Water quality conditions for Everglades National Park, Water Year 2014

Technical Oversight Committee Meeting
Wednesday, February 4, 2015

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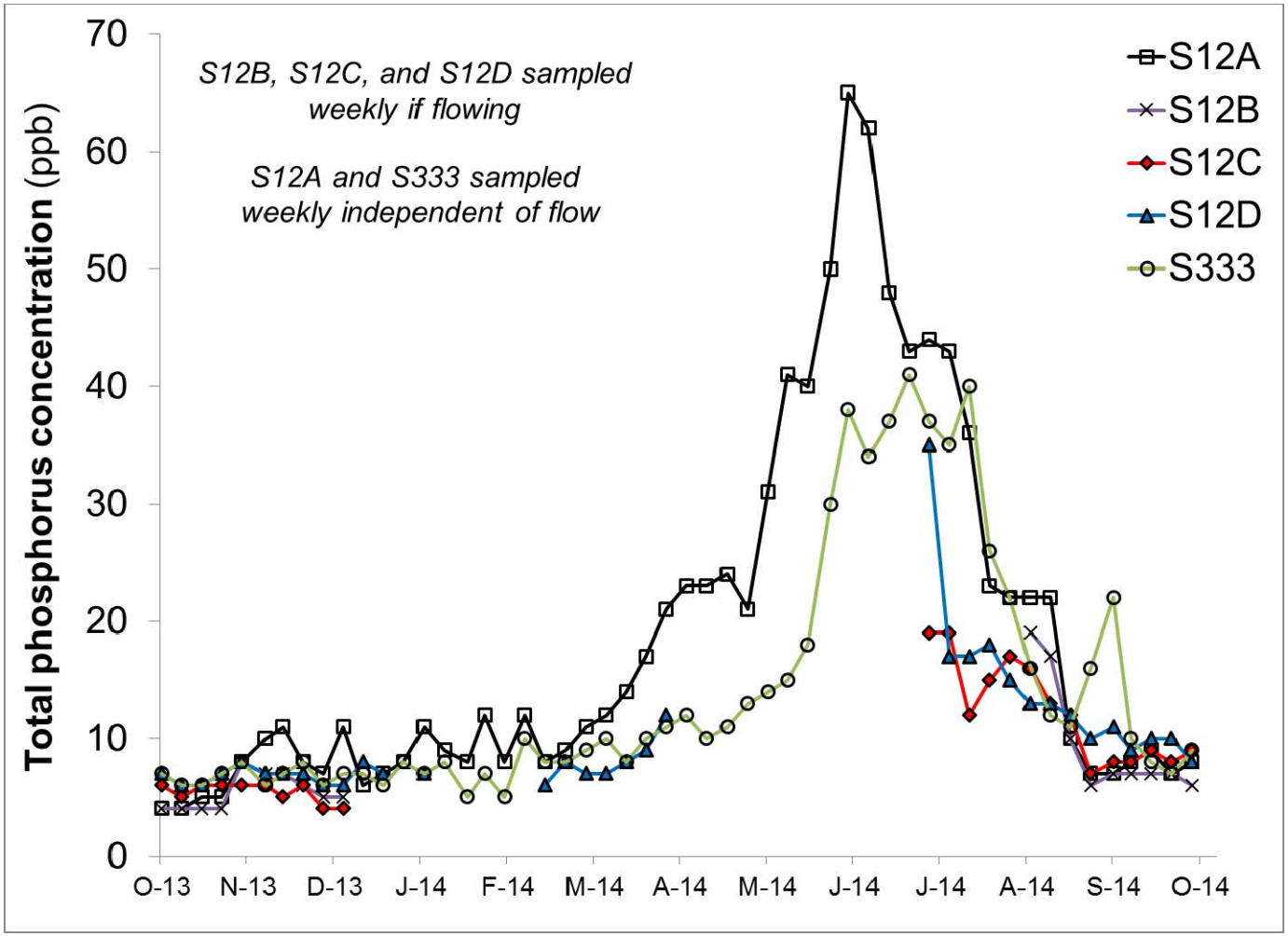
U.S. Fish and Wildlife Service
Arthur R. Marshall Loxahatchee National Wildlife Refuge

