Draft Resource Assessment by OOA BEAM for Coastal Water Planning Region

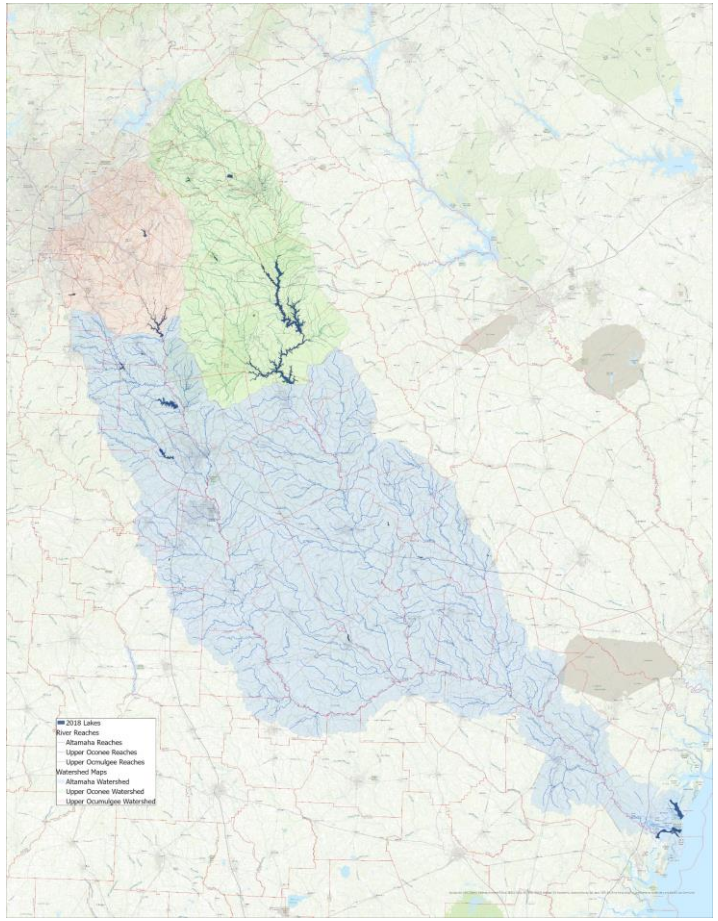
Georgia EPD

February 2022

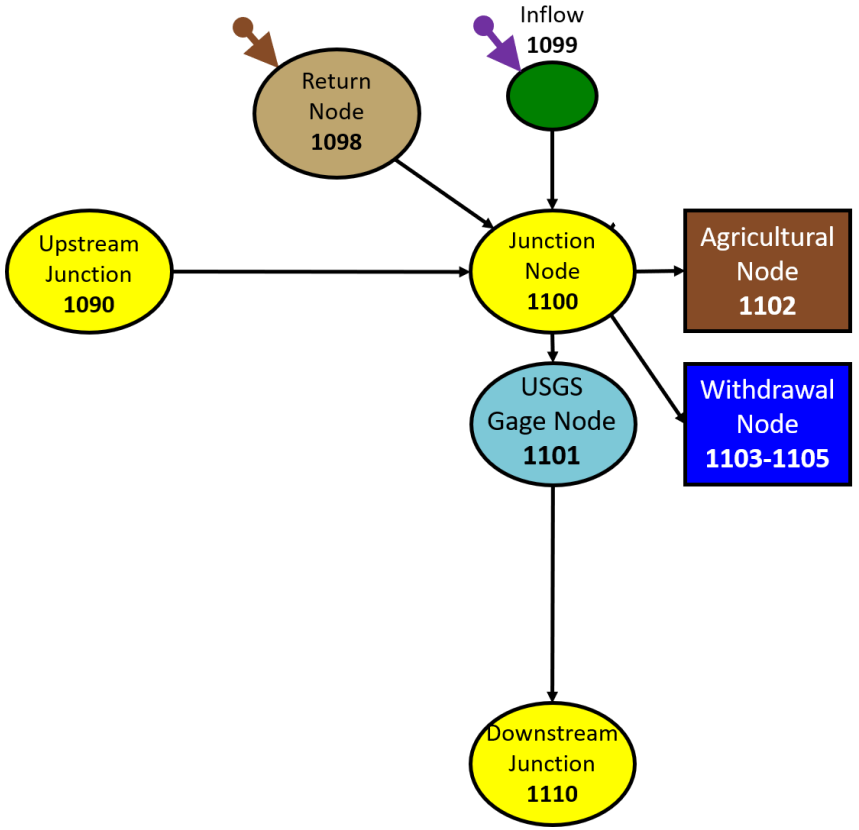
Presentation Outline

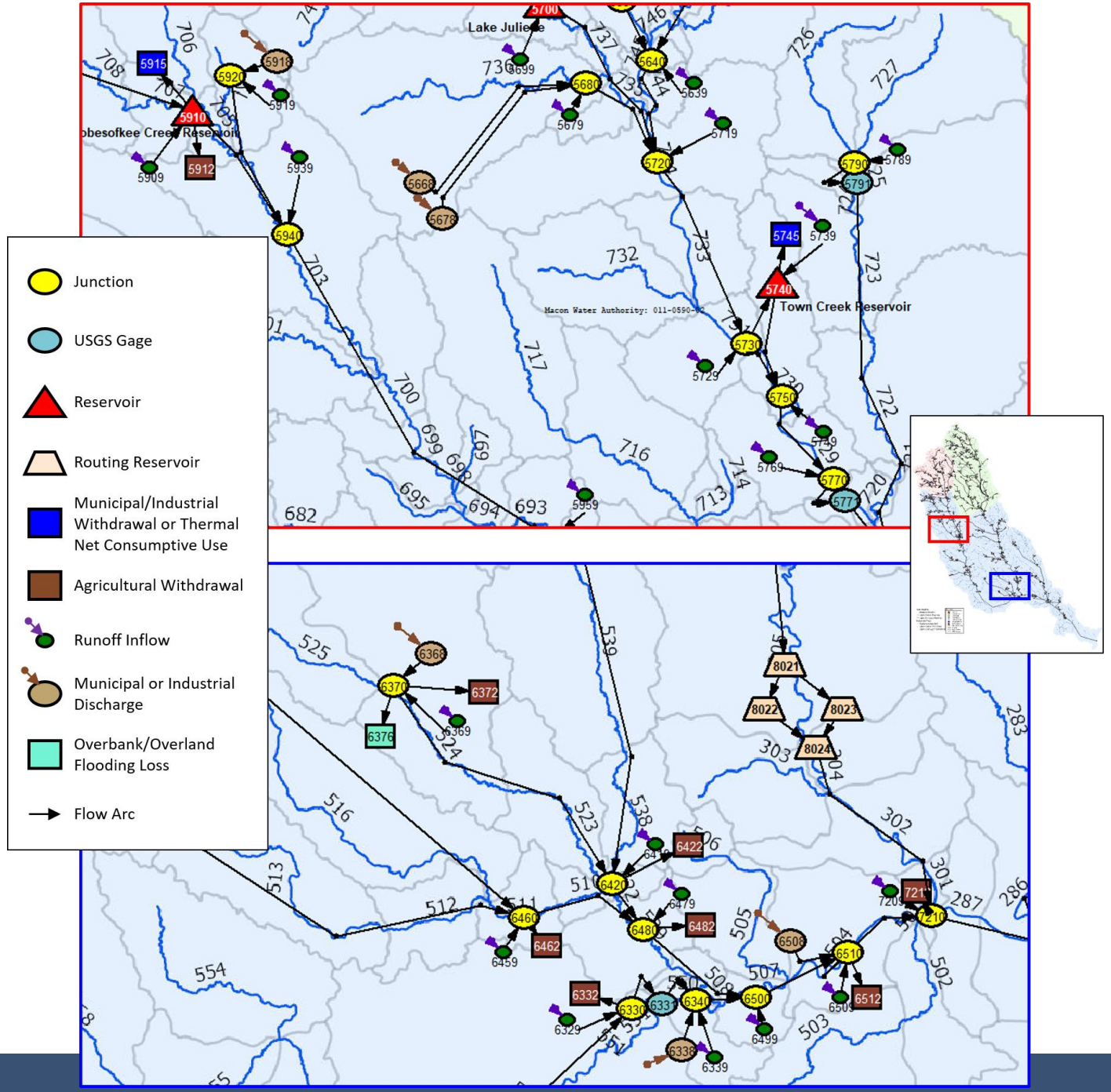
- Introduction and Model Settings
- Model Results Baseline Scenario
  - Water Supply Challenges, Examples (water supply PMs)
  - Wastewater Assimilation Challenges, Examples (wastewater assimilation PMs)
  - Performance Metric at Macon for recreation and fish habitat
- Additional Performance Measures to consider?

