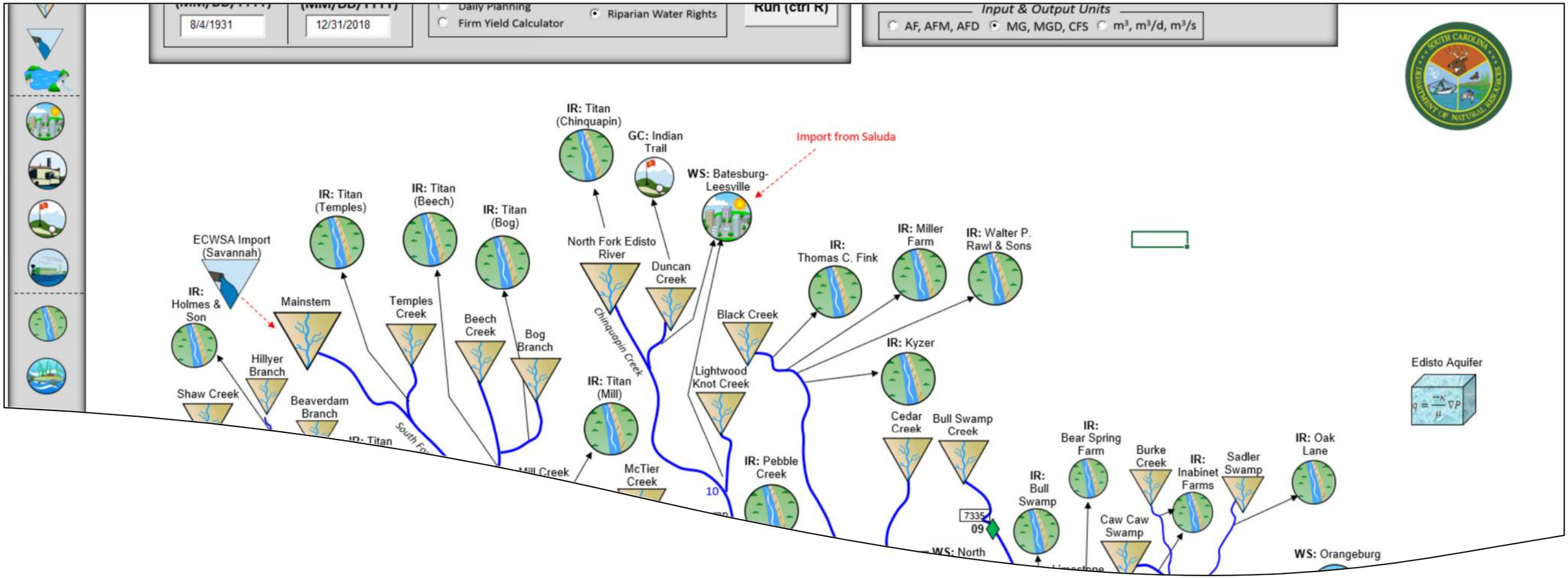


Surface Water Modeling Discussion

During the August Meeting, we…

1. Reviewed the surface water modeling results for all scenarios
2. Reviewed the results of the flow-biological health study at key locations

Today, we want to…

1. Review the scenario results and an additional model simulation requested by an RBC member (Full Allocation minus recent registrations)
2. Consider whether to identify **Reaches of Interest** and/or **Surface Water Conditions**
3. Determine what we want to address with possible management strategies or recommendations
4. Decide if more data, data analysis, or modeling is needed to consider these items.

Requests for Additional Data, Analysis, or Modeling

1. The RBC would like to see 20/30/40 monthly flows at select strategic nodes, for each scenario.

Definitions

Reaches of Interest are defined as specific stream reaches that may have no identified **Surface Water Shortage** but experience undesired impacts, environmental or otherwise, determined from current or future water-demand scenarios or proposed water management strategies.

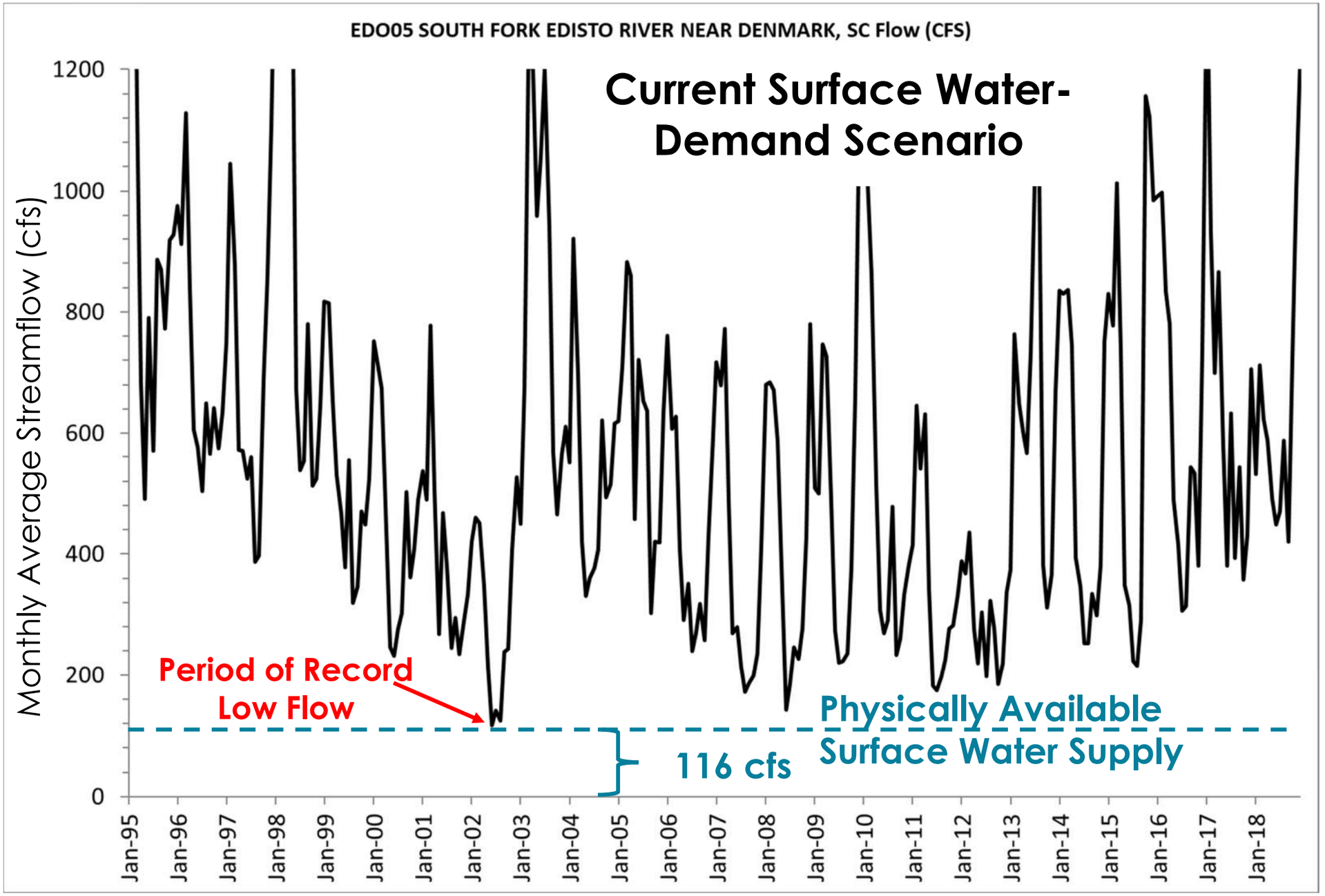
The designation of a ***Reach of Interest*** must be agreed upon by the RBC and may be related to recreational flows or in-stream flow considerations.

