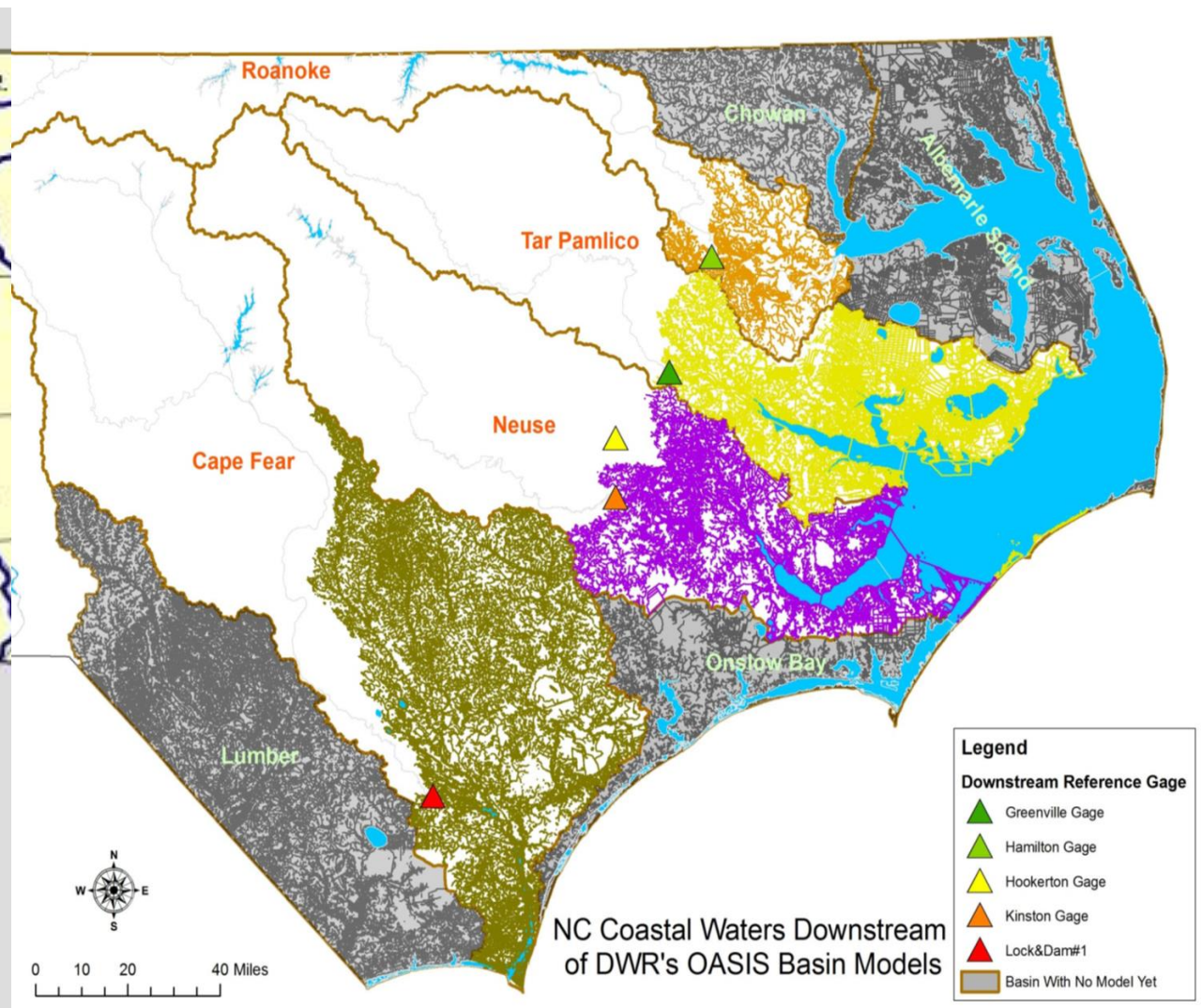




Downstream dynamics affecting upstream conditions of water level: examples from Bertie County

Robert R. Christian, Dorothea V. Ames and Stanley R. Riggs
NC Land of Water & East Carolina University