Water Quality Conditions - WY2014 Everglades National Park

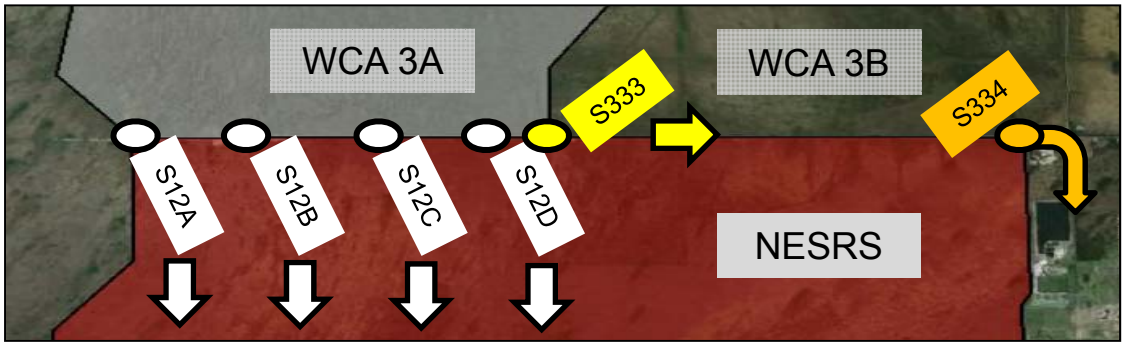
Previous discussions of Water Year 2014

- July 29th and October 21st Technical Oversight Committee meetings



Water Quality Conditions - WY2014 Everglades National Park

Consent Decree compliance calculation (Settlement Agreement, Appendix A)



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Load = Concentration × Volume

S12s ⇨ Total phosphorus concentration (parts per billion) × volume (cubic feet)

S333 ⇨ S333 Total phosphorus concentration (parts per billion) × [S333 volume (cubic feet) − S334 volume (cubic feet)]

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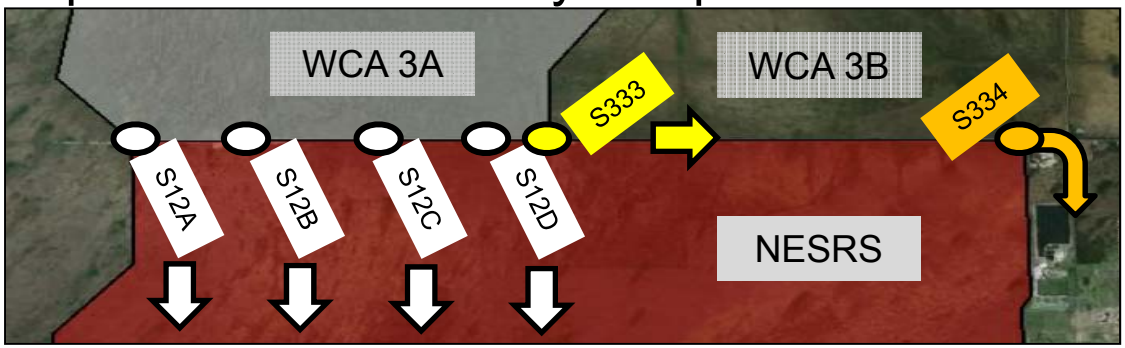
S333 total phosphorus concentrations