Definitions

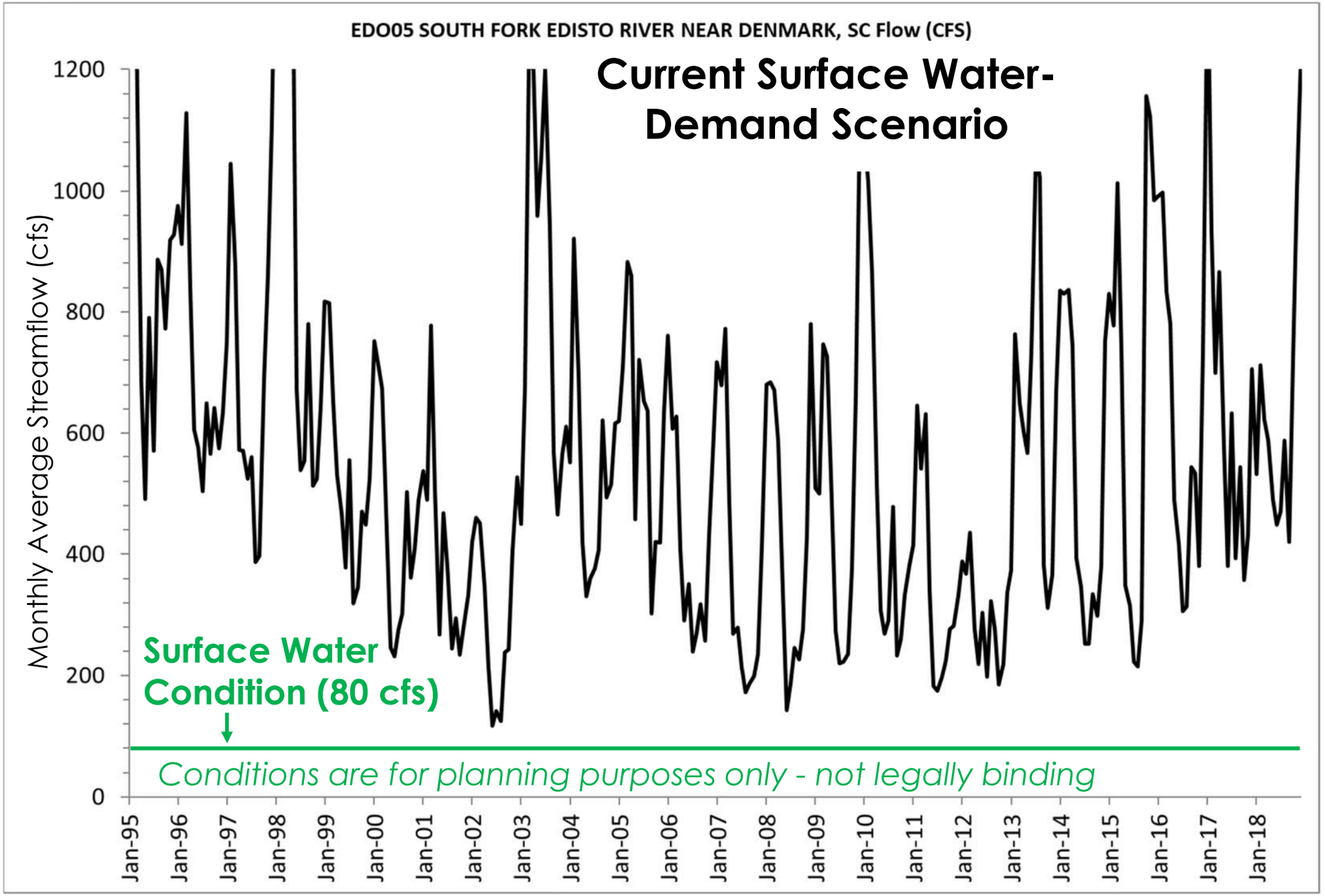
A ***Surface Water Condition*** is a limitation, defined by the RBC, on the amount of water that can be withdrawn from a surface water source, and which can be applied to evaluate ***Surface Water Supply*** for planning purposes.

Surface Water Supply is the maximum amount of water available for withdrawal 100% of the time at a location on a surface water body without violating any applied **Surface Water Conditions** on the surface water source and considering upstream demands.