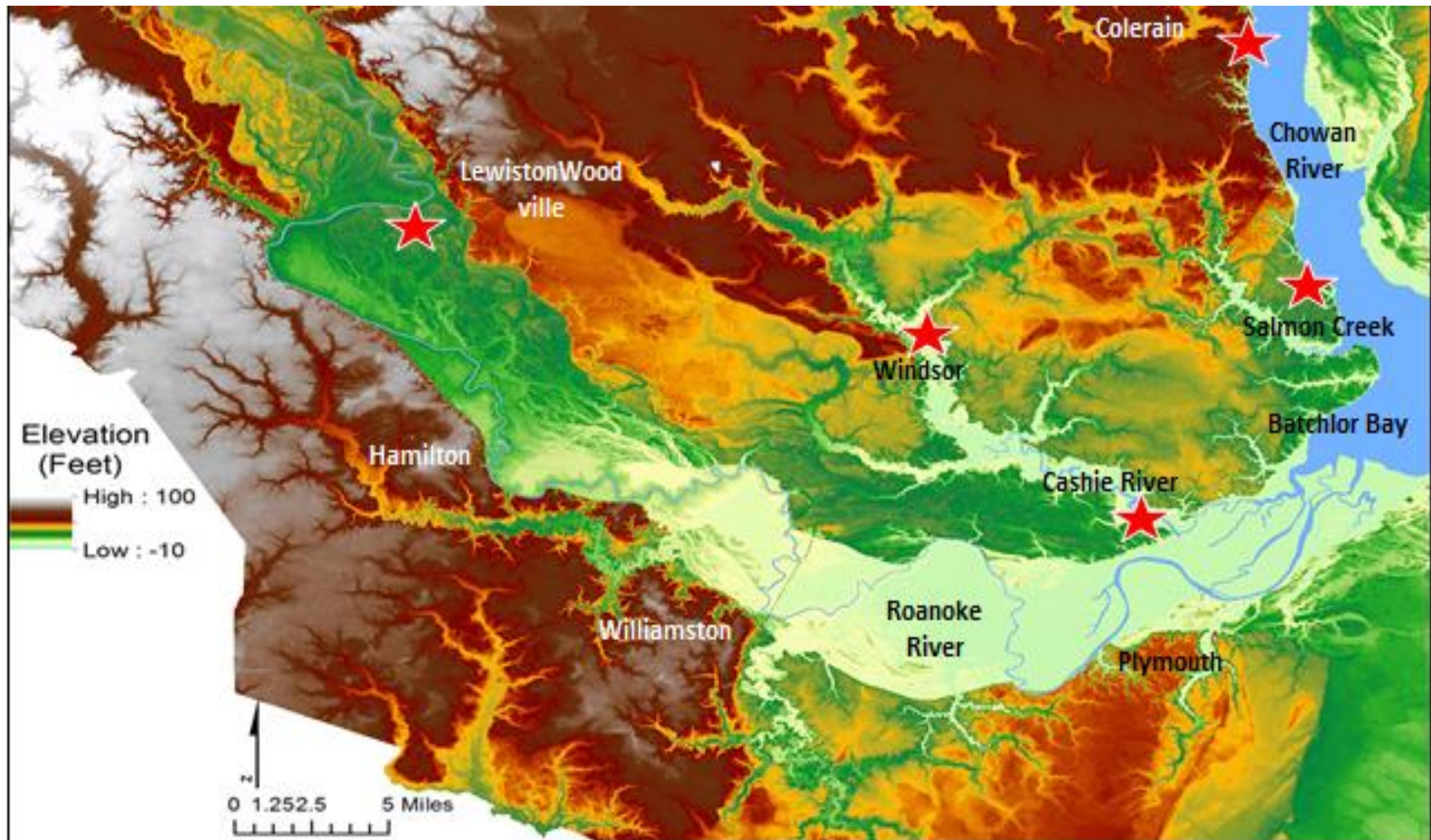


NC Coastal Waters Downstream of DWR's OASIS Basin Models

Legend

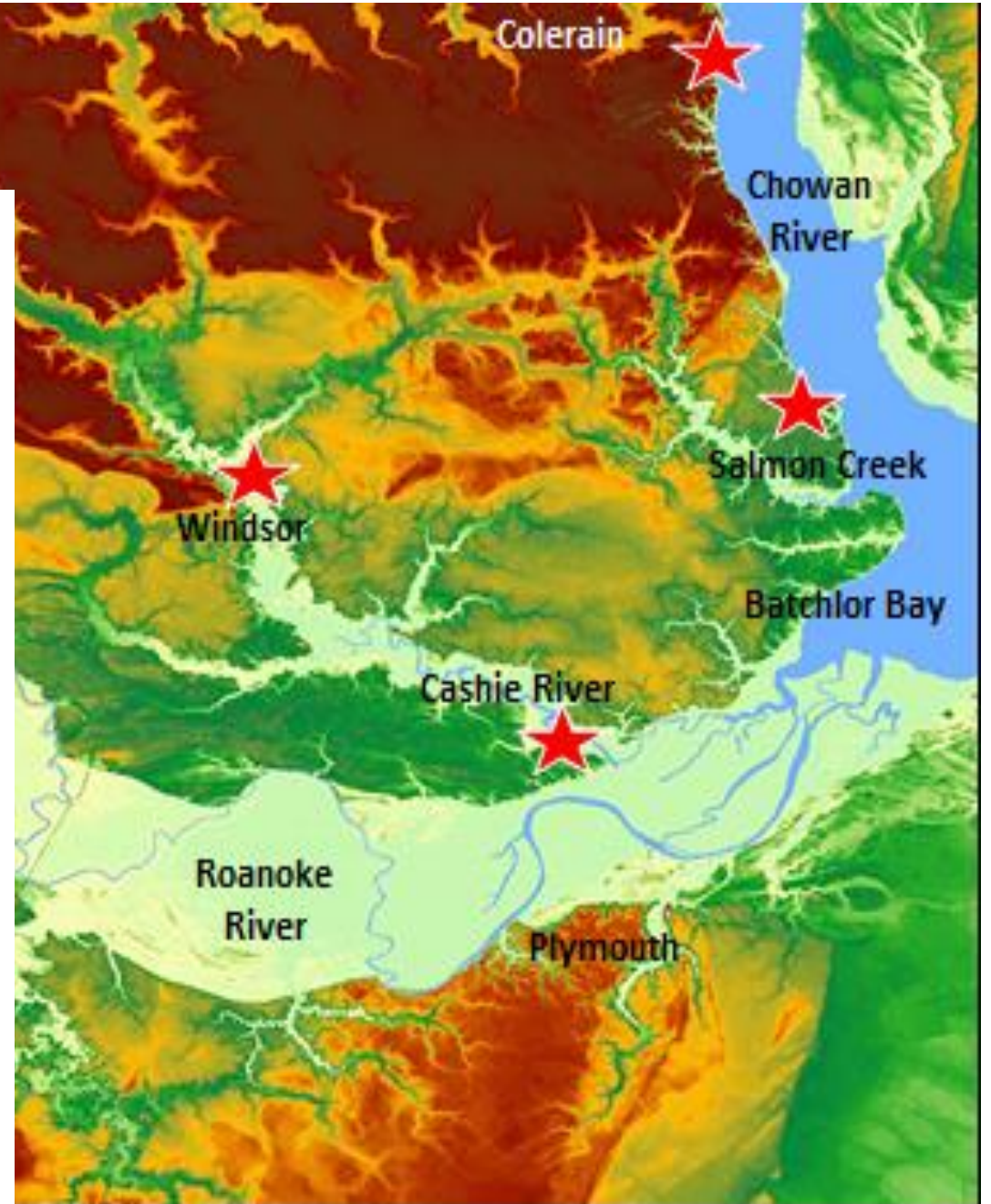
Downstream Reference Gage

- ▲ Greenville Gage
- ▲ Hamilton Gage
- ▲ Hookerton Gage
- ▲ Kinston Gage
- ▲ Lock&Dam#1
- Basin With No Model Yet