Coastal Region and OOA Model Domain



BEAM Node Types





OOA BEAM Model Baseline Settings

- Simulation Period (Hydrologic Conditions): 1939-2018
- Withdrawal and Discharge amount: average of period 2010-2018 (i.e. marginally dry conditions)
- Instream Flow Protection Thresholds: per permit conditions

Water Supply Settings: Facilities Analyzed in BEAM Model for Coastal Region

Facility	Total number
Municipal Withdrawal	None
Municipal Discharge	None
Industrial Withdrawal	None
Industrial Discharge	None
Energy Withdrawal/Discharge	None

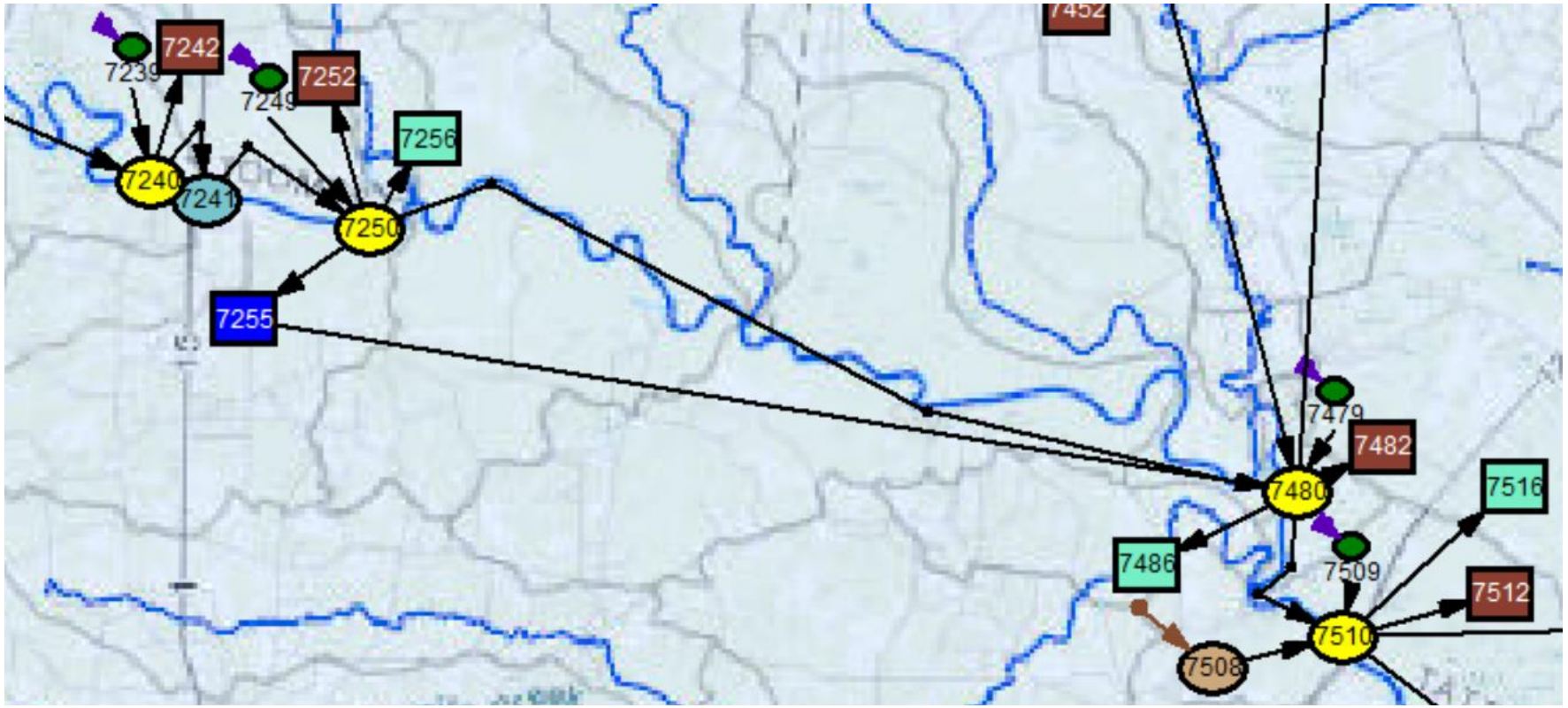
Demonstration: Resource Assessment Results

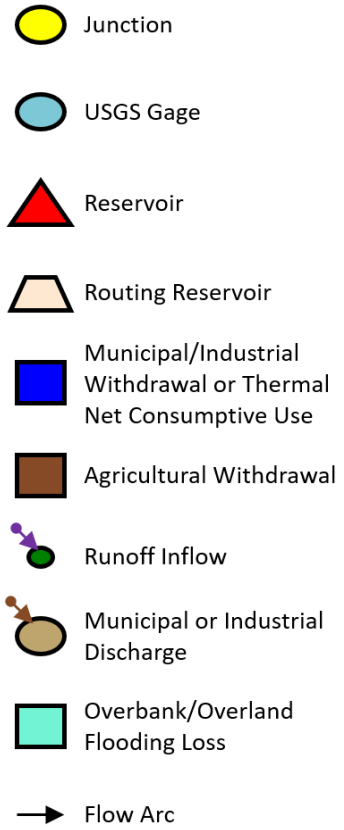
- Water Supply Challenges, Examples
  - Georgia Power Co - Plant Hatch
- Wastewater Assimilation Challenges, Examples (wastewater assimilation PMs)
  - City of Hazlehurst (Bully Creek WPCP)

- Performance Metric at Macon for recreation
- Performance Metric for fish habitat indices

Water Supply Challenge Example 1:Permit 001-0690-01 (BEAM Node 7255)

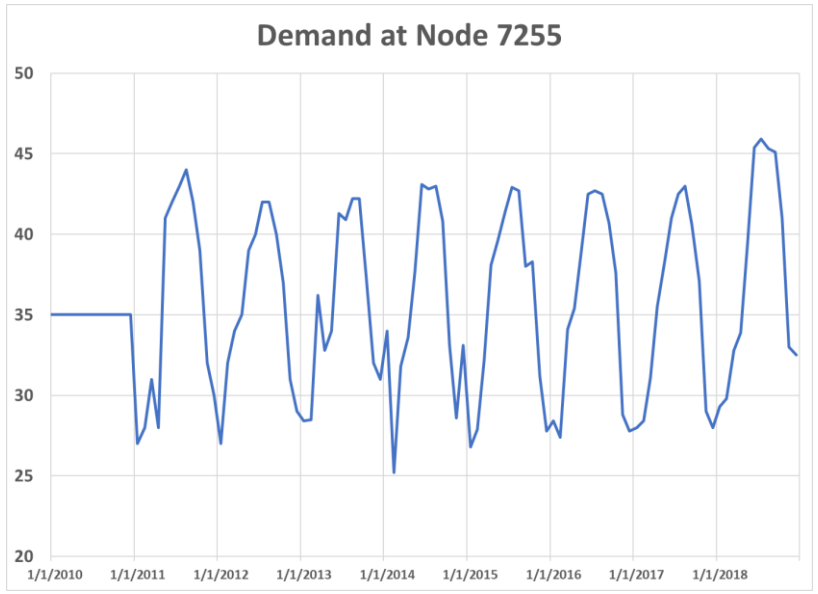
- Permit holder: Southern Nuclear Operating Company- Plant Hatch
- Withdrawal limit: 103.6 mgd (daily)/85 mgd (monthly)