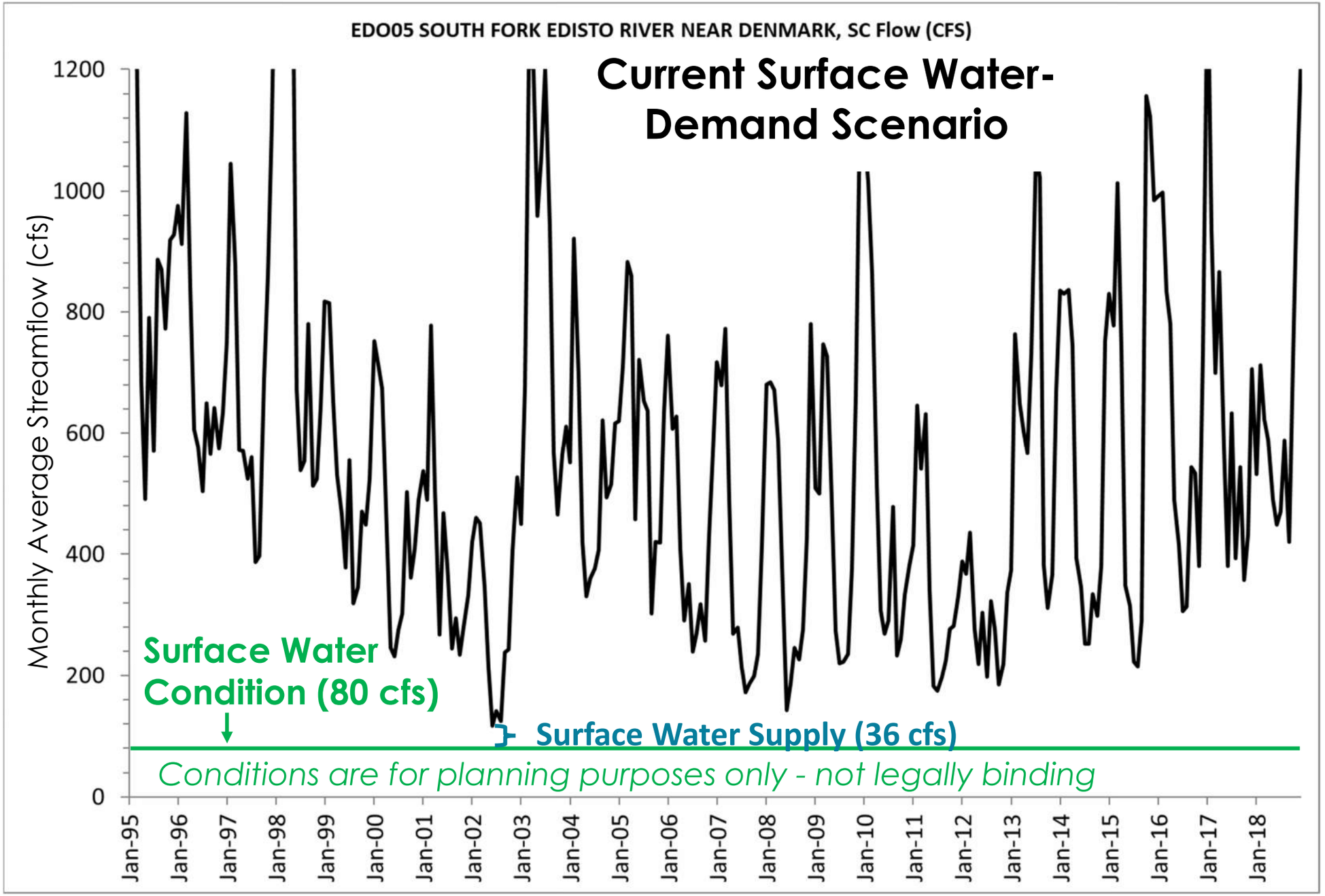
EXAMPLE ONLY



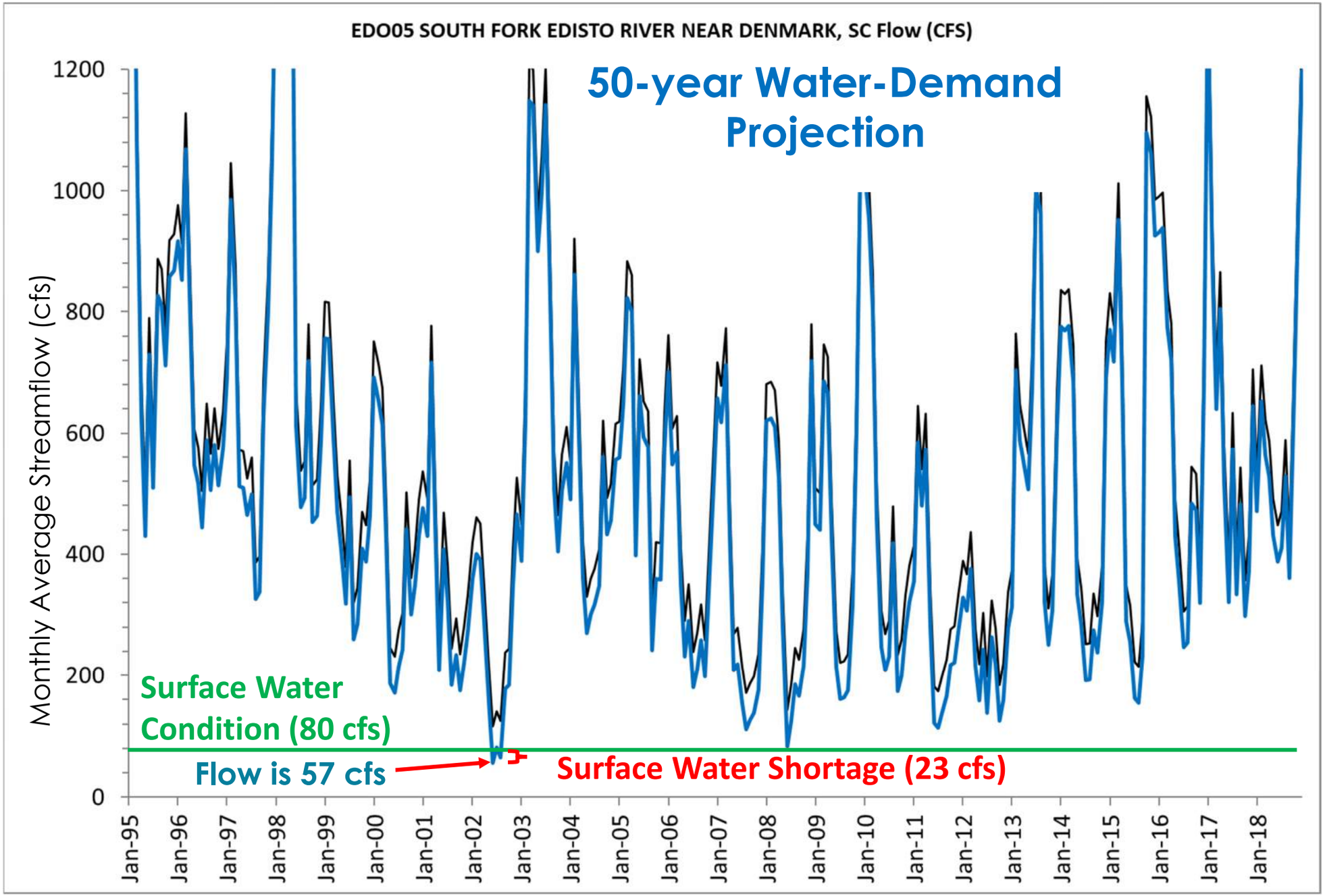
EXAMPLE ONLY



EXAMPLE ONLY



EXAMPLE ONLY



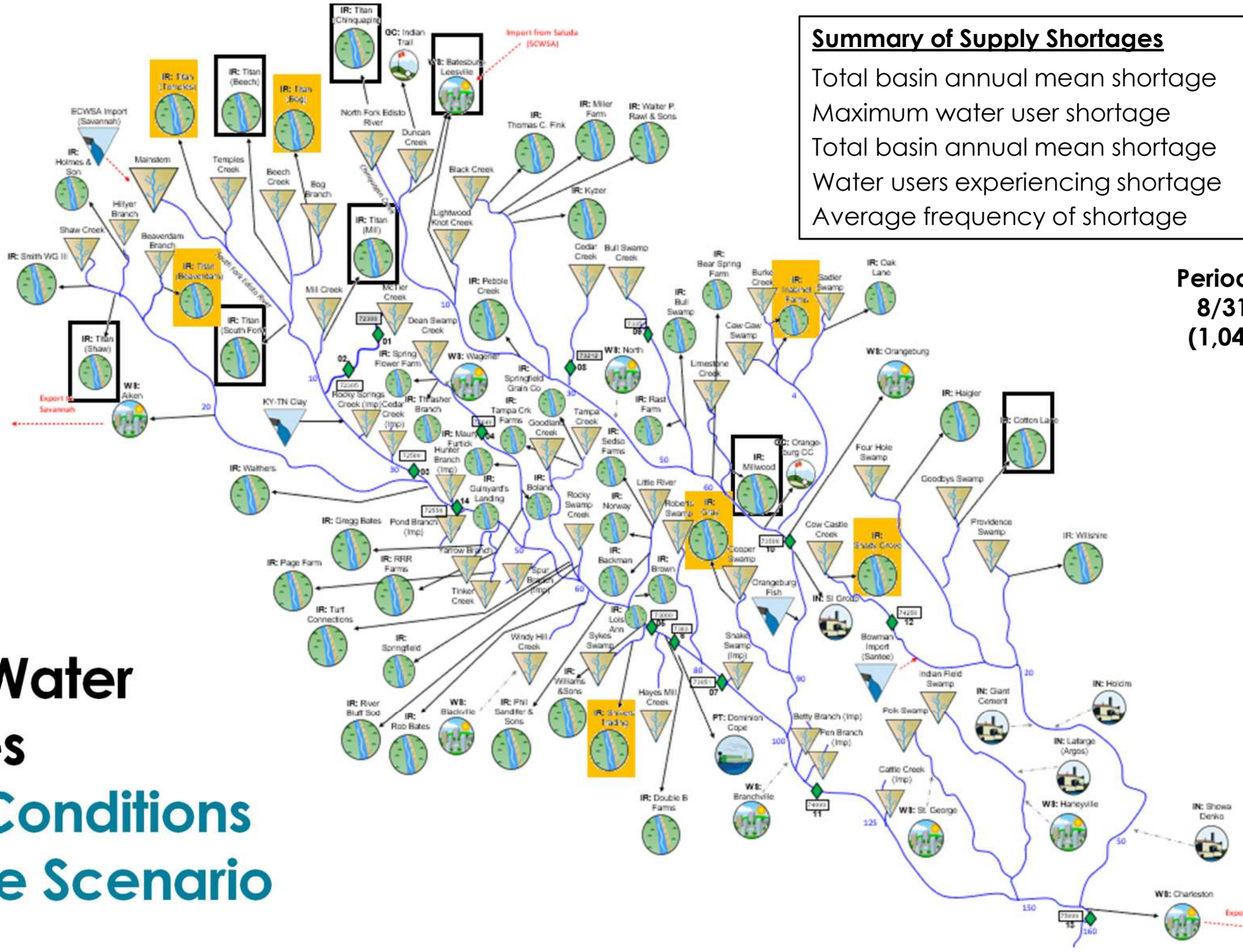
Review of Surface Water Shortages and 2002 Low Flows at Key Locations