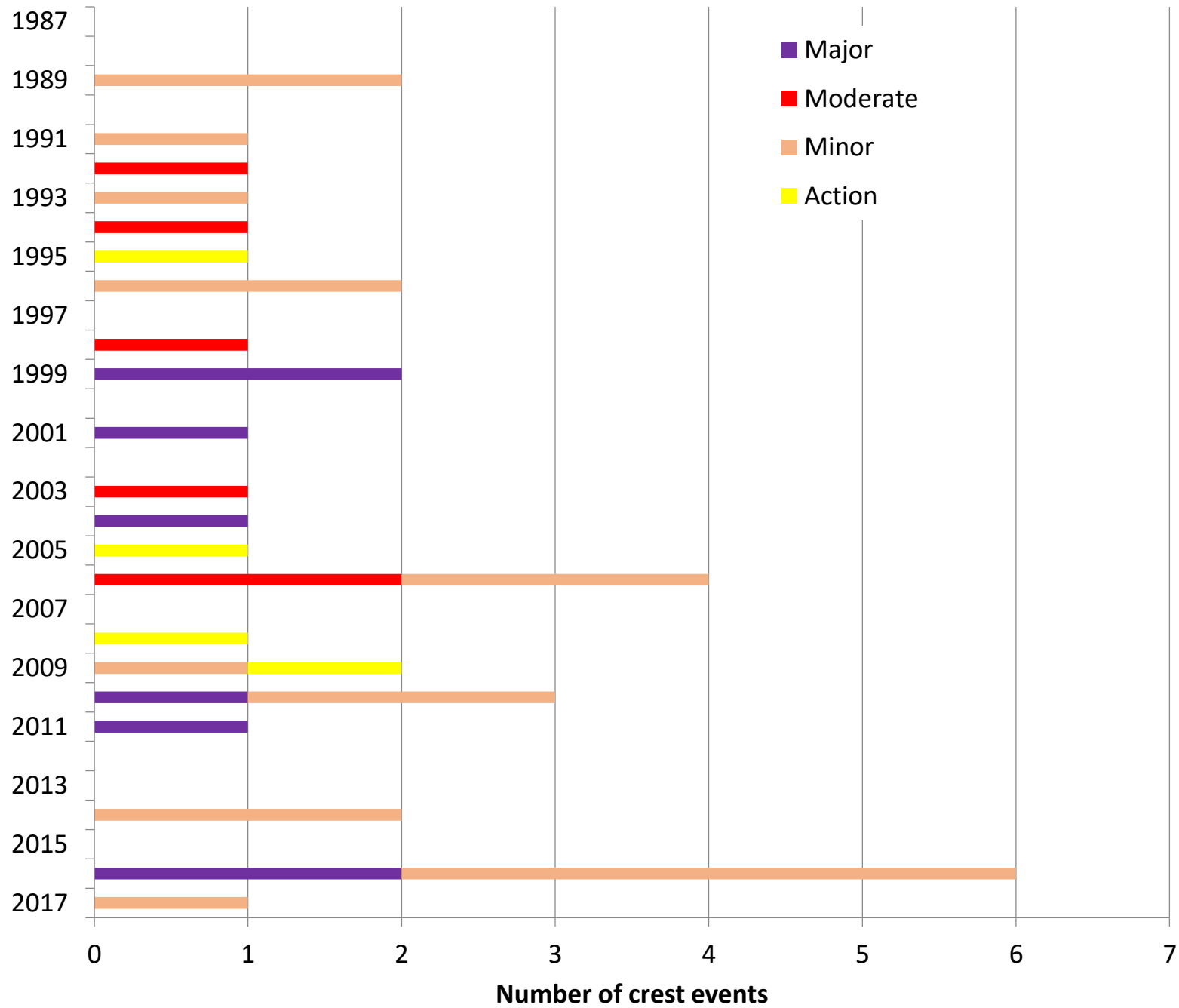
Caveats

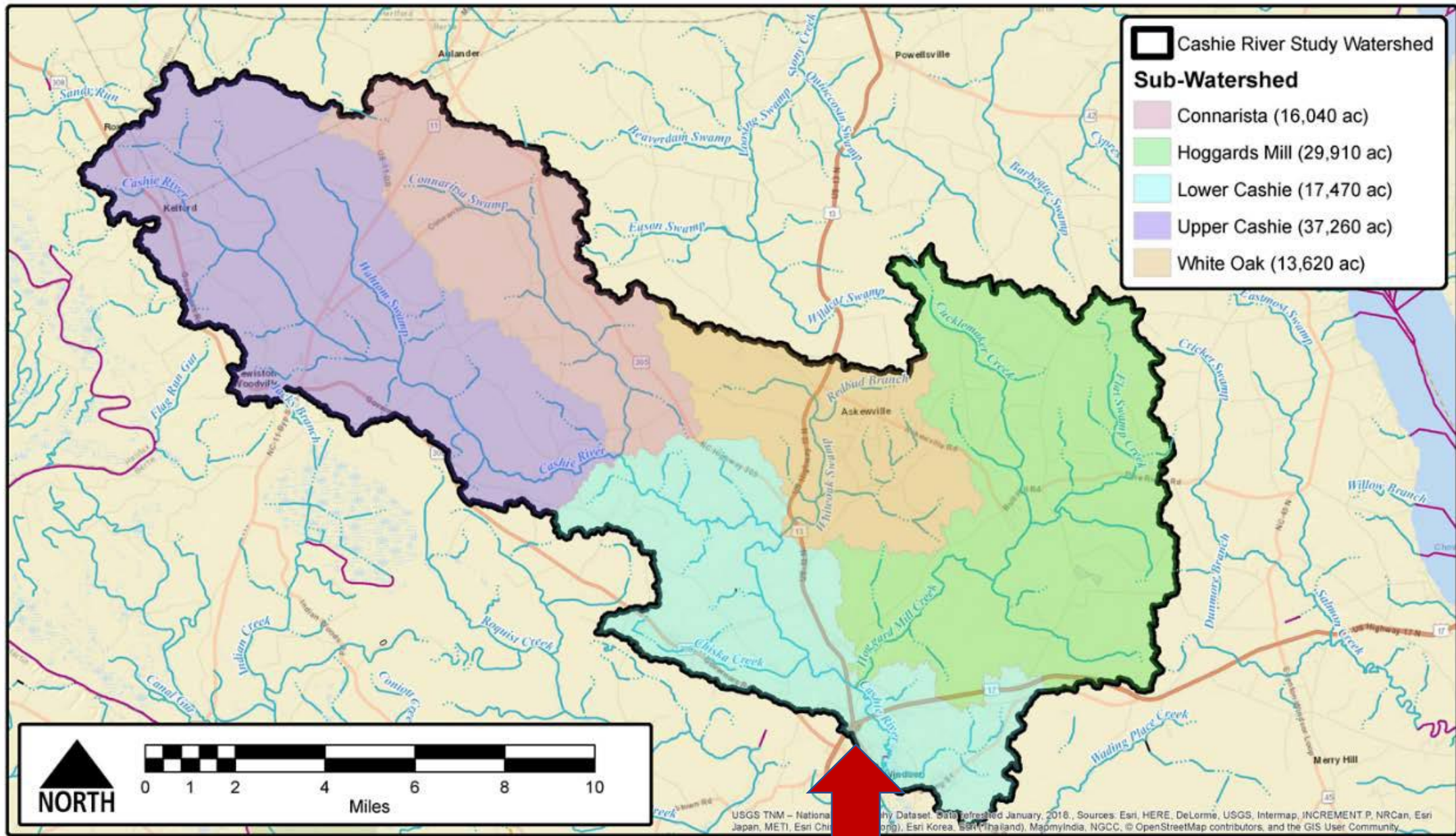
- Preliminary results –
 - with little analysis
- Done by a semi-retired ecologist –
 - not an active engineer
- Focus on high flows and flooding –
 - not low flows
- Focus on Cashie and Chowan Rivers –
 - Not Roanoke yet
- Willingness to share data and ideas!!



