

# Methodologies for Evaluating Water Availability

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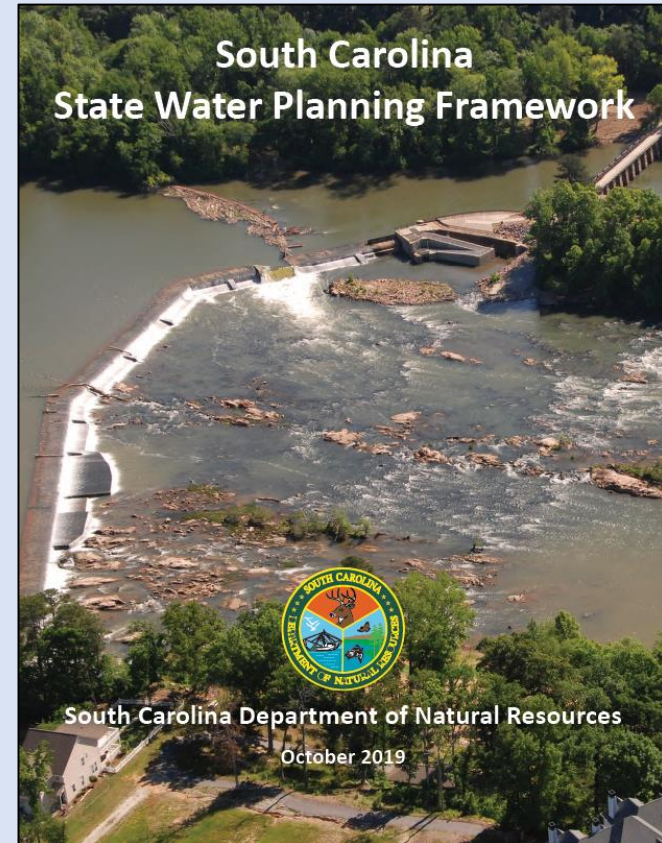


Edisto River Basin Council  
Meeting #9 (Virtual)  
January 6<sup>th</sup>, 2021

# Methods for Evaluating Water Availability



- Formal approach described in Planning Framework (Section 4).
- Based, in part, on methodologies used in Texas for evaluating water availability.
- Provides consistency – designates a common set of definitions and processes to use across the State.



*Big Picture – this is a gap analysis, the RBC will be determining where and when demand exceeds supply under varying demand scenarios and deciding how to manage water to close the gaps.*

# Methods for Evaluating Surface Water Availability



- Definitions:

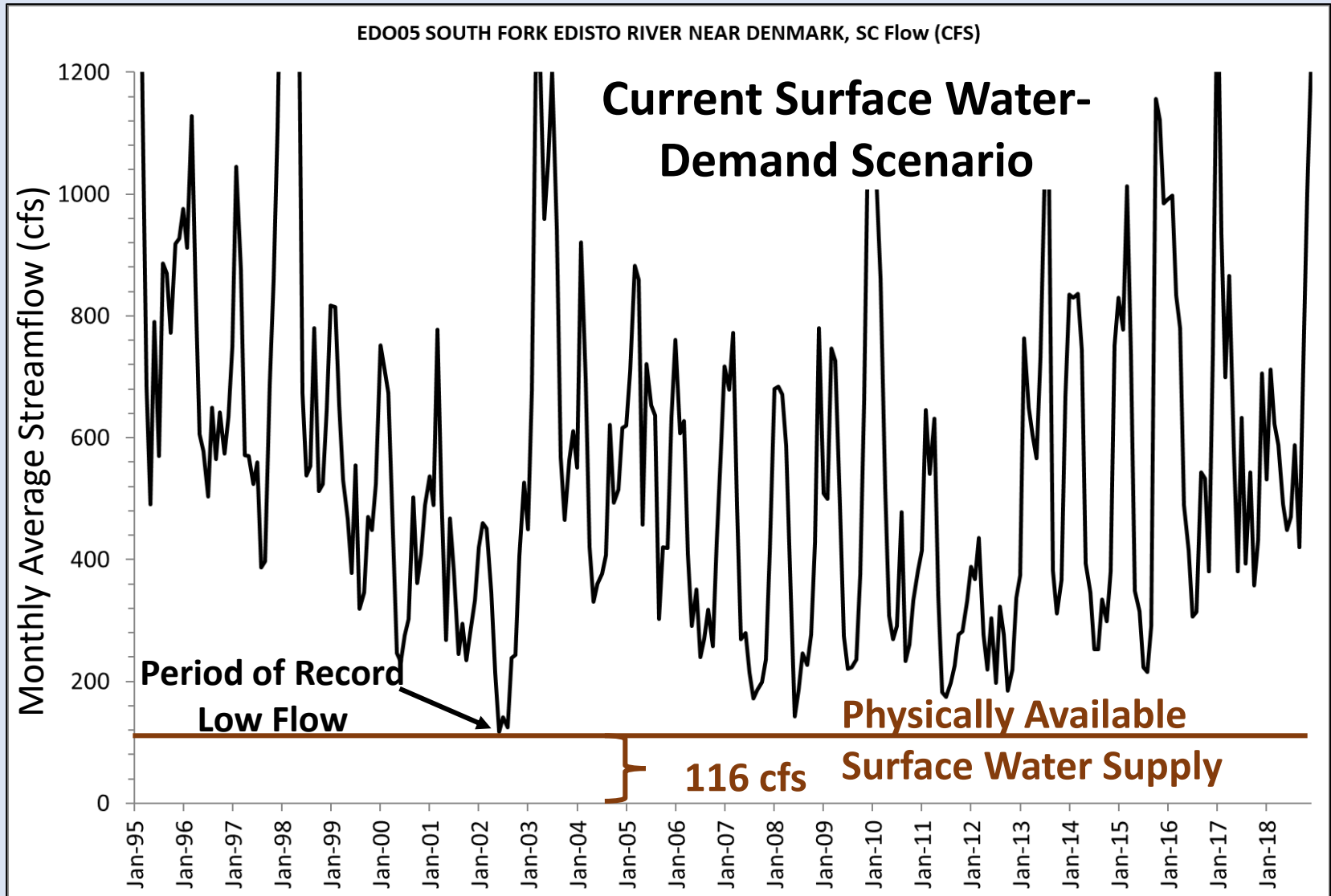
- **Physically Available Surface Water Supply** – maximum amount of water occurring 100% of the time at a location on a surface water body, with no defined conditions applied on the surface water body.
- **Surface Water Supply** – maximum amount of water available for withdrawal 100% of the time at a location on a surface water body without violating any applied *Surface Water Conditions* on the surface water source and considering upstream demands.
- **Surface Water Conditions** – a physical limitation on the amount of water that can be withdrawn from a surface water source and are independent of water demand.
- **Surface Water Shortage** – occurs when the water demand exceeds the *Surface Water Supply* for any water user in the basin.
- **Reaches of Interest** – 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.