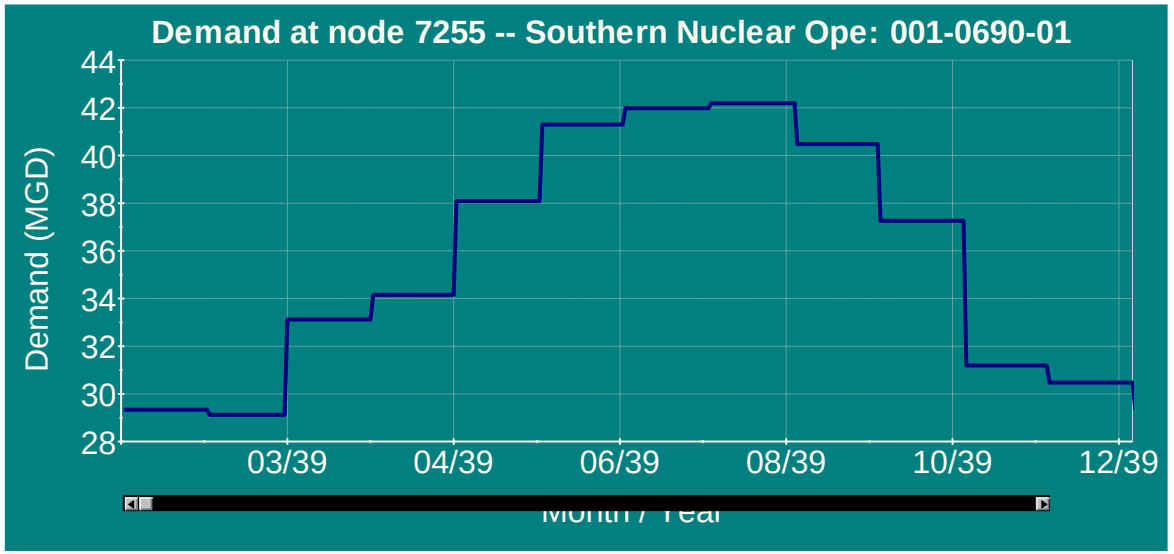


Permit 001-0690-01 Withdrawal Amount Setting- average of 2010-2018

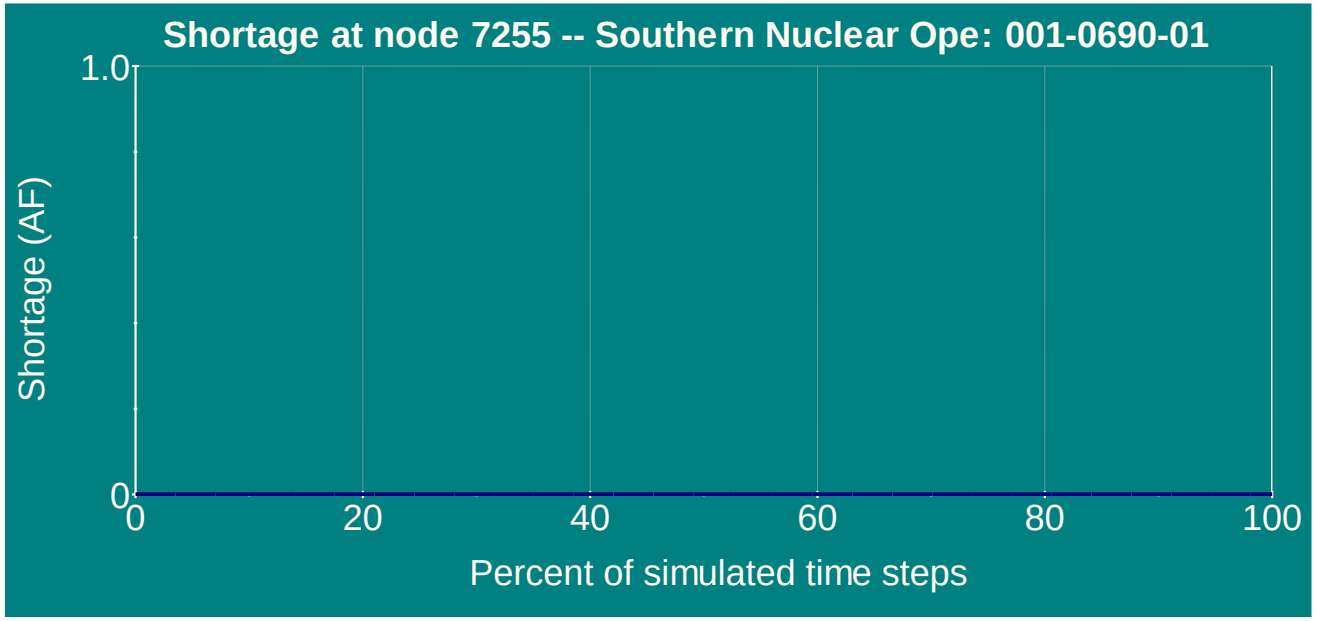
2010 - 2018



Baseline



Simulated Water Supply Challenge Frequency



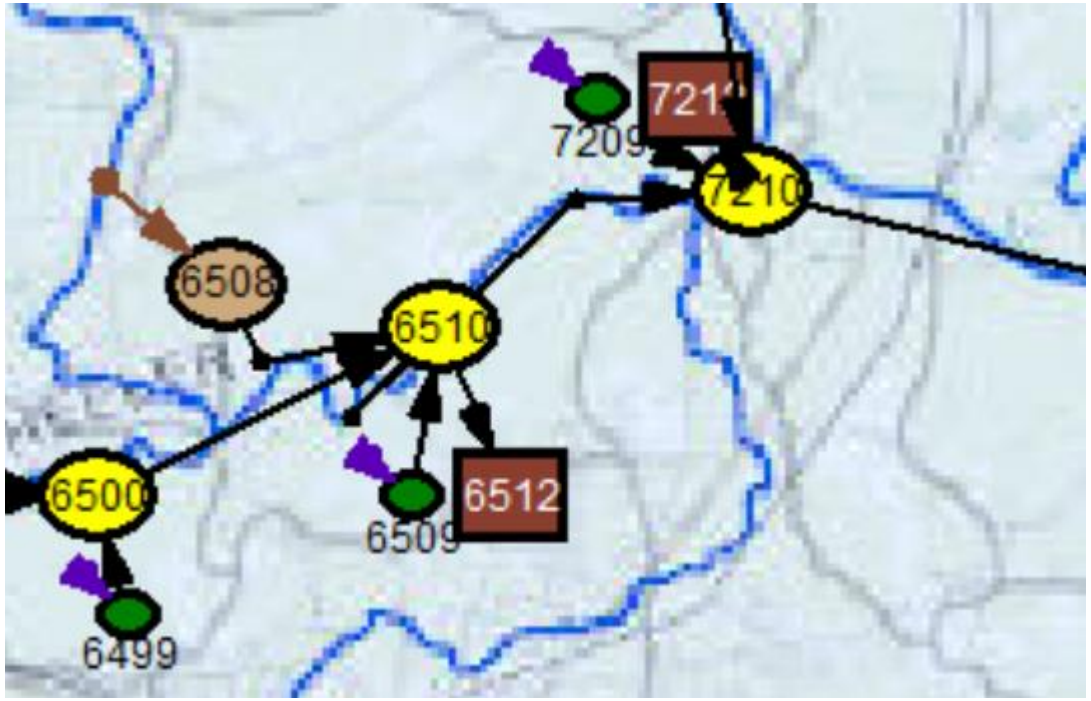
Shortage at all times remaining at zero indicates no challenges encountered.

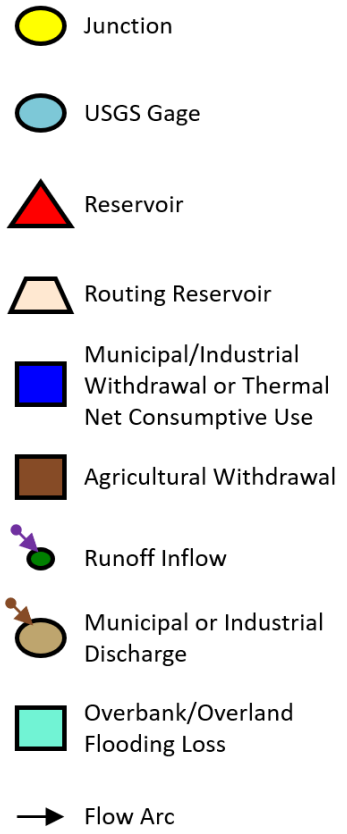
Discussion

- Do you want to adopt this performance metric as part of your plan?
- Future conditions will be included in the next update in Resource Assessment for comparison with the baseline.
- What additional performance measure would you like to see in assessing water supply?

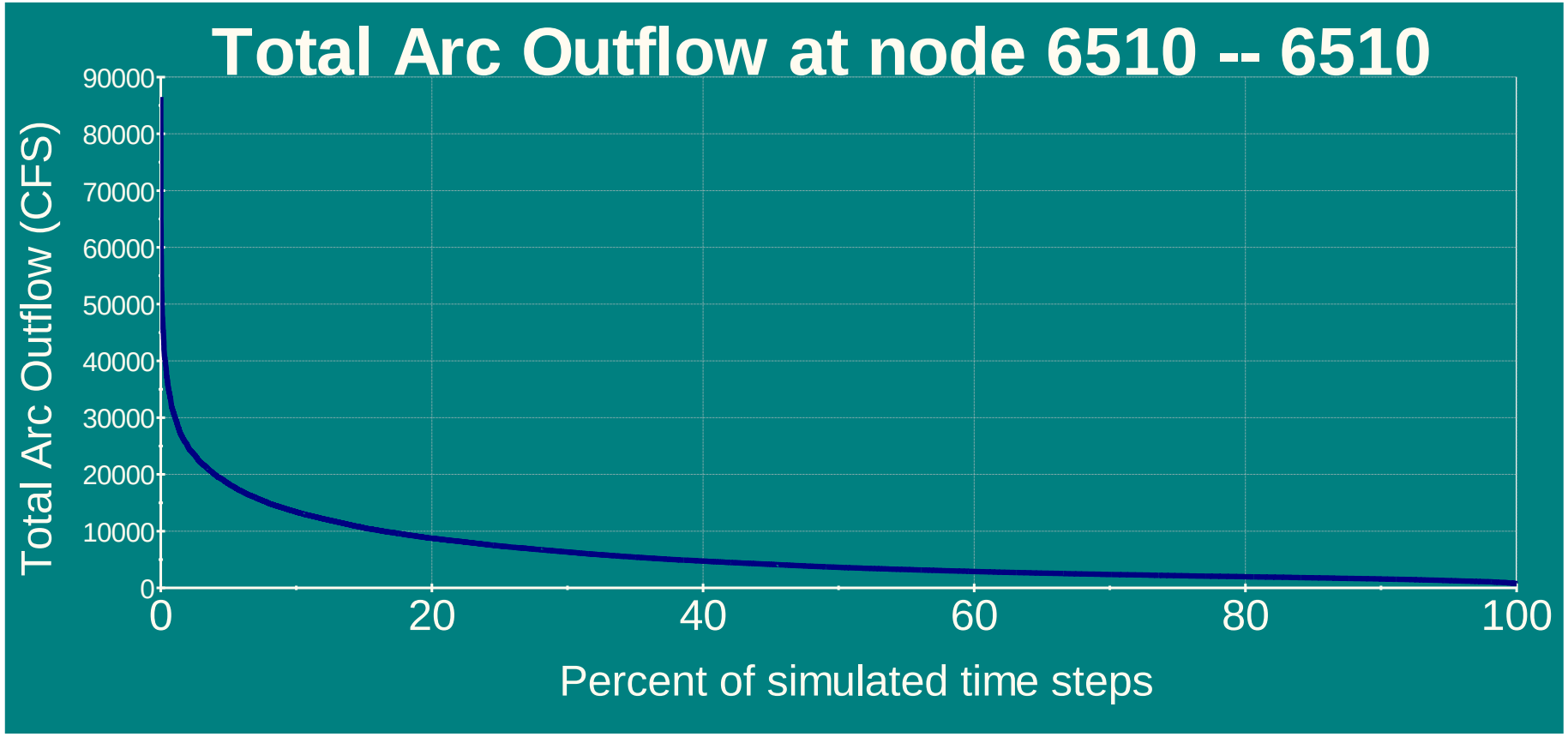
Wastewater Assimilation Challenge Example 1:Permit GA 0036765 (BEAM Node 6508)