Frequency of Shortage

< 10%

10-50%

> 50%



Summary of Supply Shortages

Total basin annual mean shortage	1.5 MGD
Maximum water user shortage	4.1 MGD
Total basin annual mean shortage	1.7%
Water users experiencing shortage	17.6%
Average frequency of shortage	16.7%

Period of record: 8/31 to 12/18 (1,049 months)

Surface Water Shortages

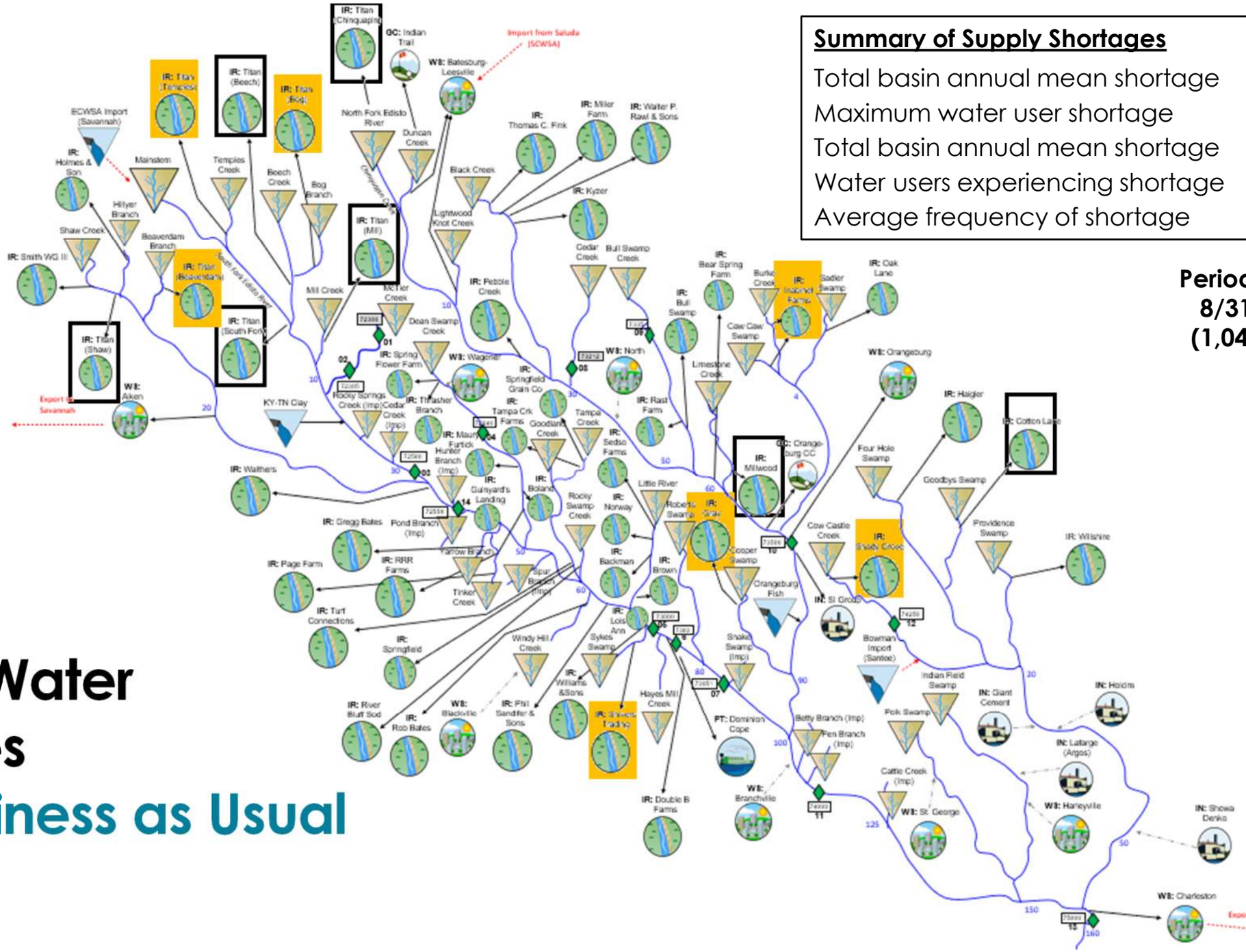
Current Conditions Water Use Scenario

Frequency of Shortage

< 10%

10-50%

> 50%



Summary of Supply Shortages

Total basin annual mean shortage	1.5 MGD
Maximum water user shortage	4.1 MGD
Total basin annual mean shortage	1.0%
Water users experiencing shortage	15.8%
Average frequency of shortage	16.7%

Period of record: 8/31 to 12/18 (1,049 months)