- S333 samples are taken weekly independent of flow



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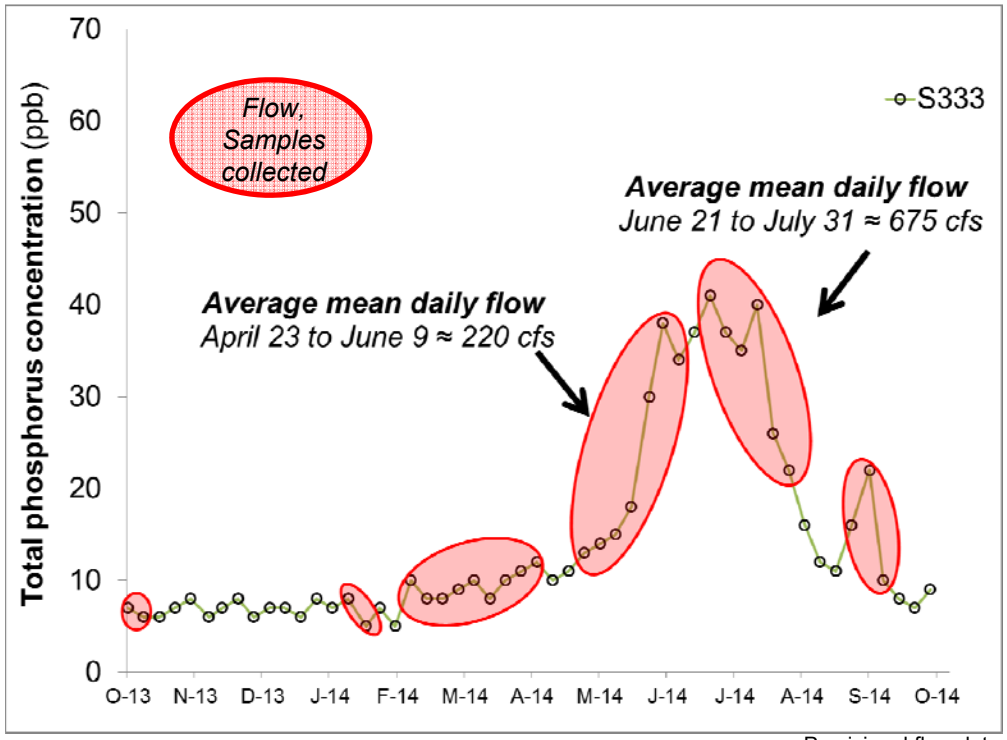
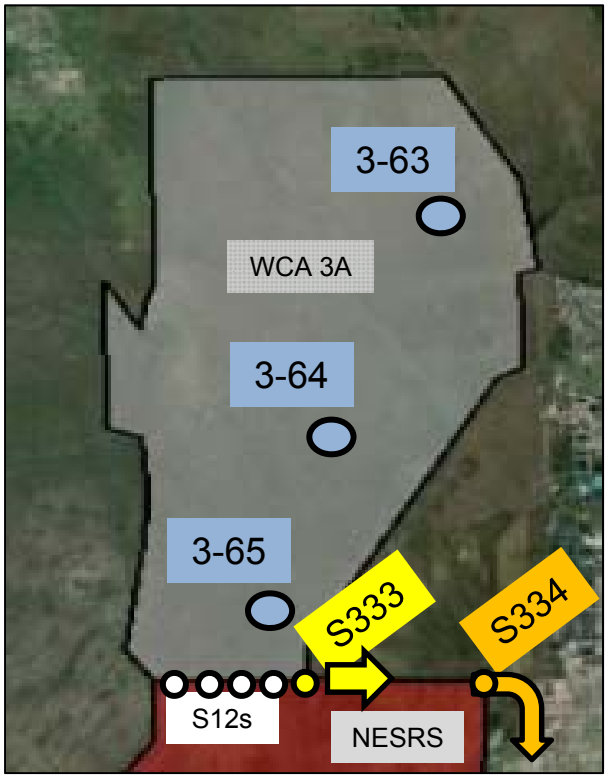


Provisional flow data

Water Quality Conditions - WY2014 Everglades National Park

Water Conservation Area 3A regulation schedule

- The location and volume of inflows to Everglades National Park vary seasonally based on the average stage at three gages in Water Conservation Area 3A and other conditions



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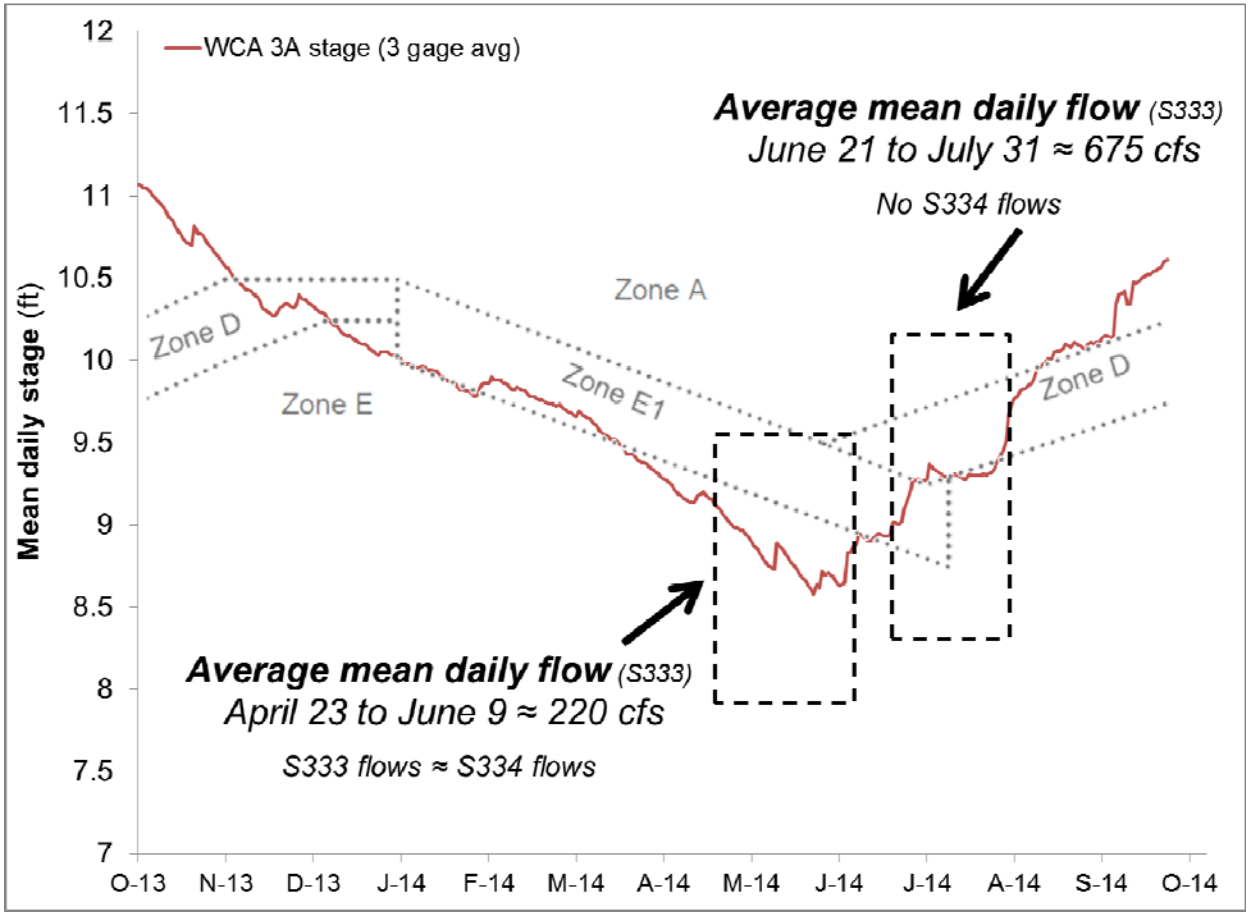
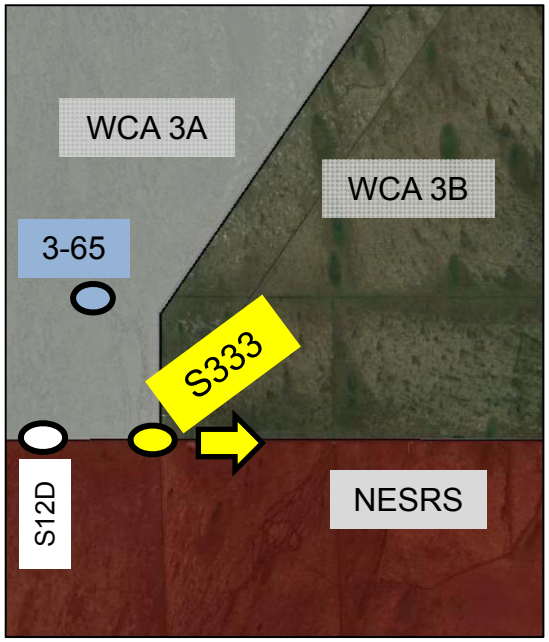