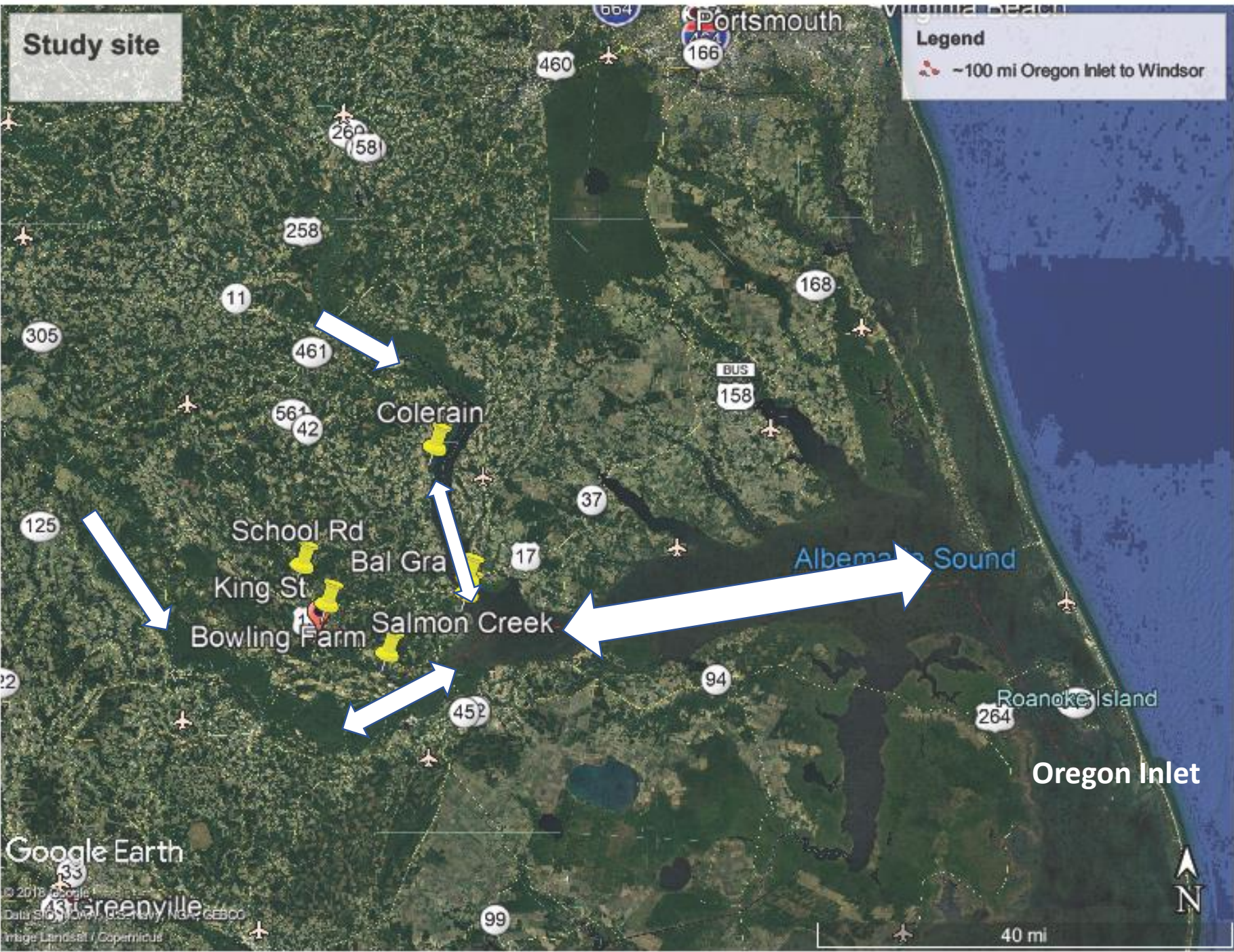


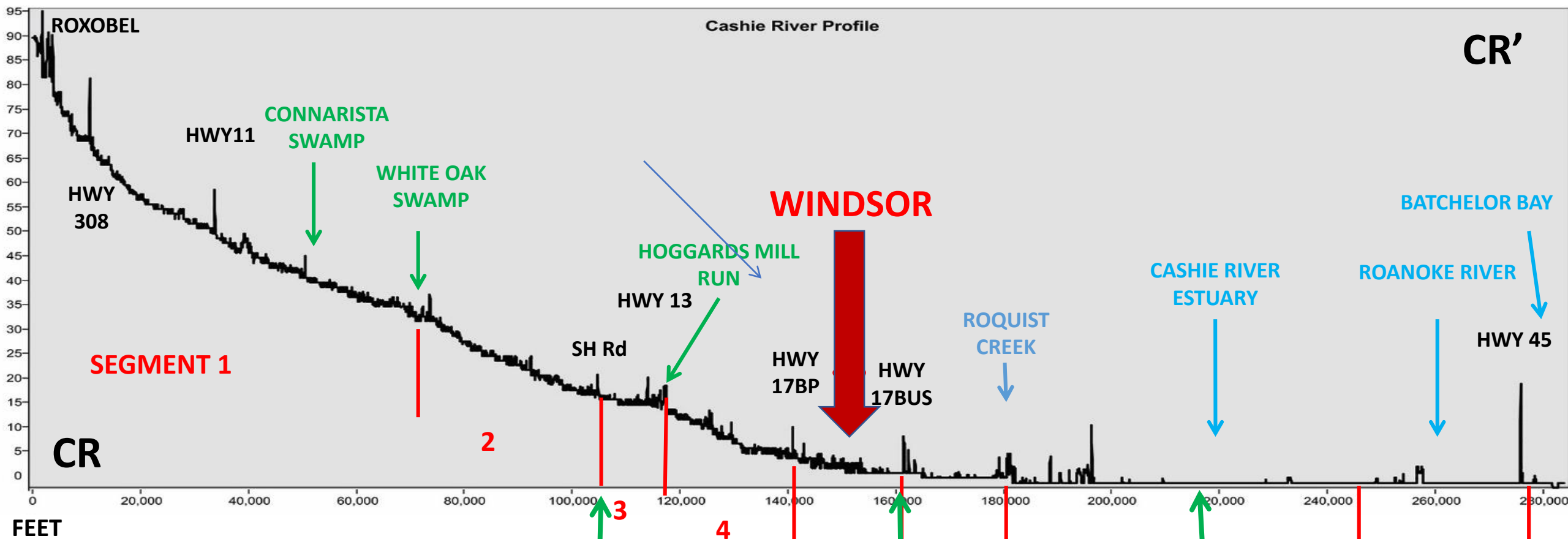
Timeline of 30 largest crest events at School Rd on the Cashie River