*Surface water volumes highlighted in the following hydrographs are for illustrative purposes only.*



# Physically Available Surface Water Supply

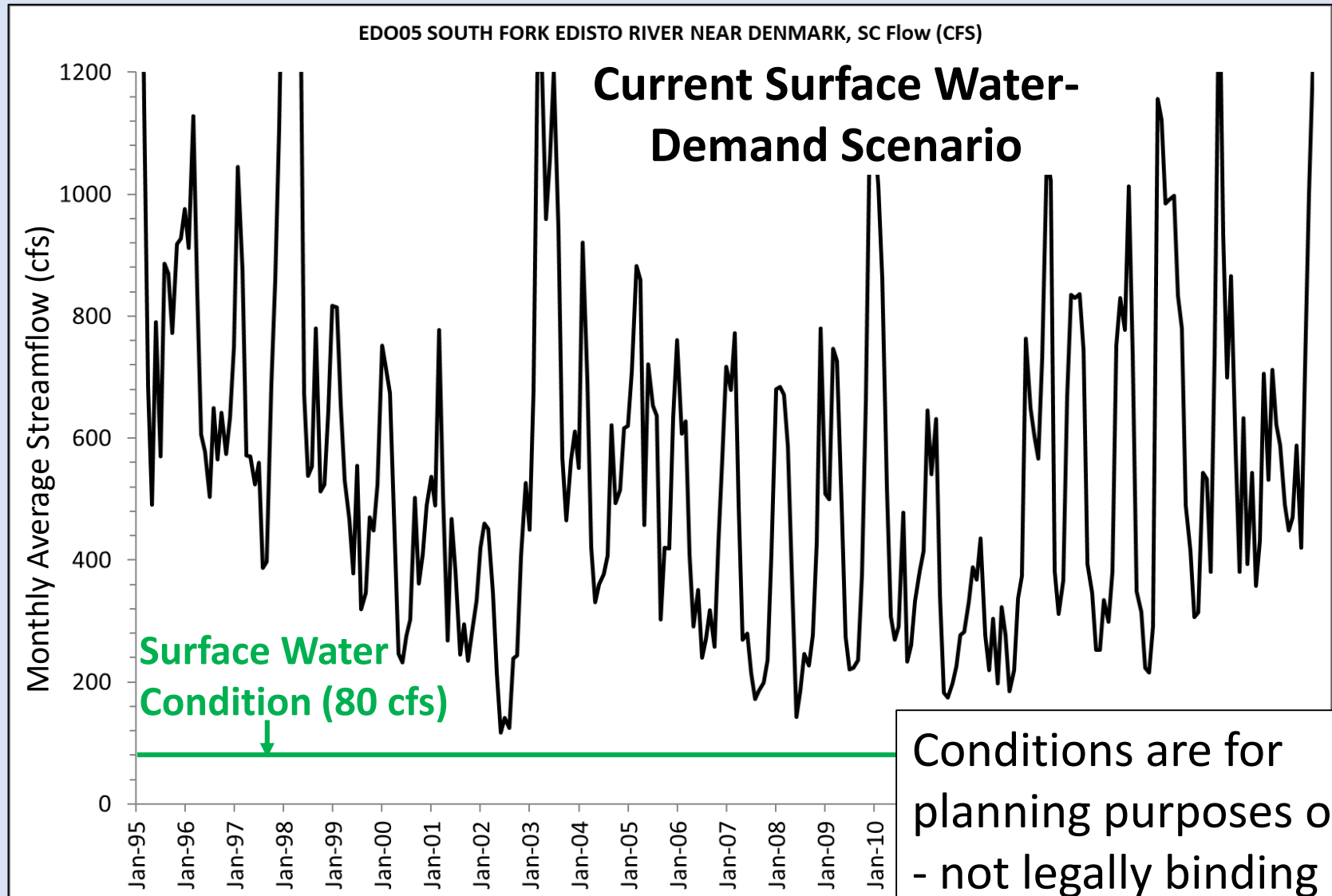
*Maximum amount of water occurring 100% of the time at a location on a surface water body, with no defined conditions applied on the surface water body.*