Provisional flow data

Water Quality Conditions - WY2014 Everglades National Park

Flow event #2 (June 21st to July 31st)

- All S333 flows delivered to Northeast Shark River Slough



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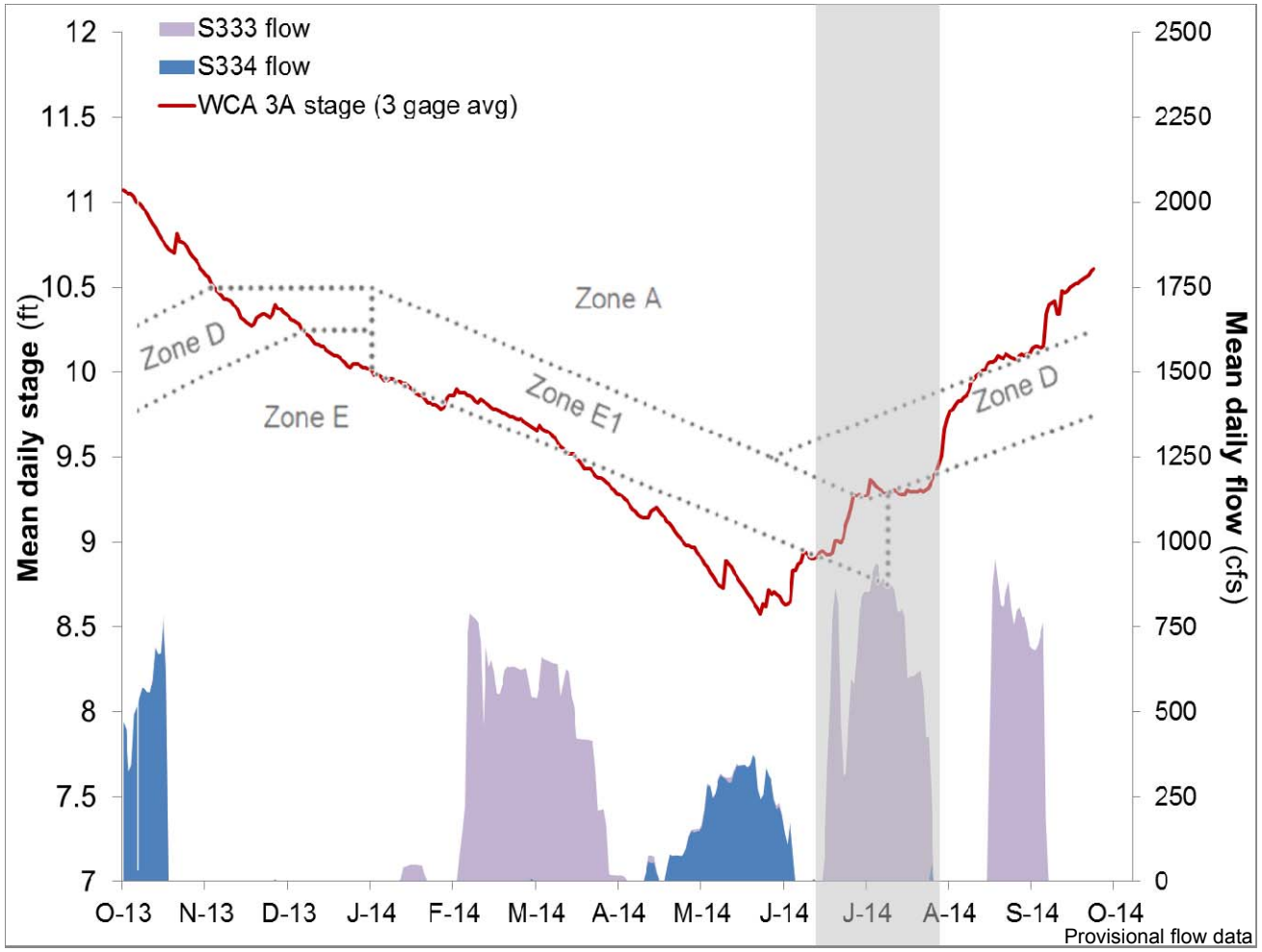
June 21st to July 31st event:
Average mean daily flow ≈ 675 cfs