Surface Water Shortages

2070 Business as Usual Scenario

Frequency of Shortage

< 10%

10-50%

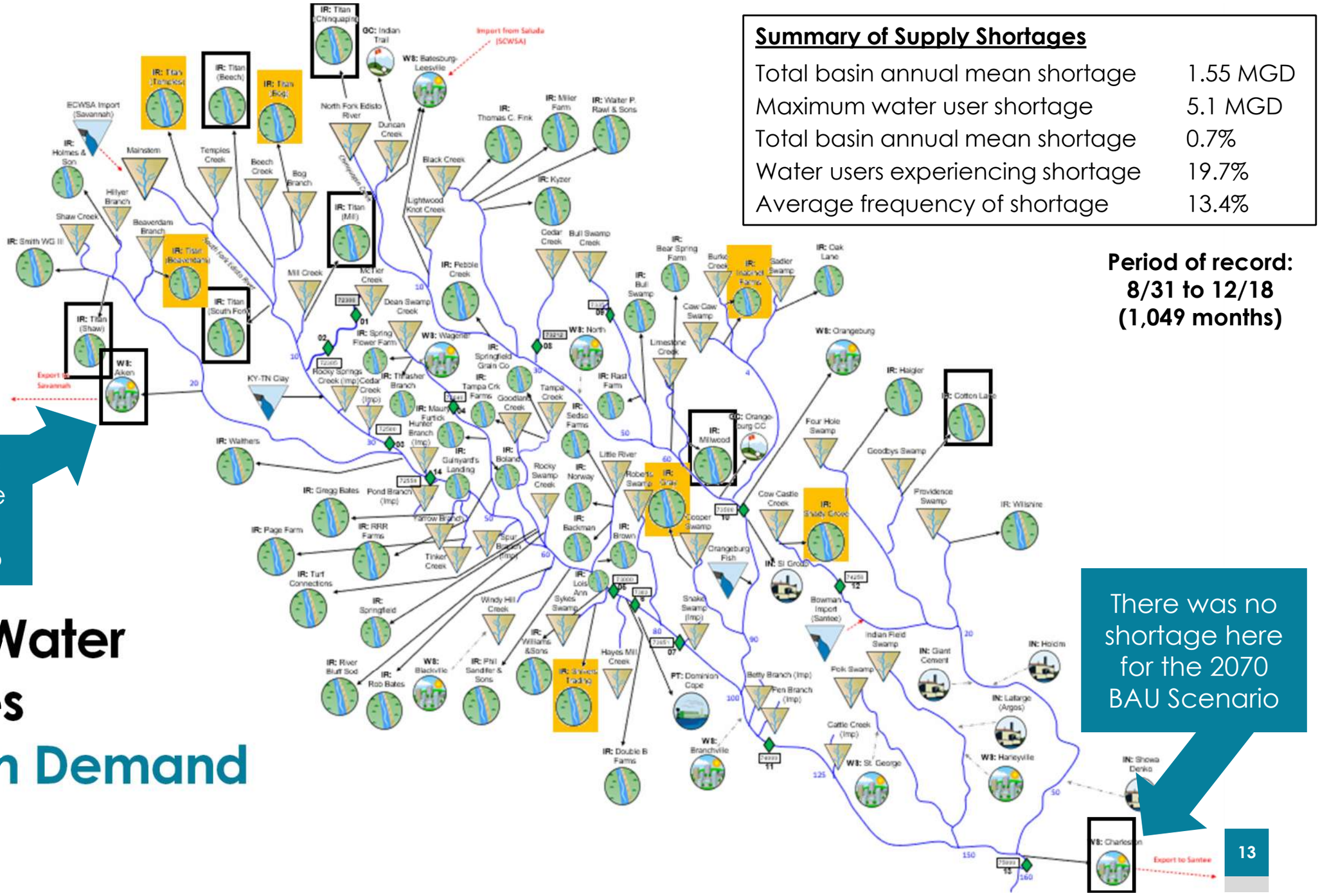
> 50%

Summary of Supply Shortages

Total basin annual mean shortage	1.55 MGD
Maximum water user shortage	5.1 MGD
Total basin annual mean shortage	0.7%
Water users experiencing shortage	19.7%
Average frequency of shortage	13.4%

Period of record: 8/31 to 12/18 (1,049 months)

There was no shortage here for the 2070 BAU Scenario



There was no shortage here for the 2070 BAU Scenario

Surface Water Shortages

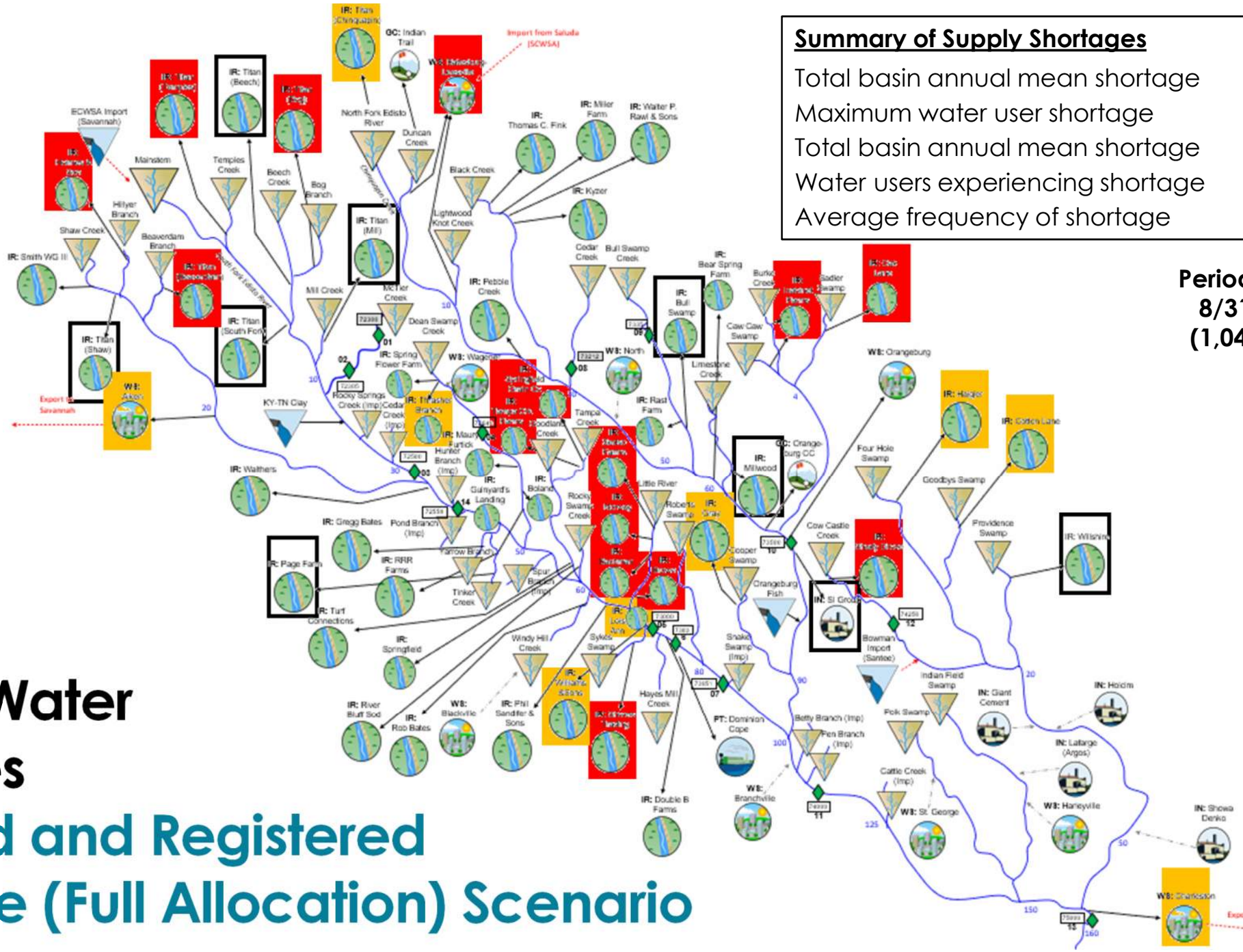
2070 High Demand Scenario

Frequency of Shortage

< 10%

10-50%

> 50%



Summary of Supply Shortages

Total basin annual mean shortage	34.8 MGD
Maximum water user shortage	231.5 MGD
Total basin annual mean shortage	4.5%
Water users experiencing shortage	46.4%
Average frequency of shortage	45.0%

Period of record: 8/31 to 12/18 (1,049 months)