- Permit holder: City of Hazlehurst(Bully Creek WPCP)
- Permitted monthly discharge flow: 1.5 mgd
- 7Q10 Flow at discharge location: 1219 cfs

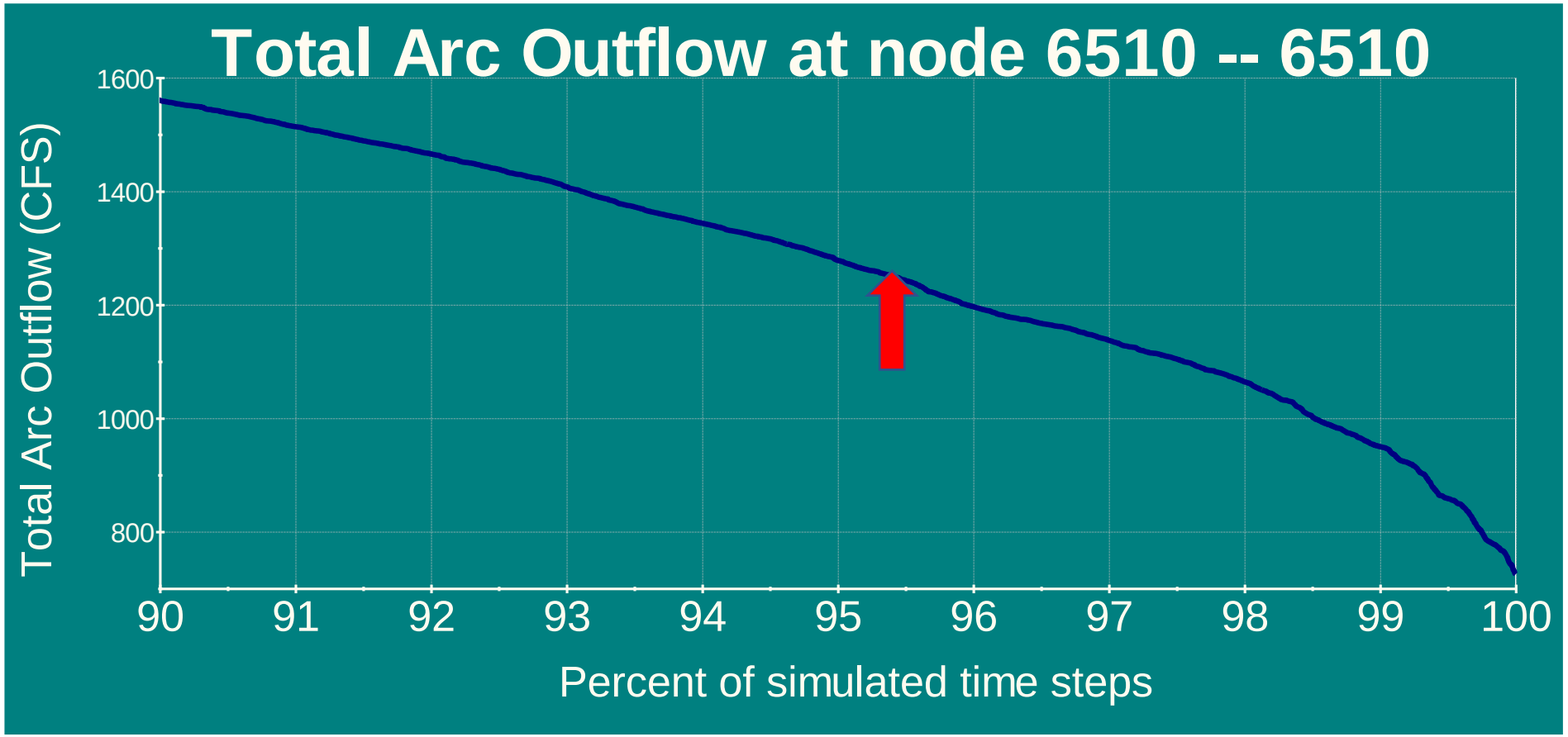




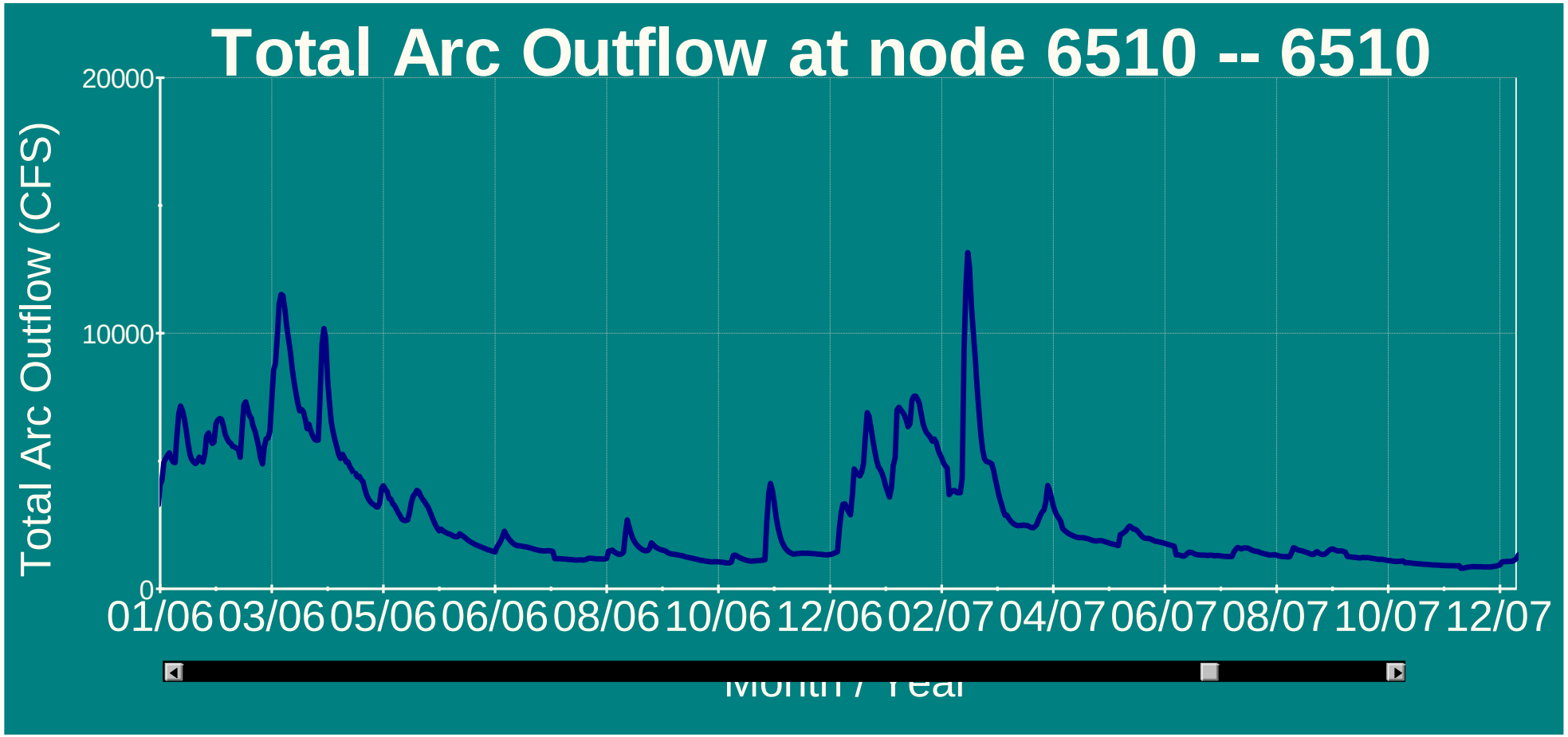
Simulation Results at GA 0036765 Location Flow Frequency