Range of mean daily flows
≈ 80 to 915 cfs

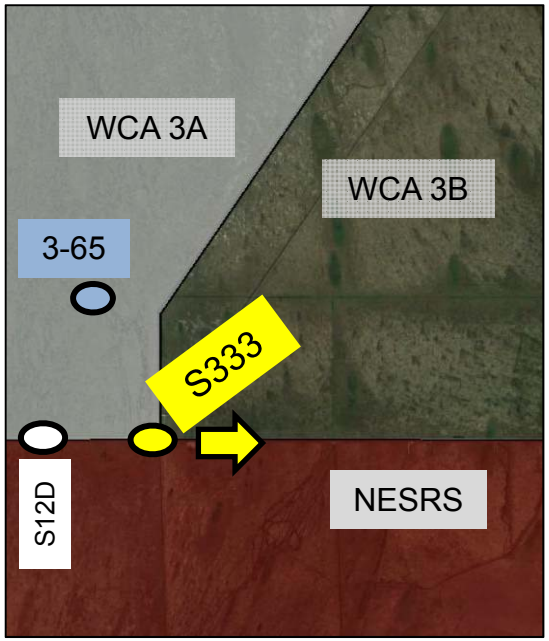


Range of WCA 3A mean daily stages (3 gage average) ≈ 8.9 to 9.4 ft

Water Quality Conditions - WY2014 Everglades National Park

Concentration event (June 21st to July 31st)

- Total phosphorus concentrations are elevated when stages in the up-stream marsh and canals are low