Windsor





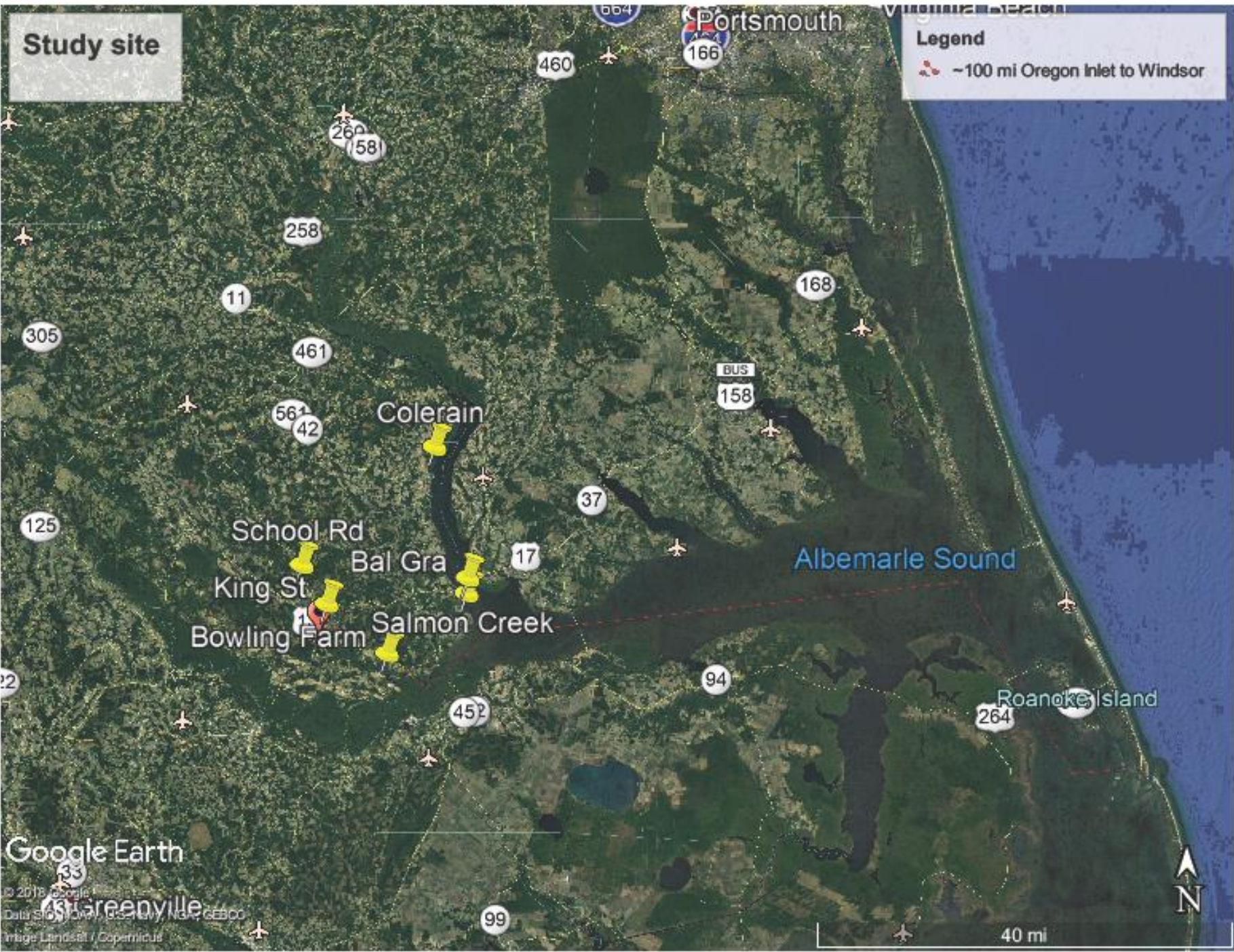
Water-level Stations =

School Rd

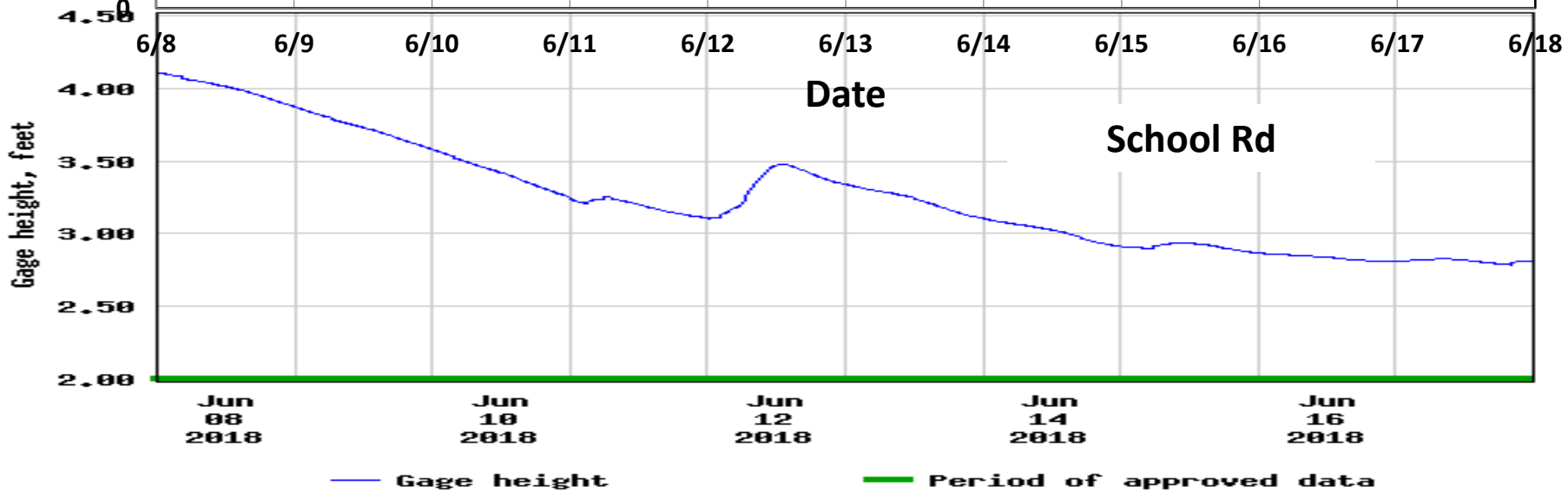
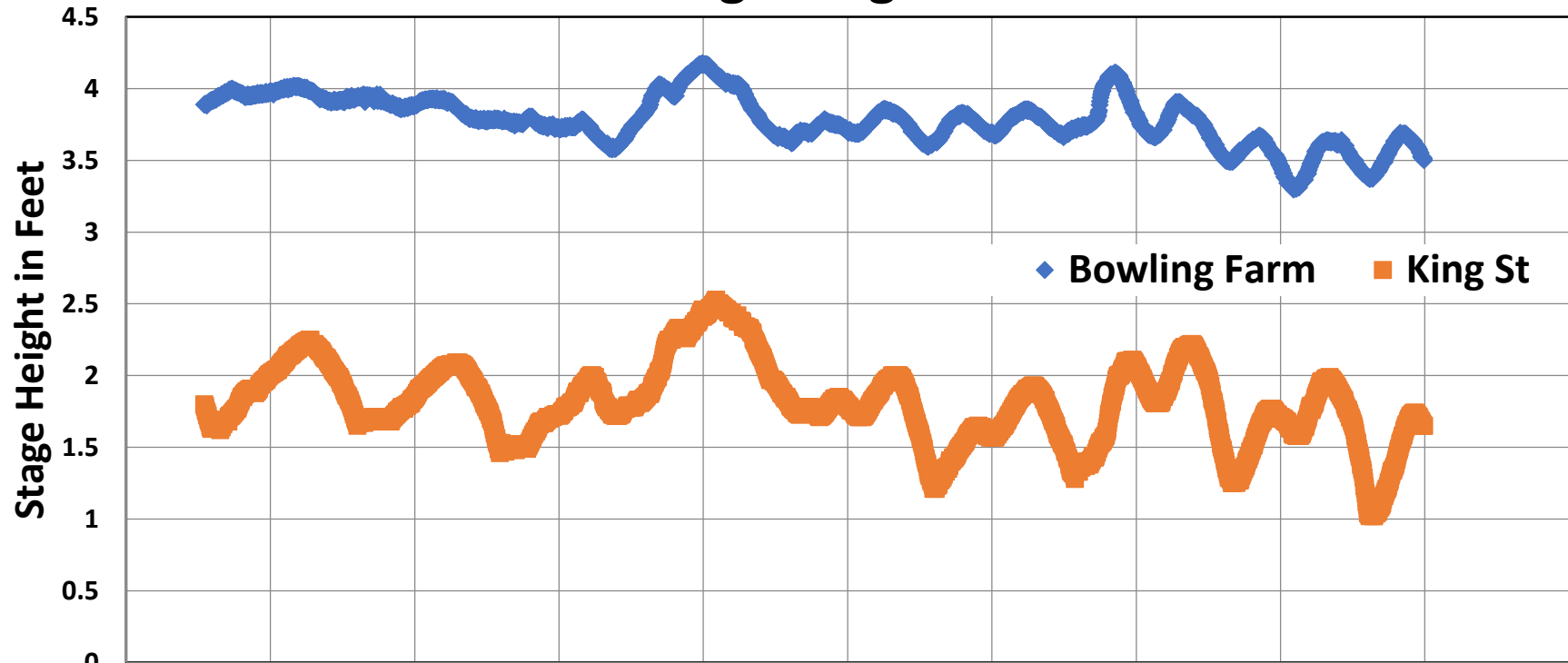
King St