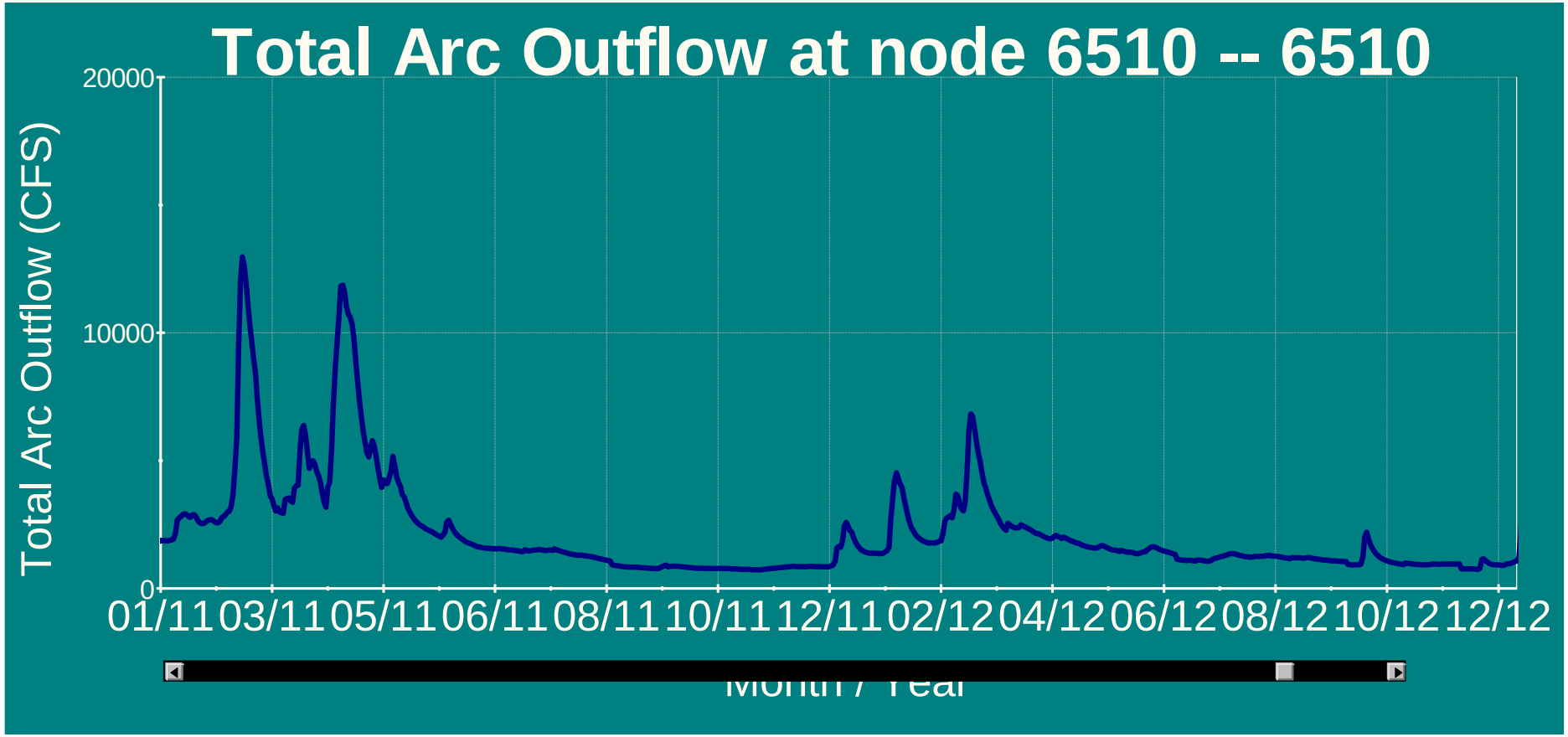
Simulation Results at GA 0036765 Location Flow Frequency (low end) (7Q10 = 1219 cfs)



Simulation Results at GA 0036765 Location Flow in 2006-2007



Simulation Results at GA 0036765 Location Flow in 2011-2012



Wastewater Assimilation Challenge in 2006 & 2007

Year	Total days of challenge	Total volume of shortage (acre-feet)
2006	**66**	**12436**
2007	**84**	**37927**

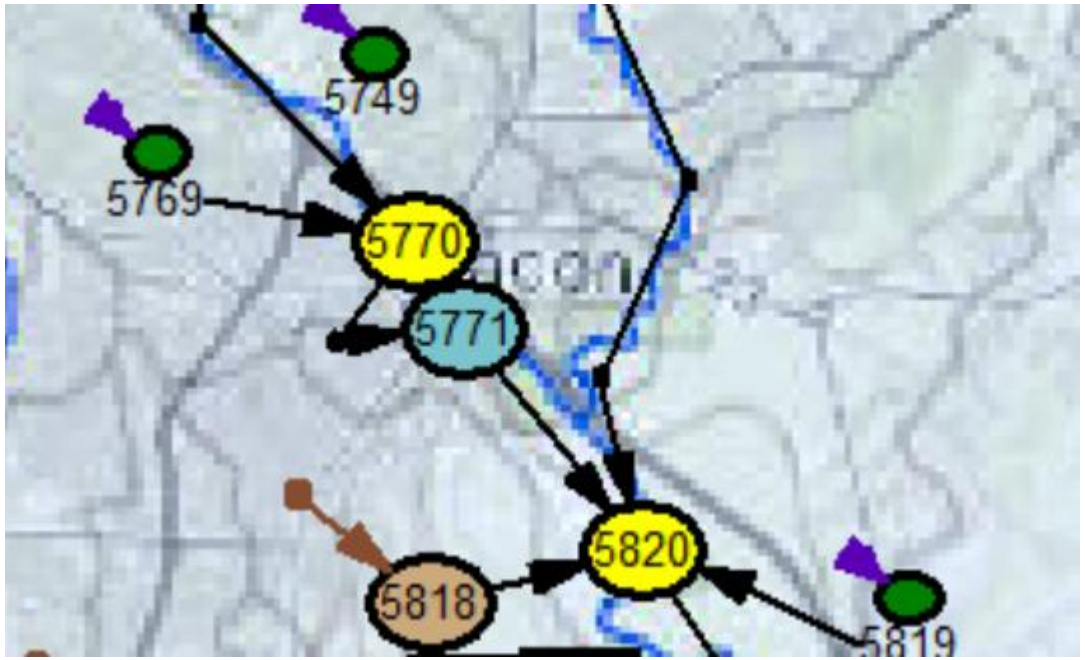
Wastewater Assimilation Challenge in 2011 & 2012

Year	Total days of challenge	Total volume of shortage (acre-feet)
2011	**130**	**98375**
2012	**140**	**55174**

Discussion

- Do you want to adopt this performance metric as part of your plan?
- Future conditions will be included in the next update in Resource Assessment for comparison with the baseline.
- What additional performance measure would you like to see in assessing wastewater assimilation?

Simulated Flow at USGS Macon Gage (BEAM Node 5771)



Junction

USGS Gage

Reservoir

Routing Reservoir

Municipal/Industrial Withdrawal or Thermal Net Consumptive Use

Agricultural Withdrawal

Runoff Inflow

Municipal or Industrial Discharge

Overbank/Overland Flooding Loss

Flow Arc

Simulation Results at USGS Macon Gage

- Flow time series from January 1, 1939 through December 31, 2018 – an eighty-year period
- May facilitate the following:
  - Recreational assessment
  - Flow evaluation, including for water quality
  - Habitat quantification