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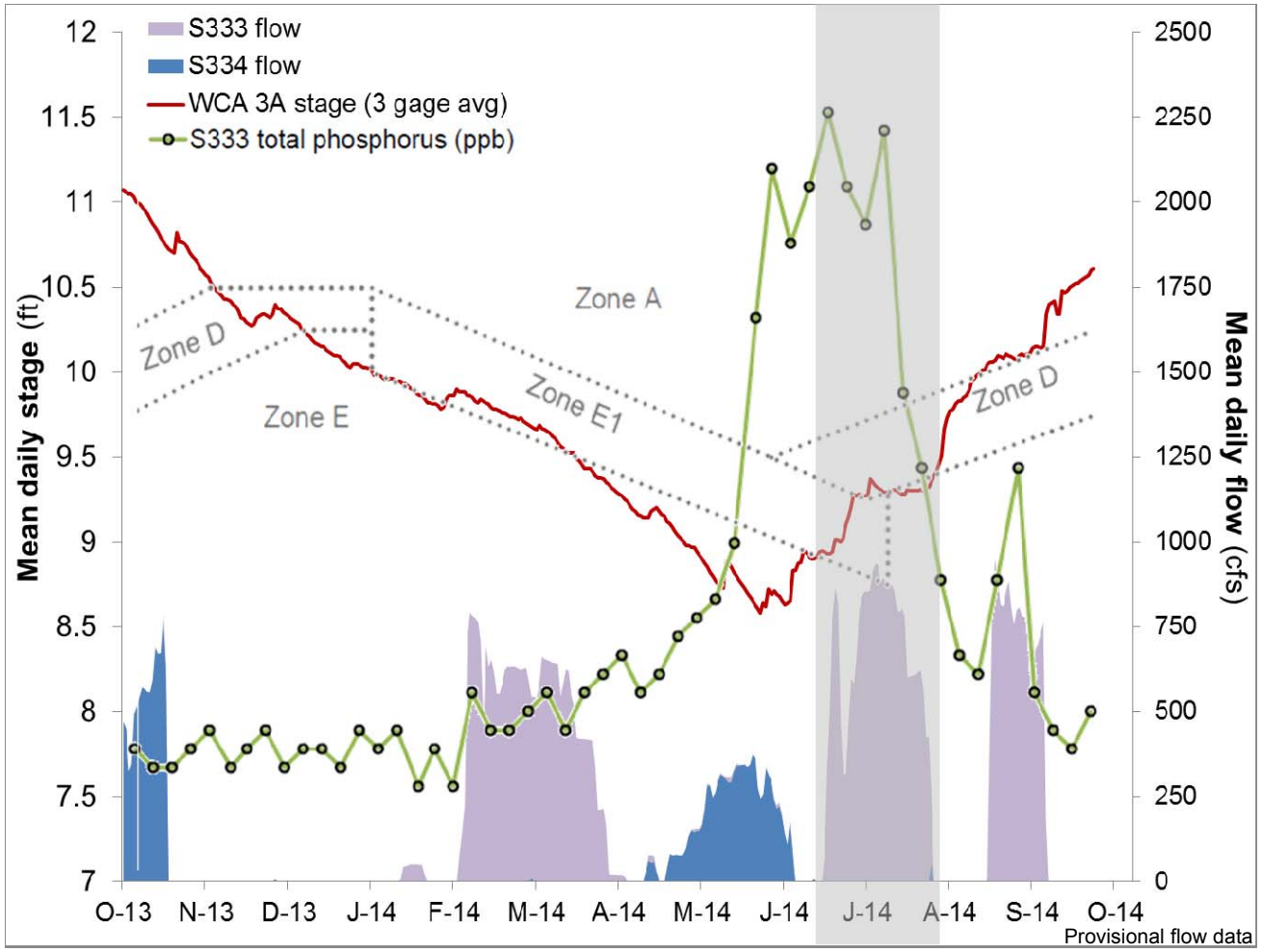
June 21st to July 31st event:
Average total phosphorus concentration ≈ 34 ppb

Range of total phosphorus concentrations ≈ 22 to 41 ppb



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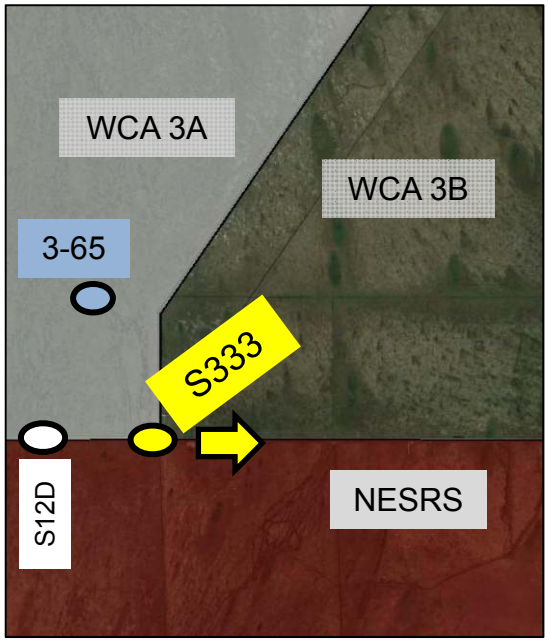