Bowling Farm

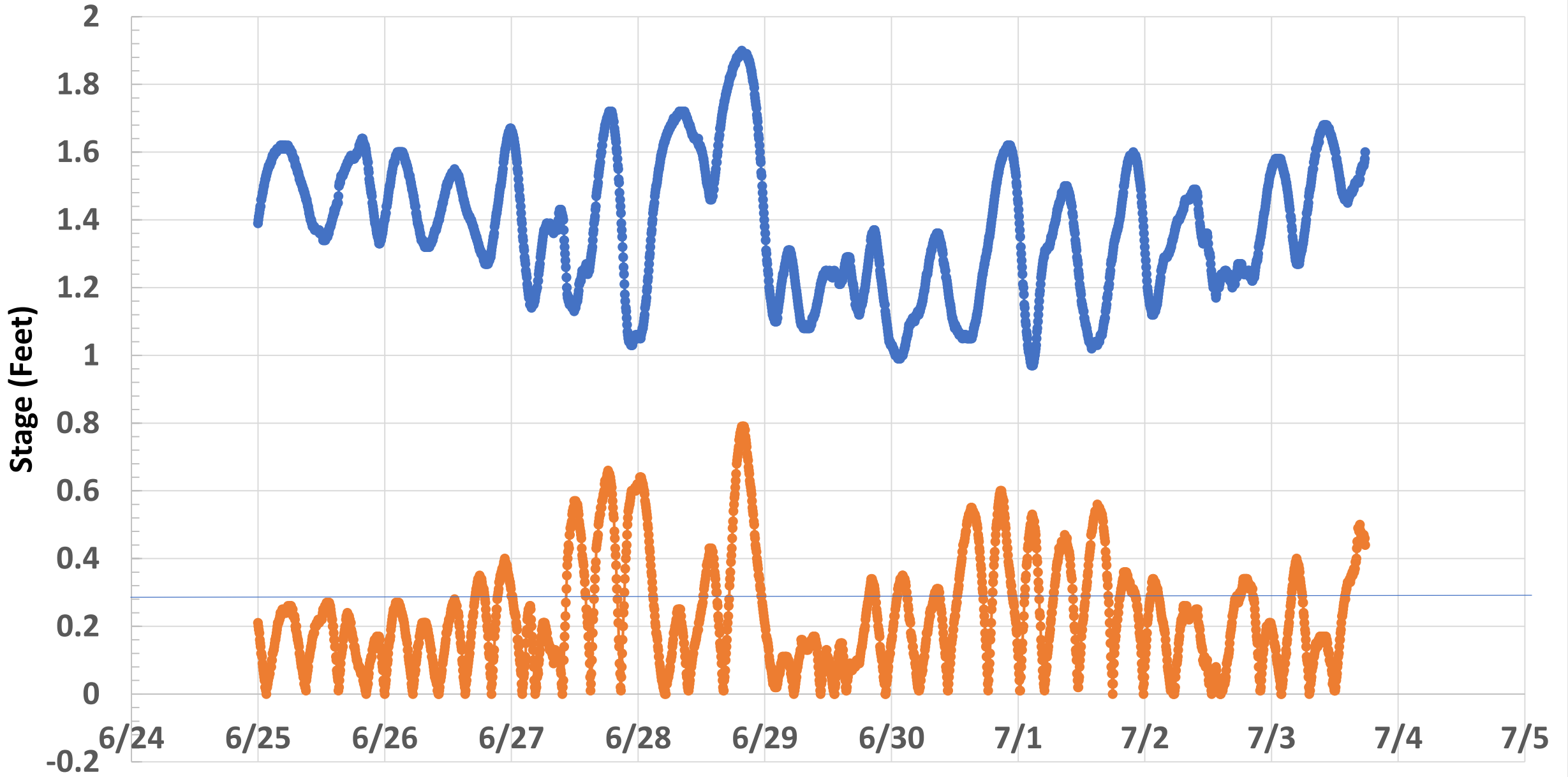
SEGMENT



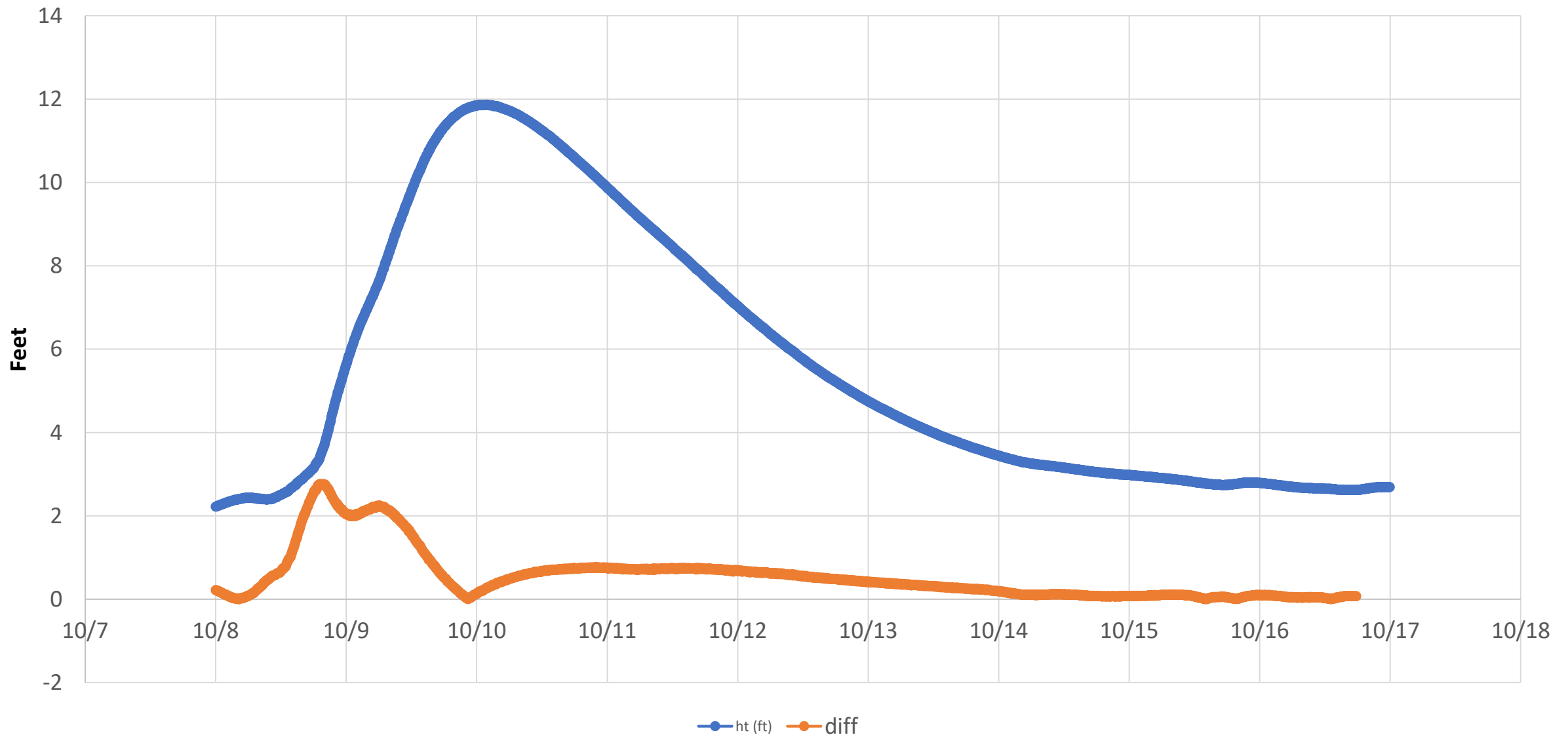
Stage Height

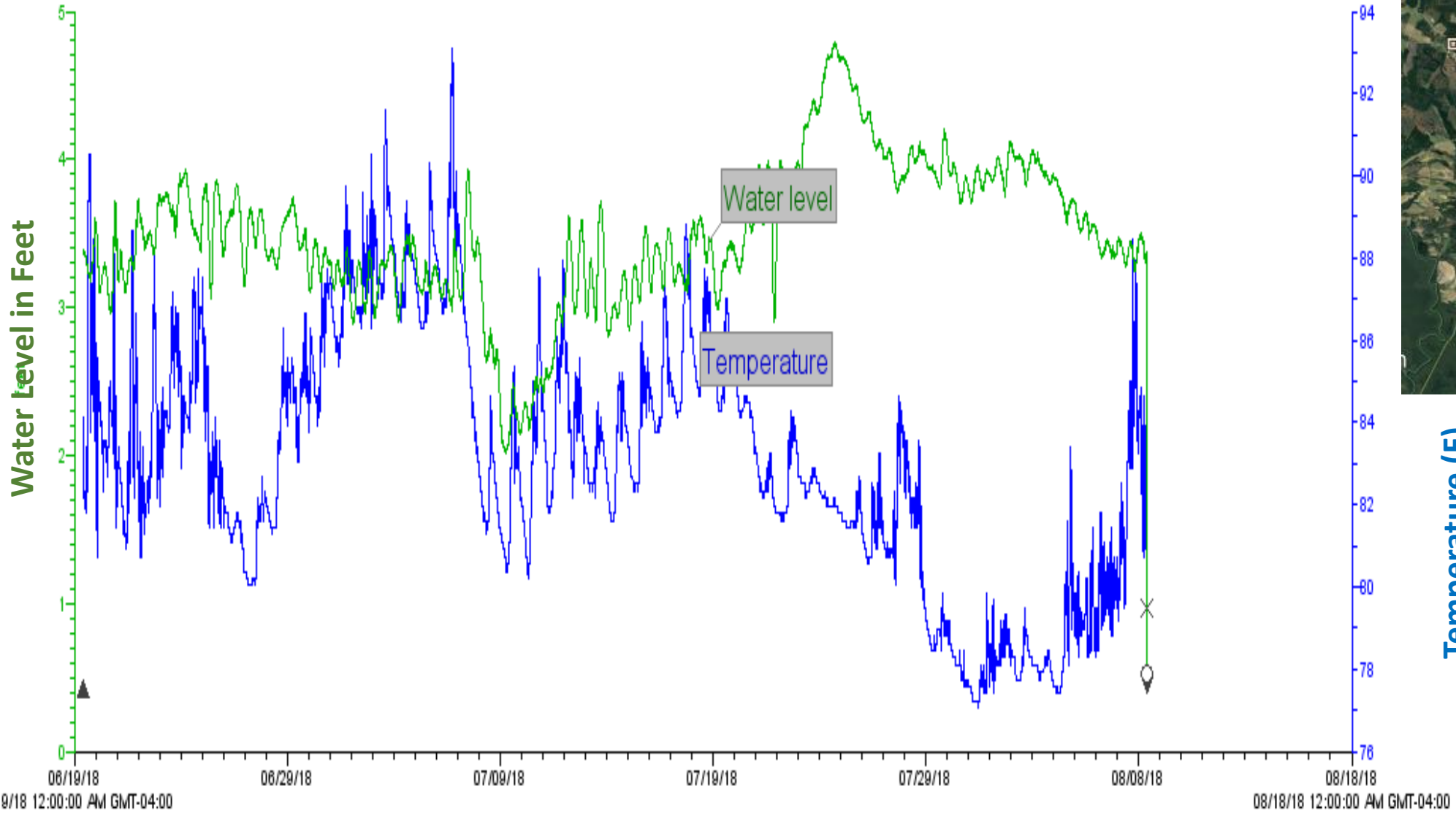


King St Stage Ht (blue) and absolute difference at intervals of 6 hr 10 min (red) (June 25 - July 4, 2014)