Using Flow to Create Boating/Paddling Performance Metric

For Informational Purposes Only

- Convert stream flow to stage

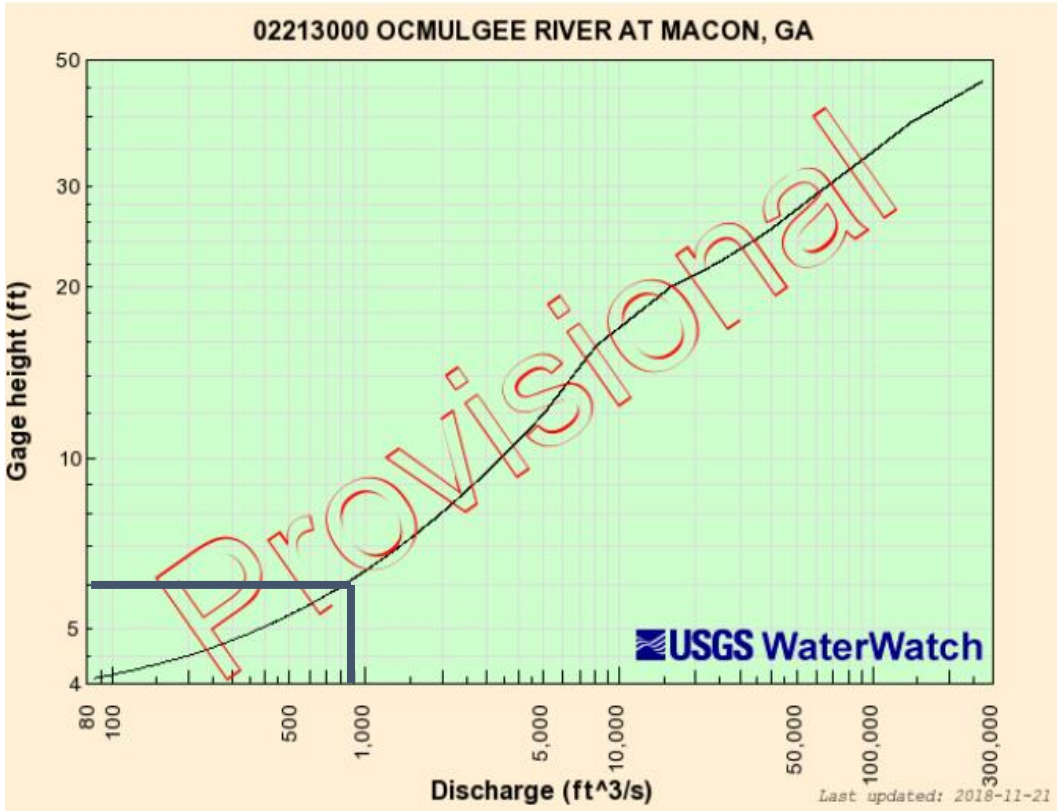


Table 11. Low-flow metrics for Ocmulgee River recreational boating

River Service	Metric	Source
Kayaking/canoeing	Amount of time that kayaking or canoeing is not ideal (i.e., gage height ≤ 6.0 feet) due to low water conditions	Personal communication with Kathleen O' Neal (Ocmulgee Outdoor Expeditions)
Boating	Amount of time that boating is not ideal (i.e., gage height ≤ 7.5 feet) due to low water conditions	Viable stage for kayaking/canoeing + 1.5 feet (average shaft length of short- and long-shaft small engines); (Iboats, 2009)

Locations of Recreational Interests – Stakeholder Input

LEGEND

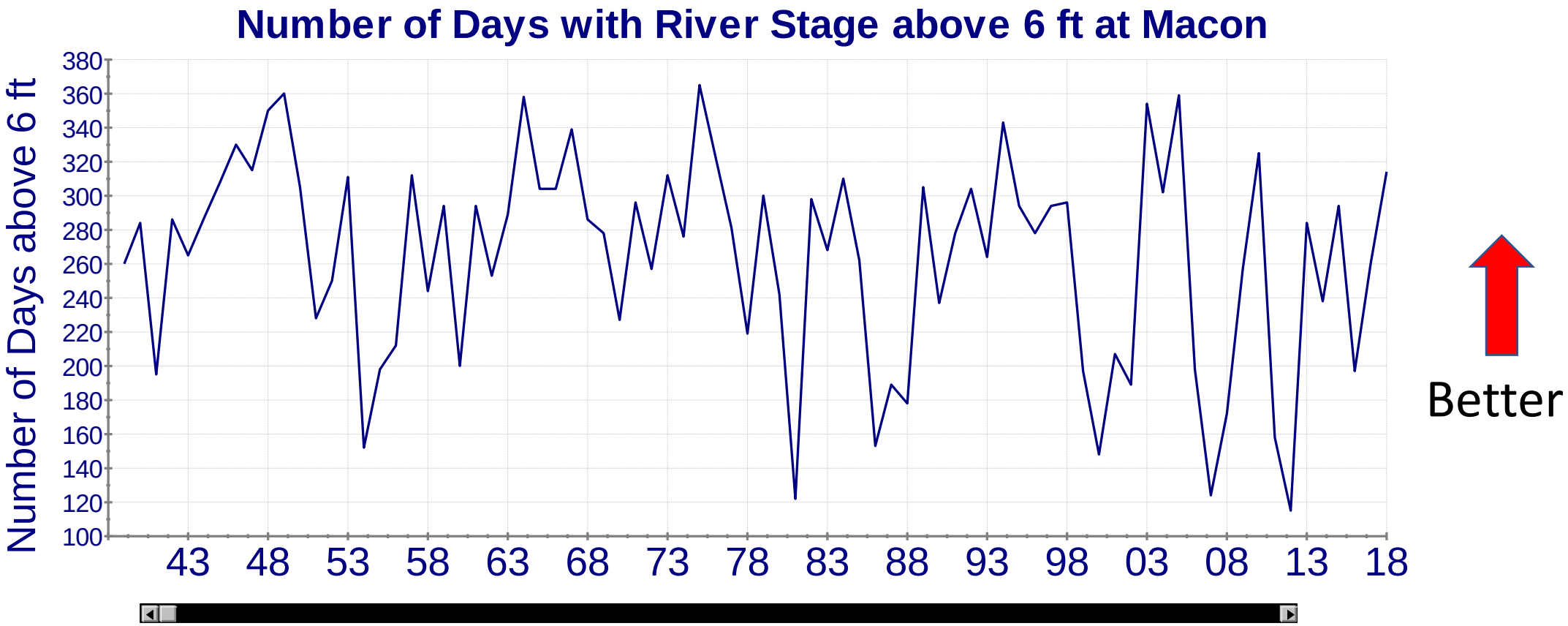
RIVERS & STREAMS

COUNTIES

STAKEHOLDER CONCERNS

- HABITAT
- HYDROELECTRIC
- RECREATION
- WATER QUALITY
- WATER SUPPLY

Performance Metric at Macon, GA for Boating



Discussion

- Do you want to adopt this performance metric as part of your plan?
- Future conditions will be included in the next update in Resource Assessment for comparison with the baseline.
- What additional performance measure would you like to see in assessing river recreation?