Surface Water Shortages

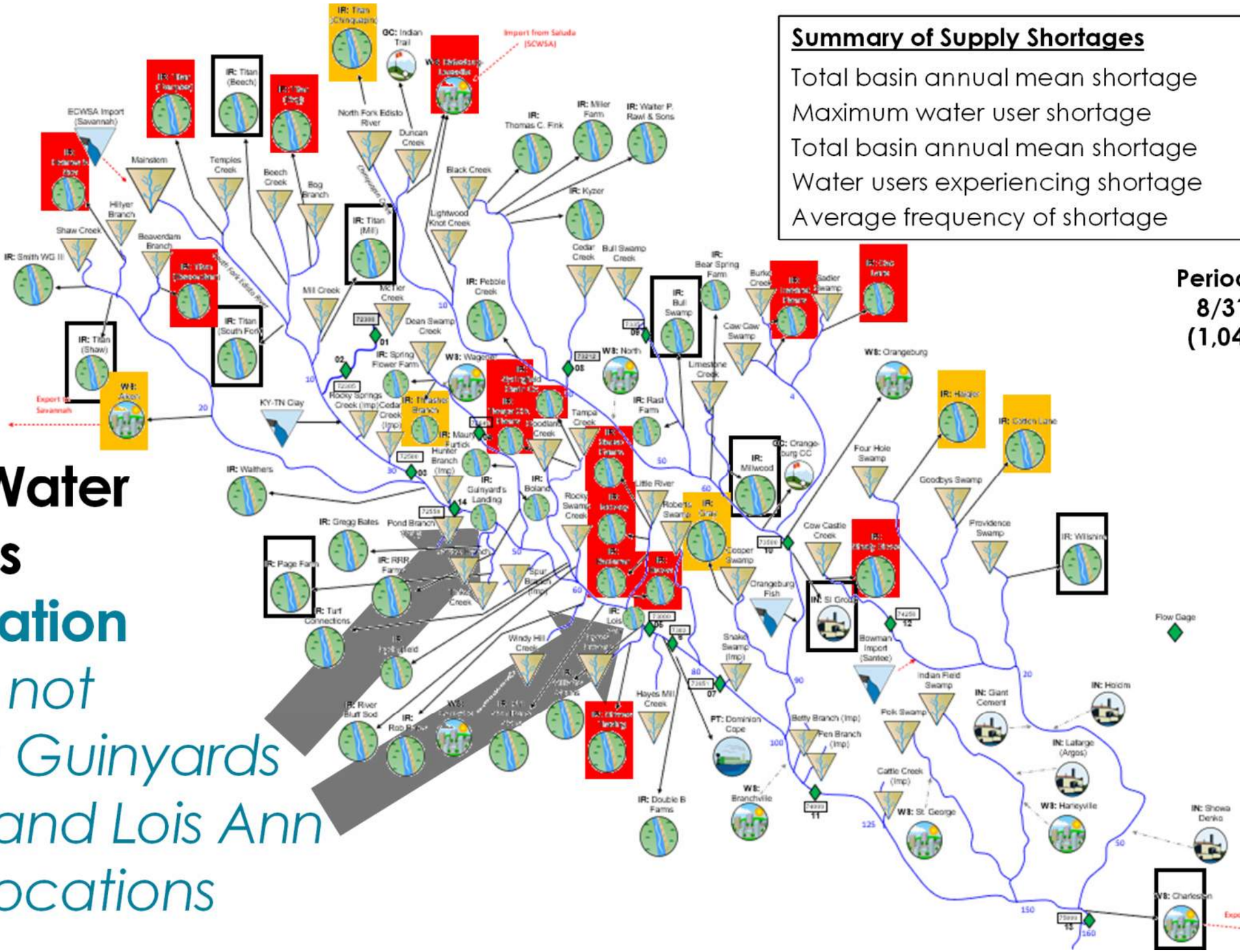
Permitted and Registered Water Use (Full Allocation) Scenario

Frequency of Shortage

< 10%

10-50%

> 50%



Surface Water Shortages

Full Allocation Scenario *not including Guinyards Landing and Lois Ann Farms Allocations*

Summary of Supply Shortages

Total basin annual mean shortage	23.9 MGD
Maximum water user shortage	178.7 MGD
Total basin annual mean shortage	3.7%
Water users experiencing shortage	43.5%
Average frequency of shortage	47.5%

Period of record: 8/31 to 12/18 (1,049 months)

Comparison of Surface Water Shortages on Mainstem, below Location of Guinyards Landing Registration

					Full Allocation Simulation				Full Allocation Simulation, not including Guinyards Landing and Lois Ann Farms			
Water User Name	User Type	Source Water	Location (mi)	Average Annual Demand (MGD)	Minimum Physically Available Flow (MGD)	Average Shortage (MGD)	Maximum Shortage (MGD)	Frequency of Shortage (%)	Minimum Physically Available Flow (MGD)	Average Shortage (MGD)	Maximum Shortage (MGD)	Frequency of Shortage (%)
IR: Lois Ann	Ag water user	Mainstem	69	105	31	1.2	0.9	5.1%	49	0.0	0.0	0.0%
IR: Williams & Sons	Ag water user	Mainstem	69	2	0	0.1	73.9	5.3%	48	0.0	0.0	0.0%
WS: Charleston	M&I water user	Mainstem	159	287	59	13.1	231.5	12.4%	112	3.5	178.7	6.0%

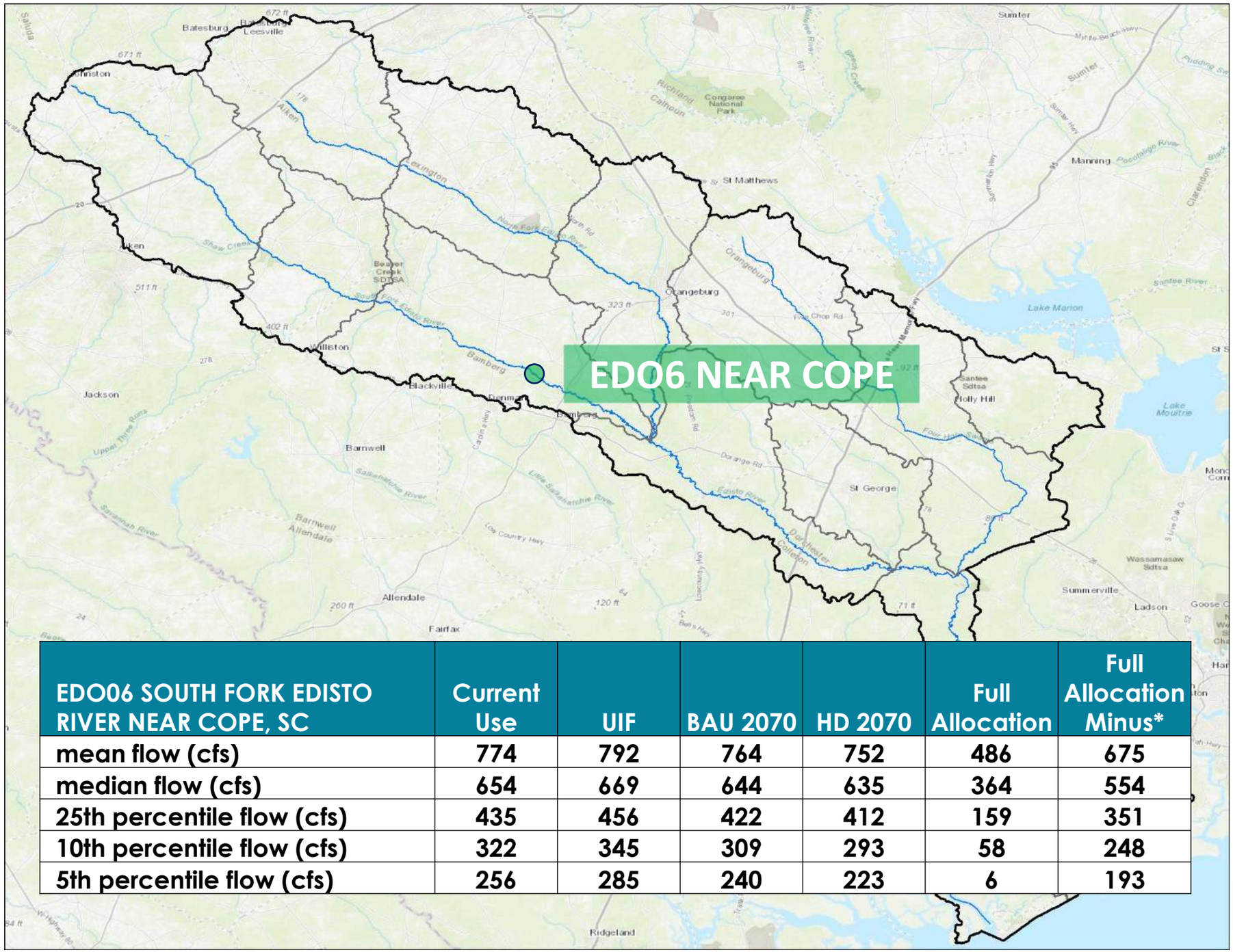
Note: Guinyards Landing has an 18 MGD average annual demand under the Full Allocation Scenario