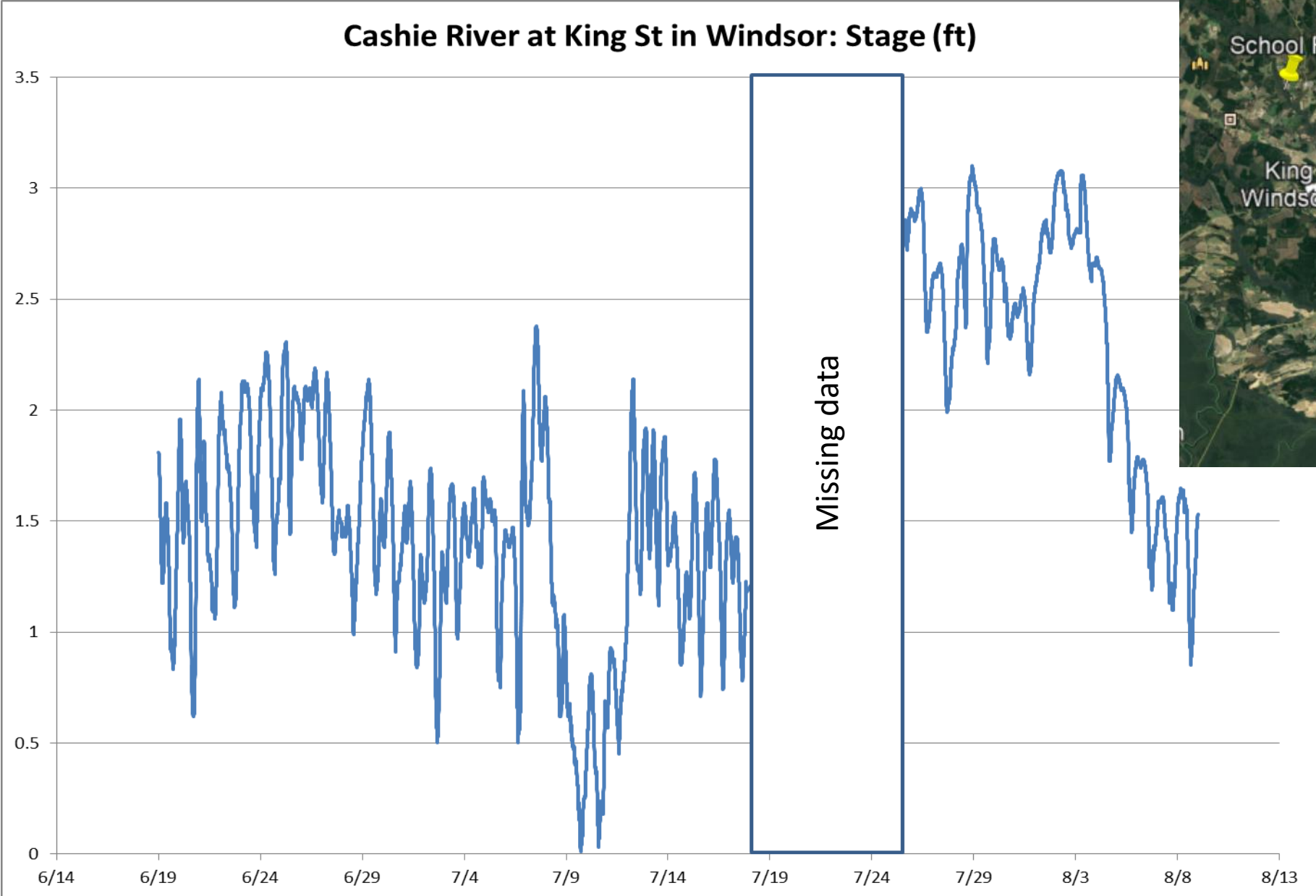
Hurricane Matthew at King St, Windsor: stage ht (blue) and absolute difference at 6.17 hr (red)





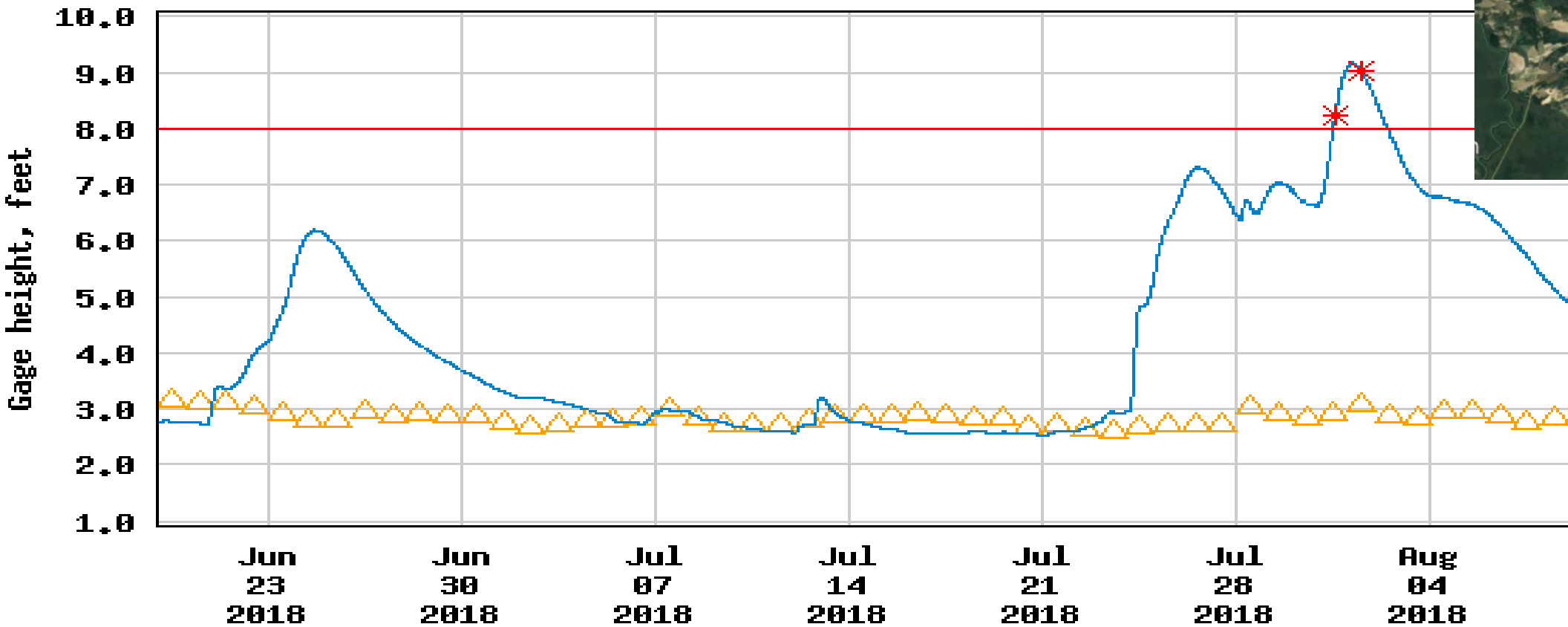
Temperature (F)

Bowling Farms on lower Cashie River
(June 19 to August 8, 2018)