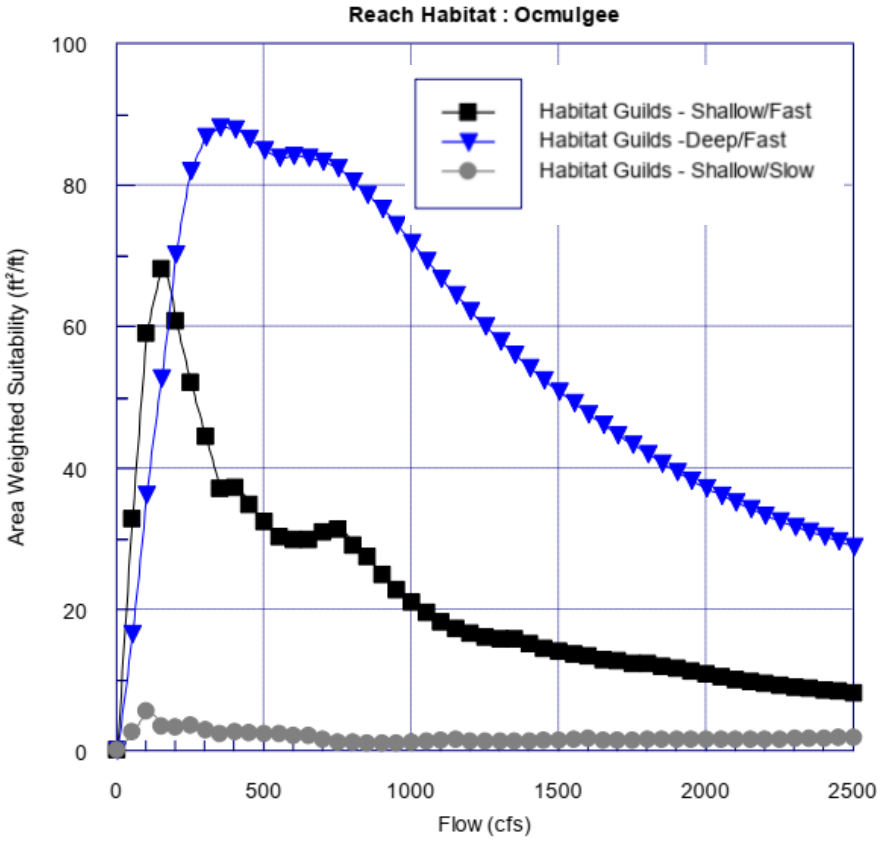
Reach Habitat

- Shallow/Fast
  - Species: Spottail Shiner and Bluehead Chub

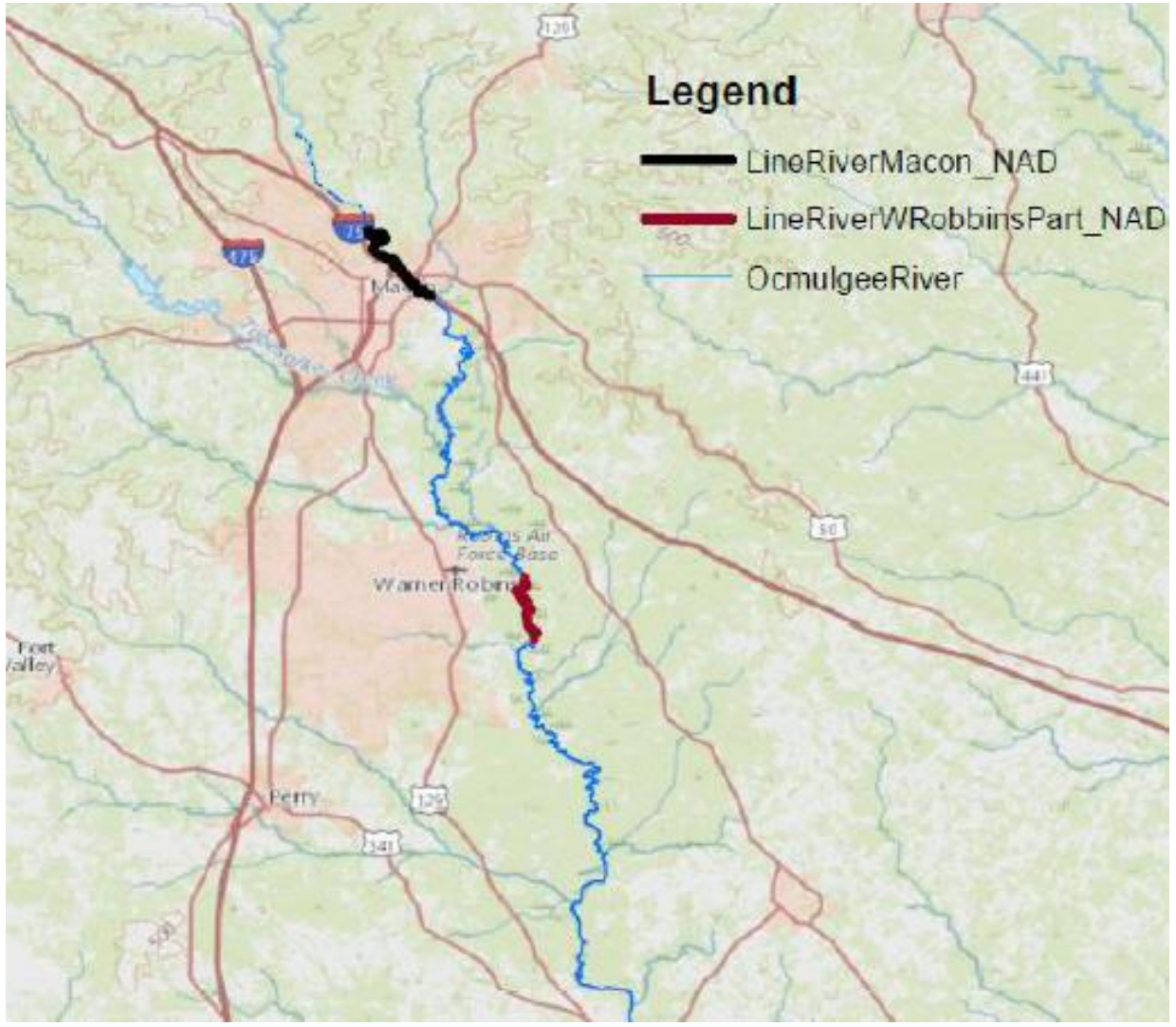
https://www.inaturalist.org/guide_taxa/490641
https://en.wikipedia.org/wiki/Spottail_shiner

- Deep/Fast
  - Species: Largemouth Bass

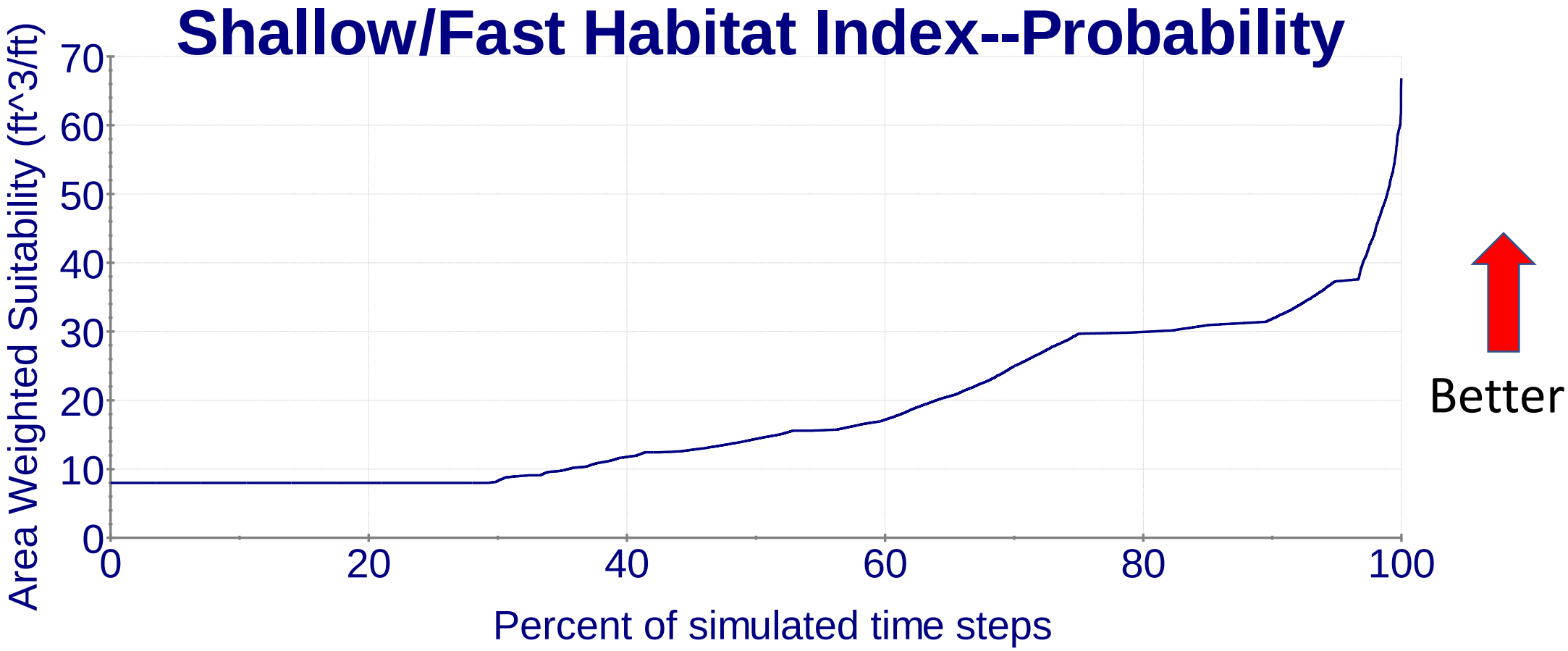
https://www.fws.gov/fisheries/freshwater-fish-of-america/largemouth_bass.html