EDO6

HUC 10 Outlet

USGS Gage

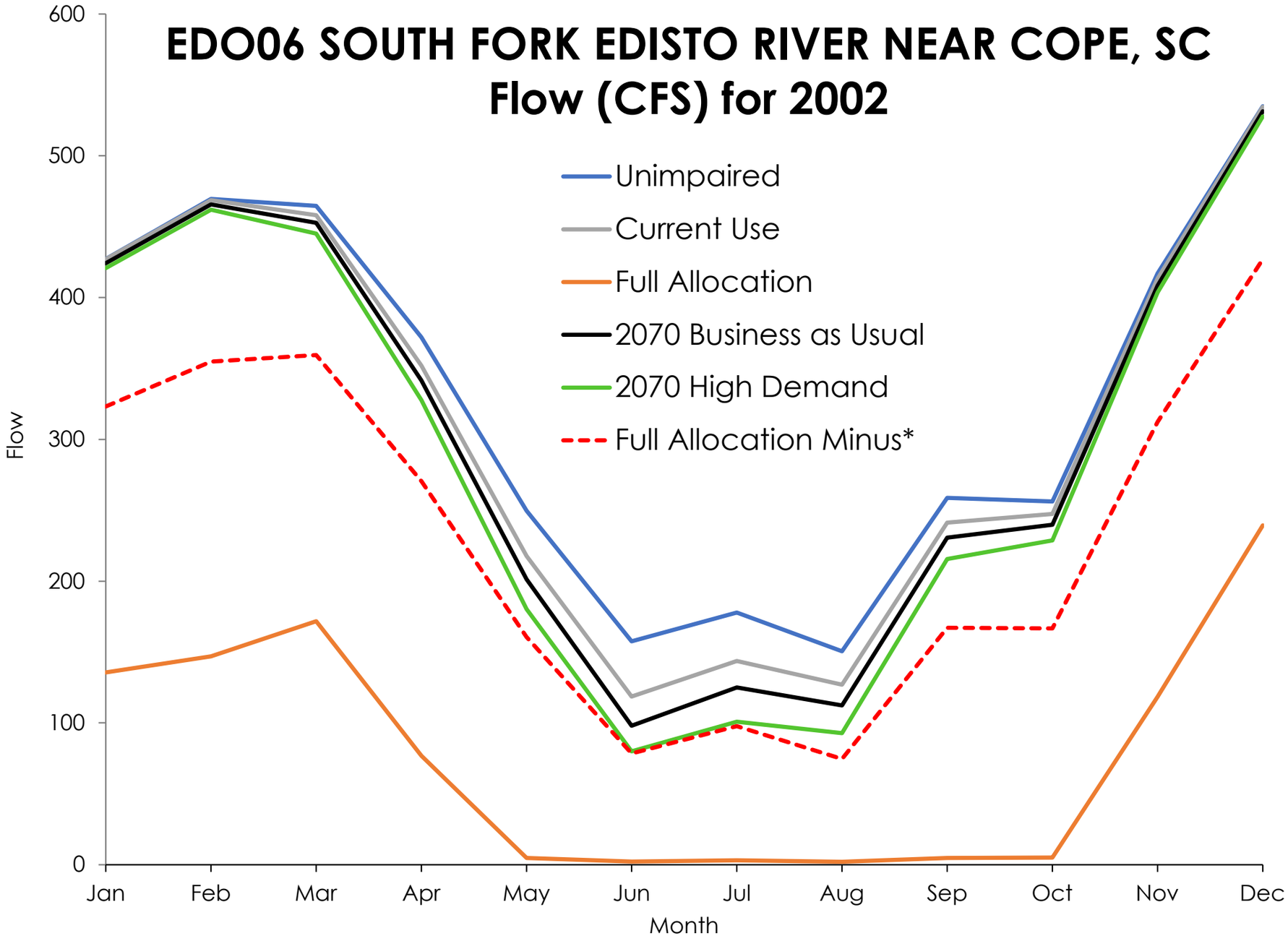
Other Strategic Nodes



Flow Performance Measures

EDO06 SOUTH FORK EDISTO RIVER NEAR COPE, SC	Current Use	UIF	BAU 2070	HD 2070	Full Allocation	Full Allocation Minus*
mean flow (cfs)	774	792	764	752	486	675
median flow (cfs)	654	669	644	635	364	554
25th percentile flow (cfs)	435	456	422	412	159	351
10th percentile flow (cfs)	322	345	309	293	58	248
5th percentile flow (cfs)	256	285	240	223	6	193