Cashie River at Windsor

USGS 020811310 CASHIE RIVER AT SR1257 NEAR WINDSOR, NC

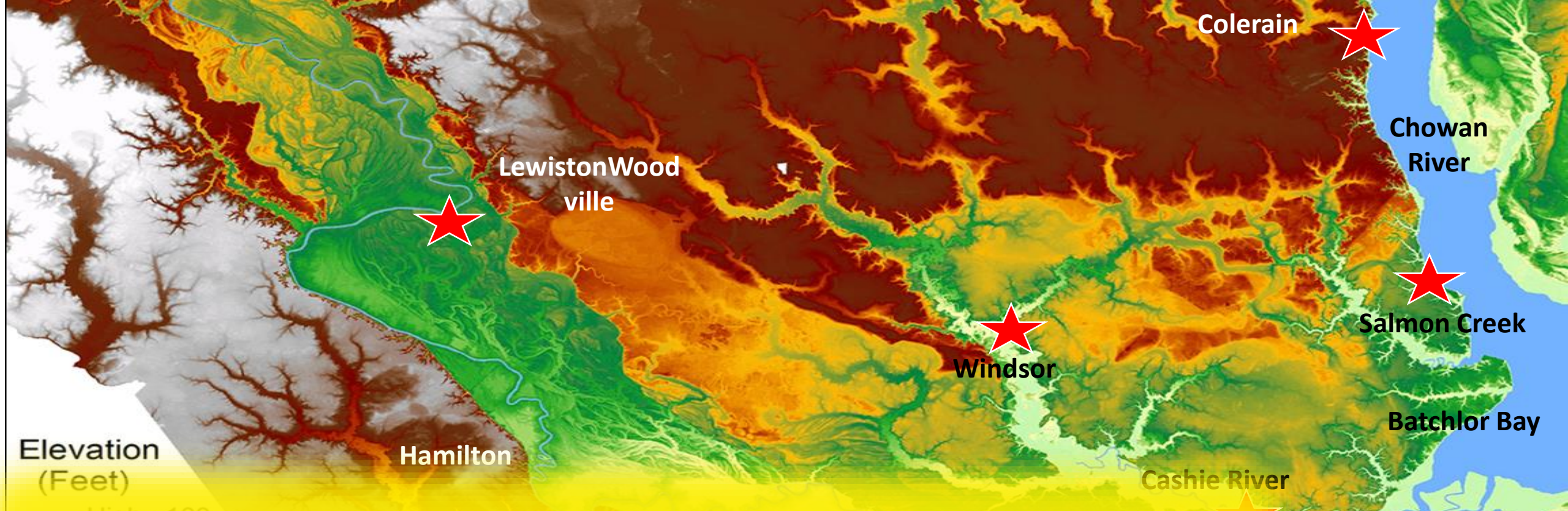


----- Provisional Data Subject to Revision -----

- Median daily statistic (30 years)
- Gage height
- Measured gage height
- National Weather Service Floodstage

Period of record and water level range time of June and August 2018

Location	Period of record (2018)	High water ft	High water date	Low water ft	Low water date	Difference ft
Bowling Farm	6/19-8/8	4.8	7/24/2018	2.0	7/9/2018	2.8
Colerain	6/26-8/7	5.0	7/24/2018	1.7	7/9/2018	3.3
Bal Gra	6/19-8/8	4.1	7/24/2018	0.9	7/9/2018	3.2
Salmon Creek	7/12-8/8	3.9	7/24/2018	1.9	7/13/2018	2.0
Windsor	6/19-7/18:7/25-8/8	2.8	≤7/28/2018	0.1	7/10/2018	2.7
School Road	6/19-8/8	9.2	8/1/2018	2.5	7/6-21/2018	6.7

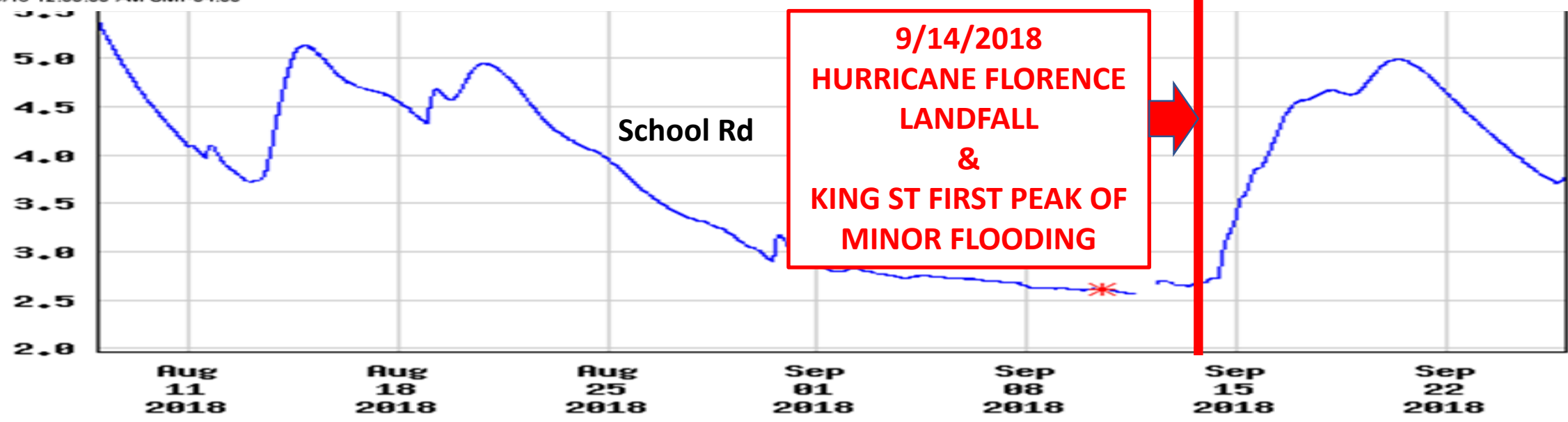
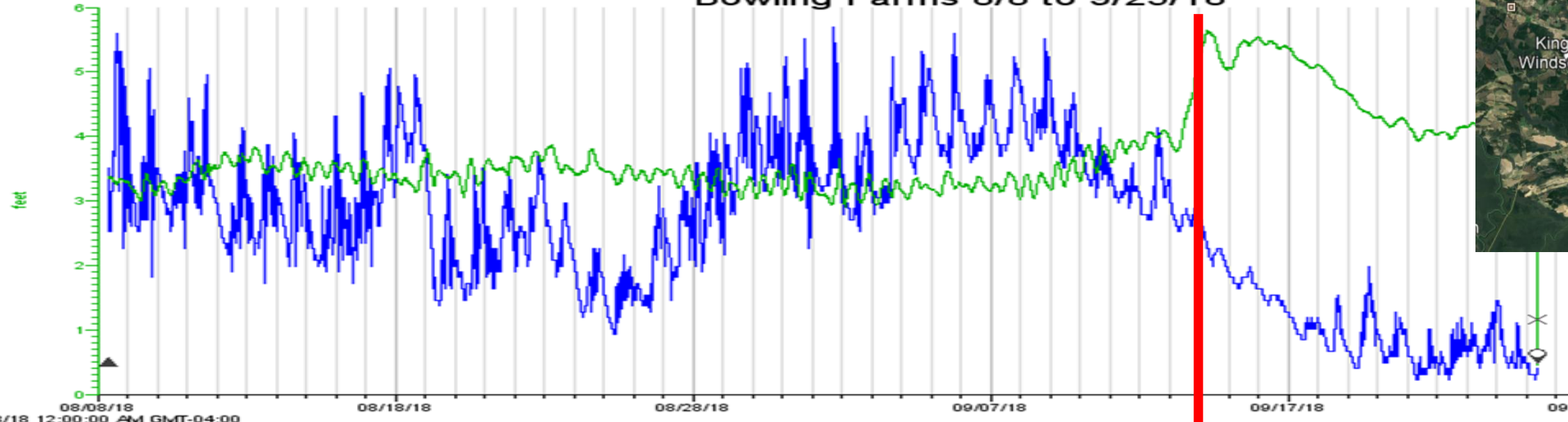


PRELIMINARY SUMMARY

Downstream processes affecting flow and water level do matter.

They may be as or more important than upstream processes at times.

Bowling Farms 8/8 to 9/25/18



----- Provisional Data Subject to Revision -----
— Gage height * Measured gage height

NC FIMAN results at King St (Sep 11 to Oct 11, 2018)