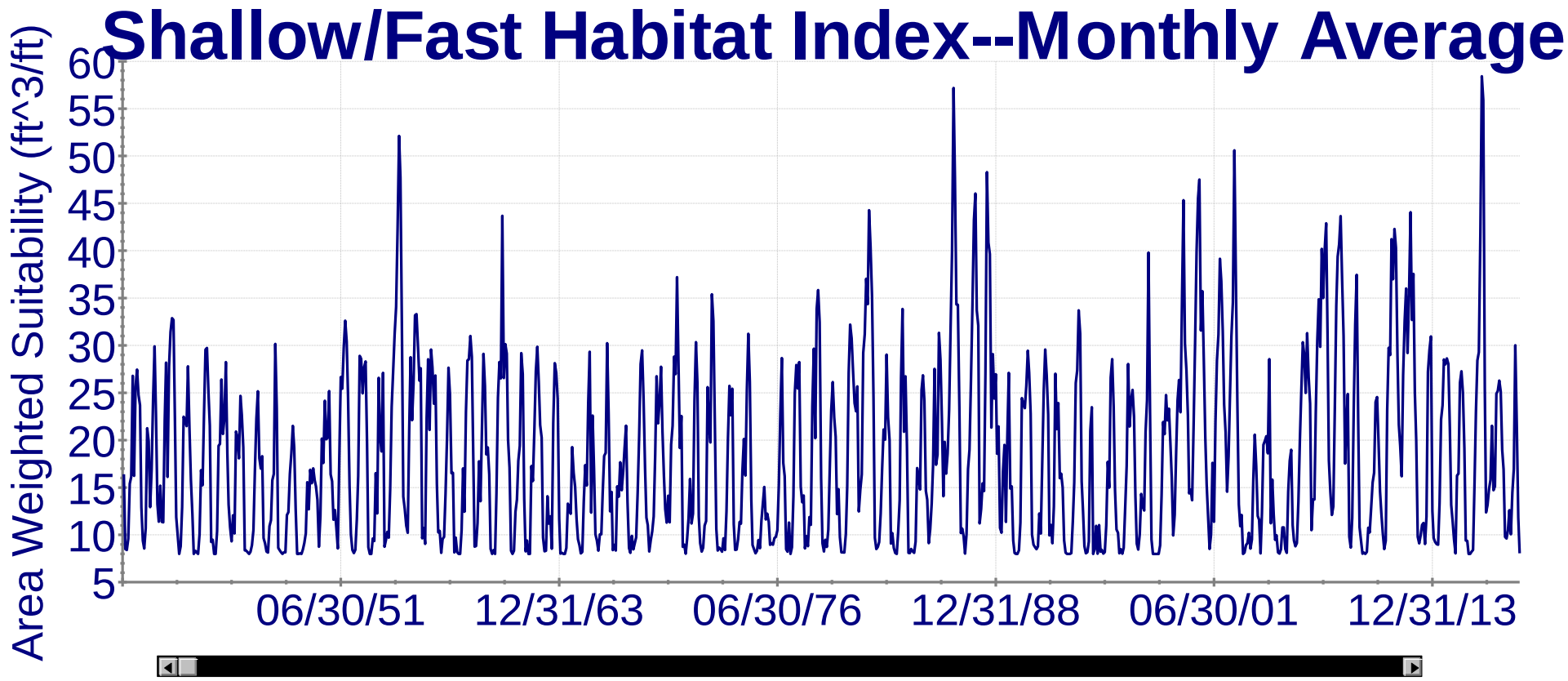
Reaches of the Ocmulgee River Where Bathymetric Data Allow for Habitat Assessment



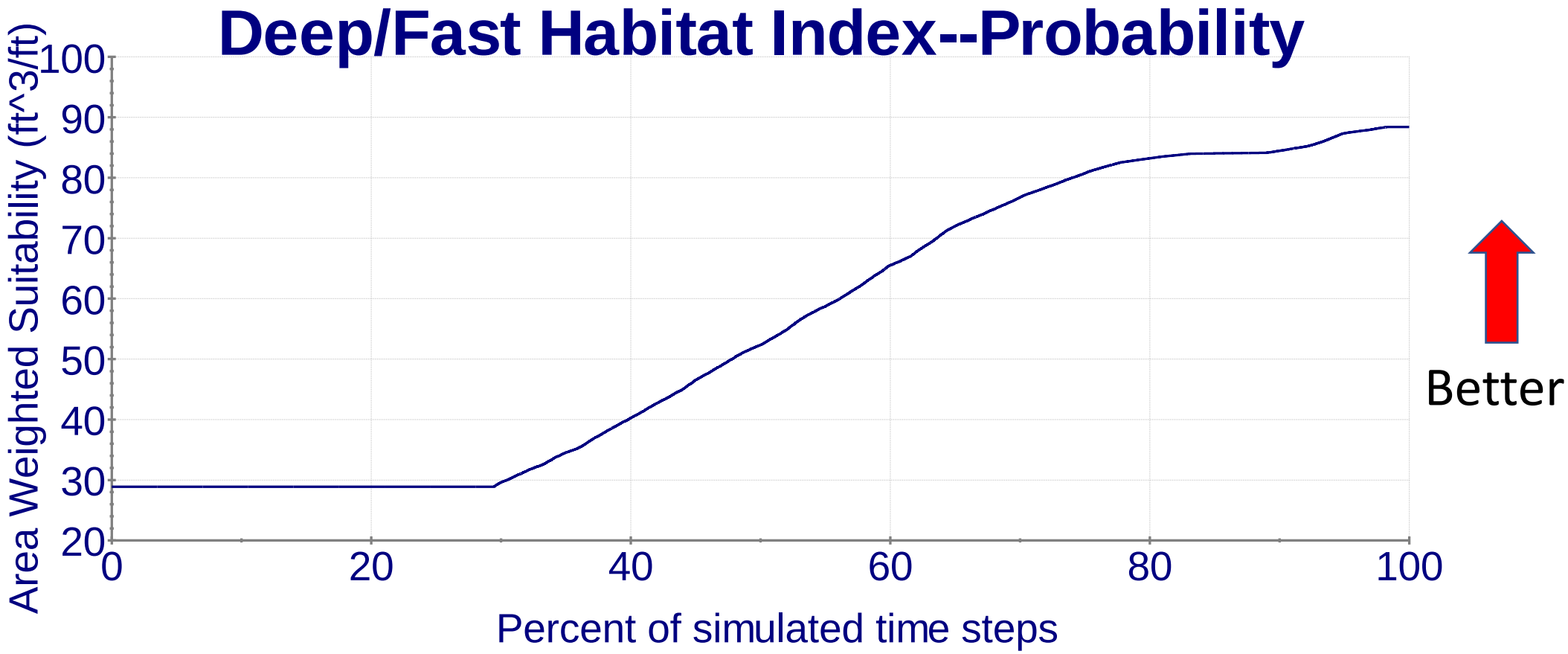
Performance Metric-Shallow/Fast Habitat Frequency



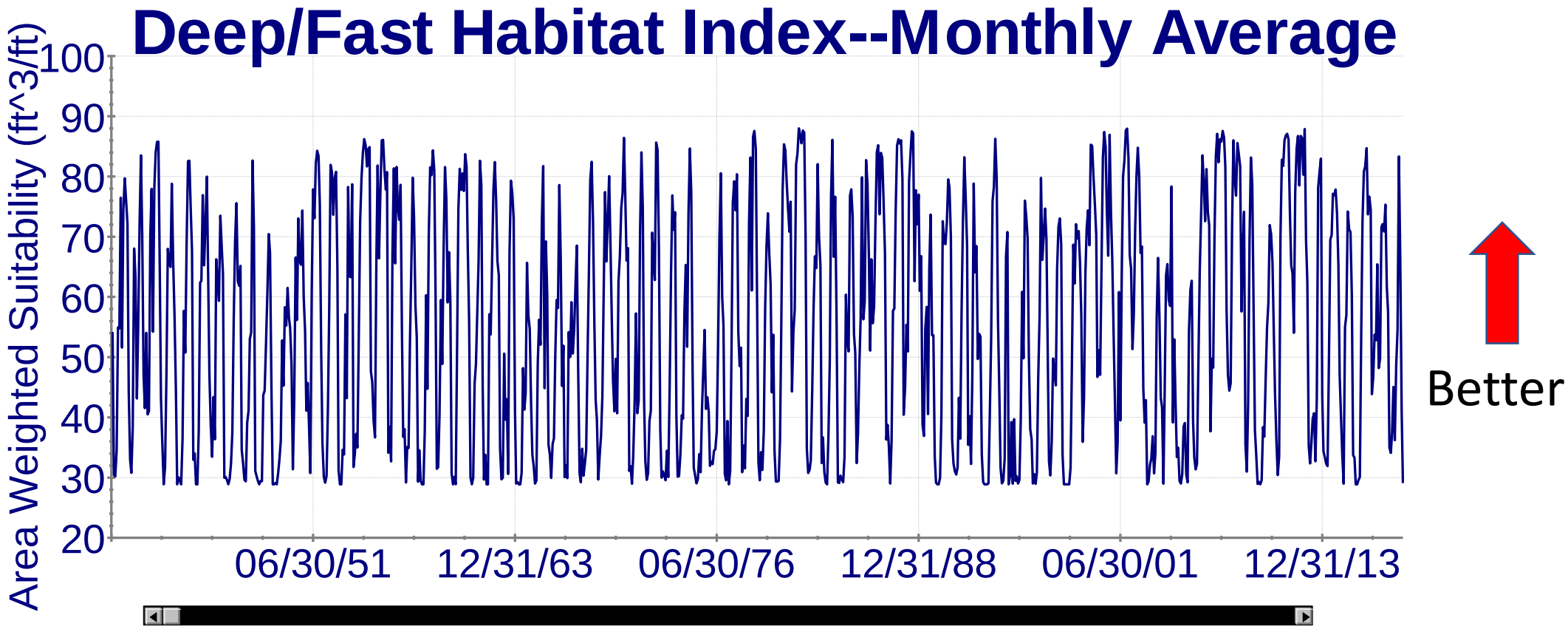
Performance Metric-Shallow/Fast Habitat (Monthly Average)



Performance Metric-Deep/Fast Habitat Frequency



Performance Metric-Deep/Fast Habitat (Monthly Average)



Discussion

- Do you want to adopt similar performance metric as part of your plan?
- Future conditions will be included in the next update in Resource Assessment for comparison with the baseline.
- What additional performance measure would you like to see in assessing river recreation or river habitats?

Questions?

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