* Full Allocation minus Guinyards Landing and Lois Ann Farms



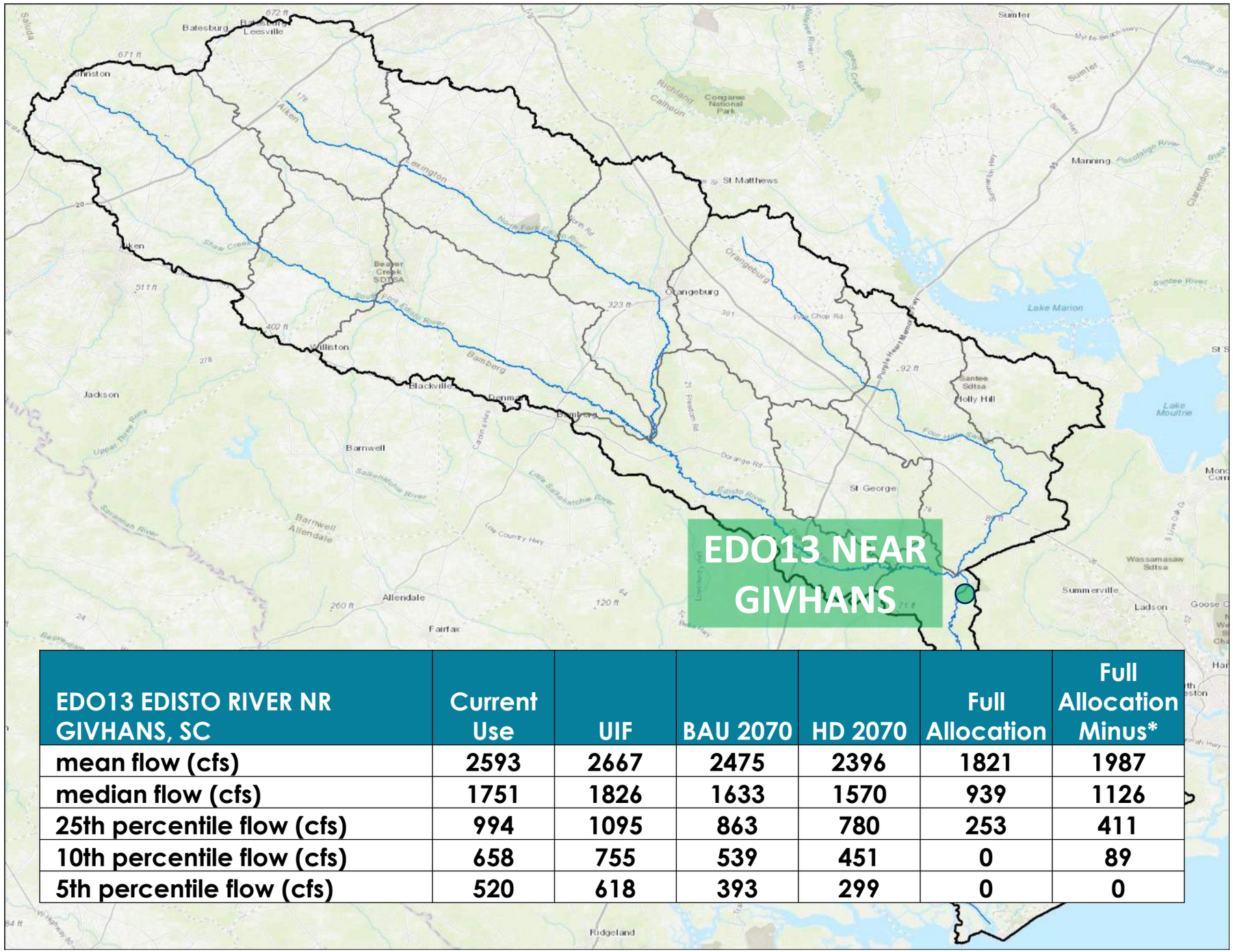
* Full Allocation minus Guinyards Landing and Lois Ann Farms

EDO13

HUC 10 Outlet

USGS Gage

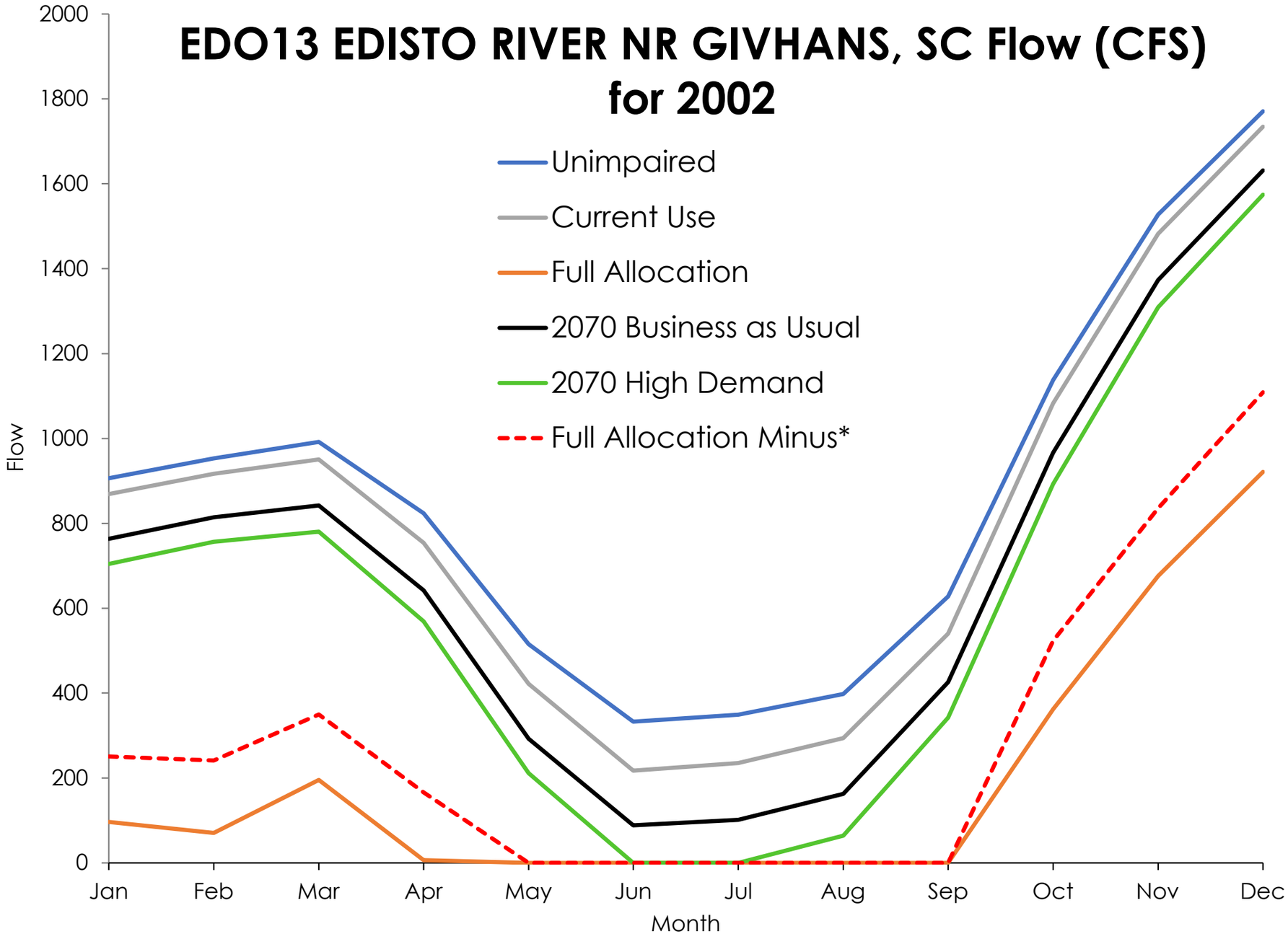
Other Strategic Nodes



Flow Performance Measures

EDO13 EDISTO RIVER NR GIVHANS, SC	Current Use	UIF	BAU 2070	HD 2070	Full Allocation	Full Allocation Minus*
mean flow (cfs)	2593	2667	2475	2396	1821	1987
median flow (cfs)	1751	1826	1633	1570	939	1126
25th percentile flow (cfs)	994	1095	863	780	253	411
10th percentile flow (cfs)	658	755	539	451	0	89
5th percentile flow (cfs)	520	618	393	299	0	0

* Full Allocation minus Guinyards Landing and Lois Ann Farms



* Full Allocation minus Guinyards Landing and Lois Ann Farms