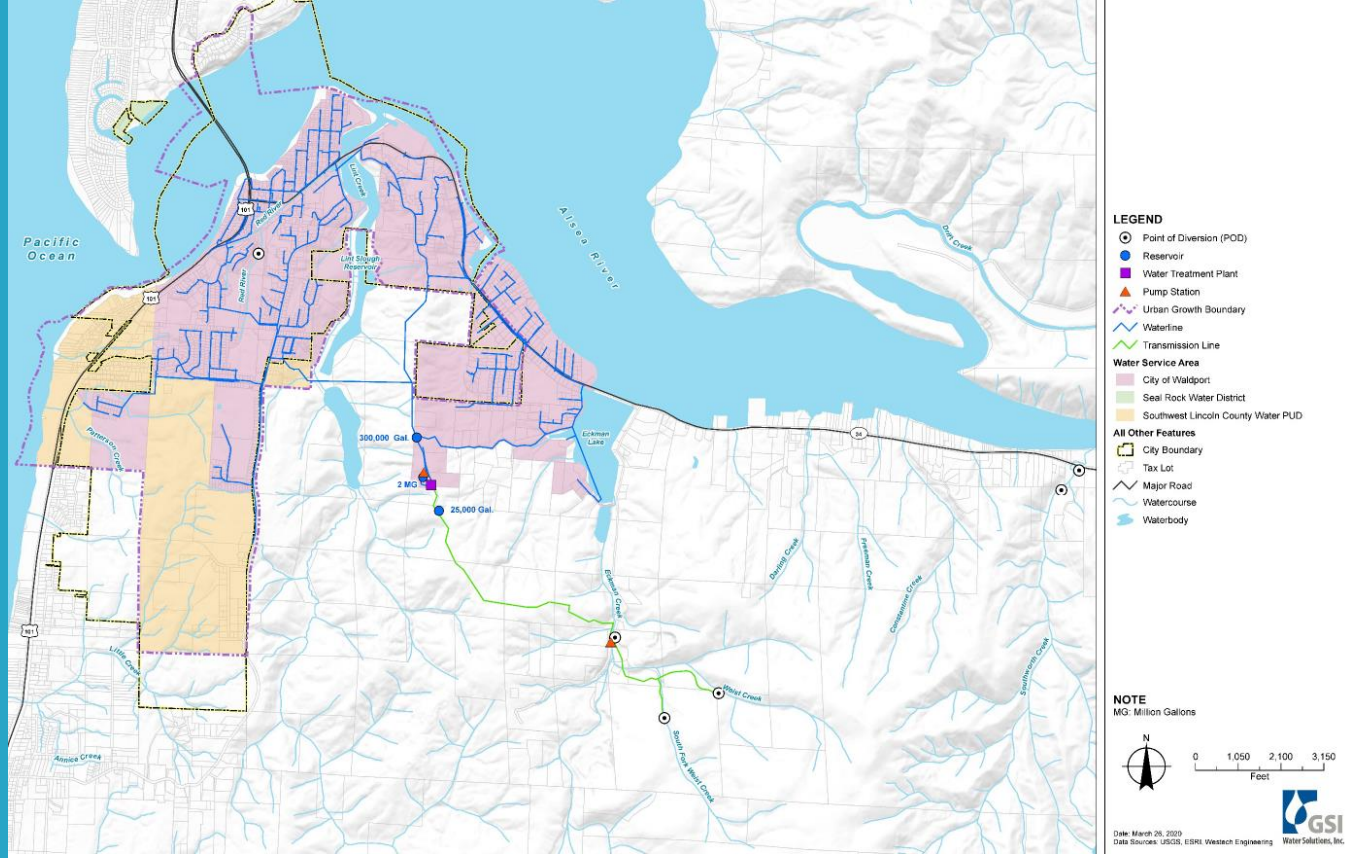
Southworth Creek

Continued monitoring

Informed decision making

Regulatory compliance

Eckman and Weist Creeks



- Continuous monitoring
- Operational efficiency

Questions?

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