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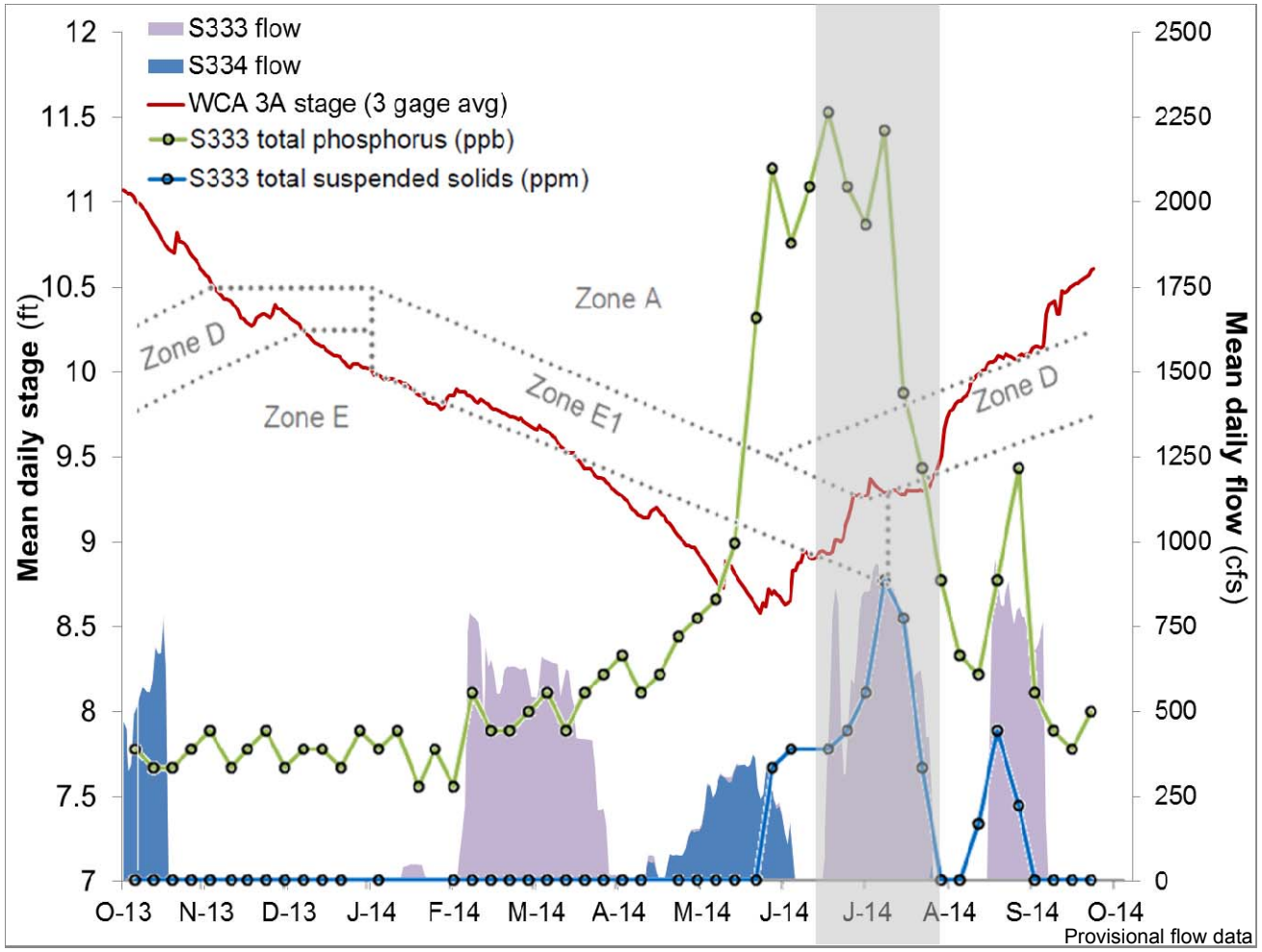
June 21st to July 31st event:
Average total suspended solids concentration ≈ 10 ppm

Range of total suspended solids concentrations ≈ 6 to 16 ppm



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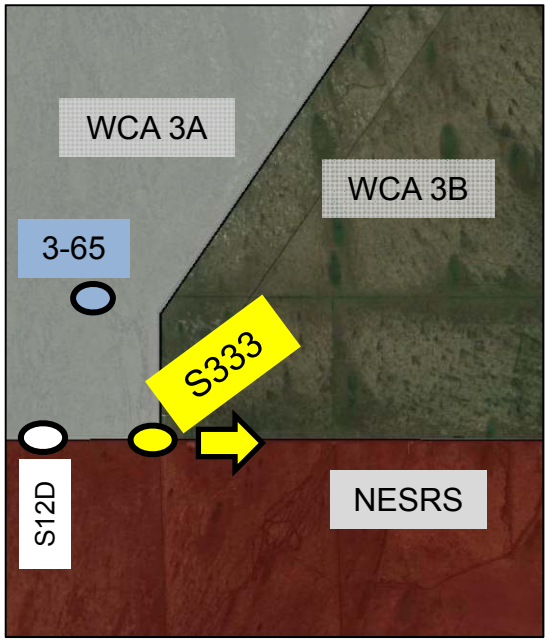

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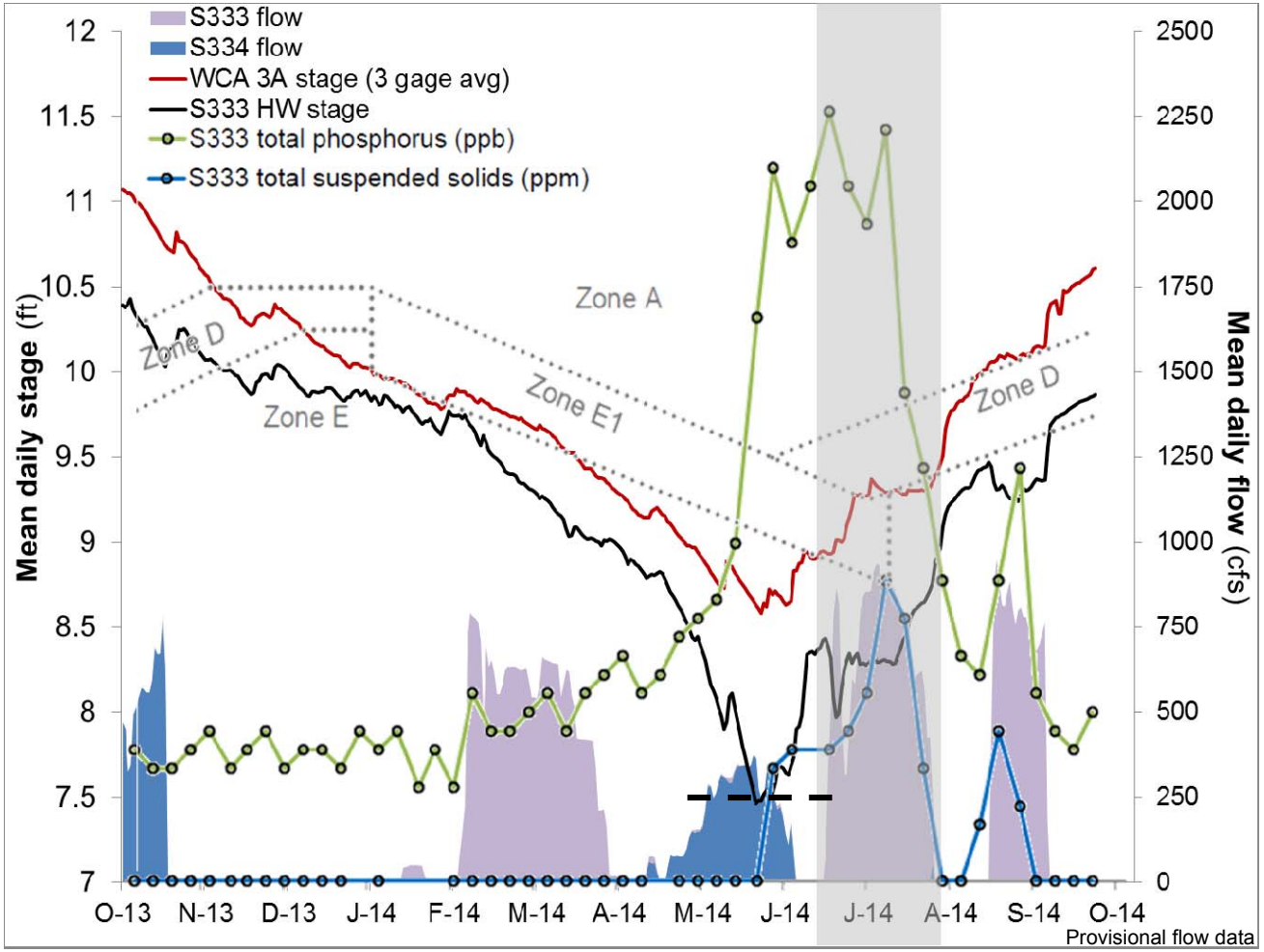
June 21st to July 31st event:

Average mean daily flow ≈ 675 cfs

Average total phosphorus concentration ≈ 34 ppb

Average total suspended solids concentration ≈ 10 ppm



Range of WCA 3A mean daily stages (3 gage average) ≈ 8.9 to 9.4 ft

Range of S333 HW stages ≈ 8.0 to 8.8 ft

Water Quality Conditions - WY2014 Everglades National Park

Summary of Water Year 2014:

- Water Year 2014 conditions are representative of the previously documented dynamic between stage and total phosphorus concentration observed at marsh and structure monitoring stations
- Long-term water quality conditions and trends in the Everglades Protection Area continue to improve
- The long-term, downward trend in the flow-weighted mean total phosphorus concentration for the inflow structures to Everglades National Park continued through Water Year 2014
- Future technical analyses will further evaluate: rainfall quantity and distribution, hydrologic conditions in Water Conservation Area 3A, seasonal dynamics between canal and marsh stages, and the impact of nutrient loading events on the Everglades National Park marsh

Consent Decree compliance timeline:

- Final compliance data presented to the Technical Oversight Committee meeting - April 28, 2015

Questions?