# Surface Water Conditions



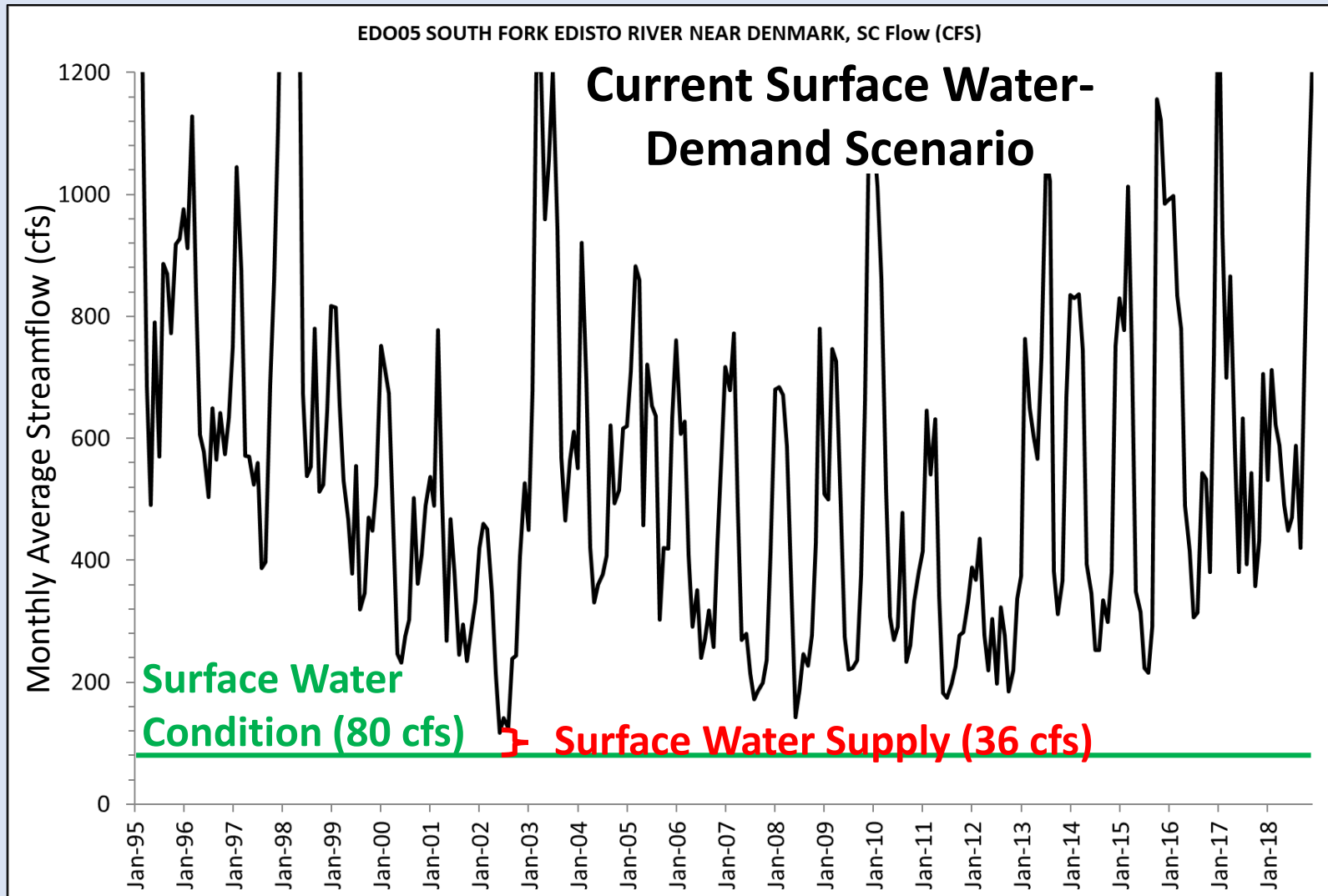
*Conditions which physically limit the amount of water that can be withdrawn from a surface water source and are independent of water demand.*



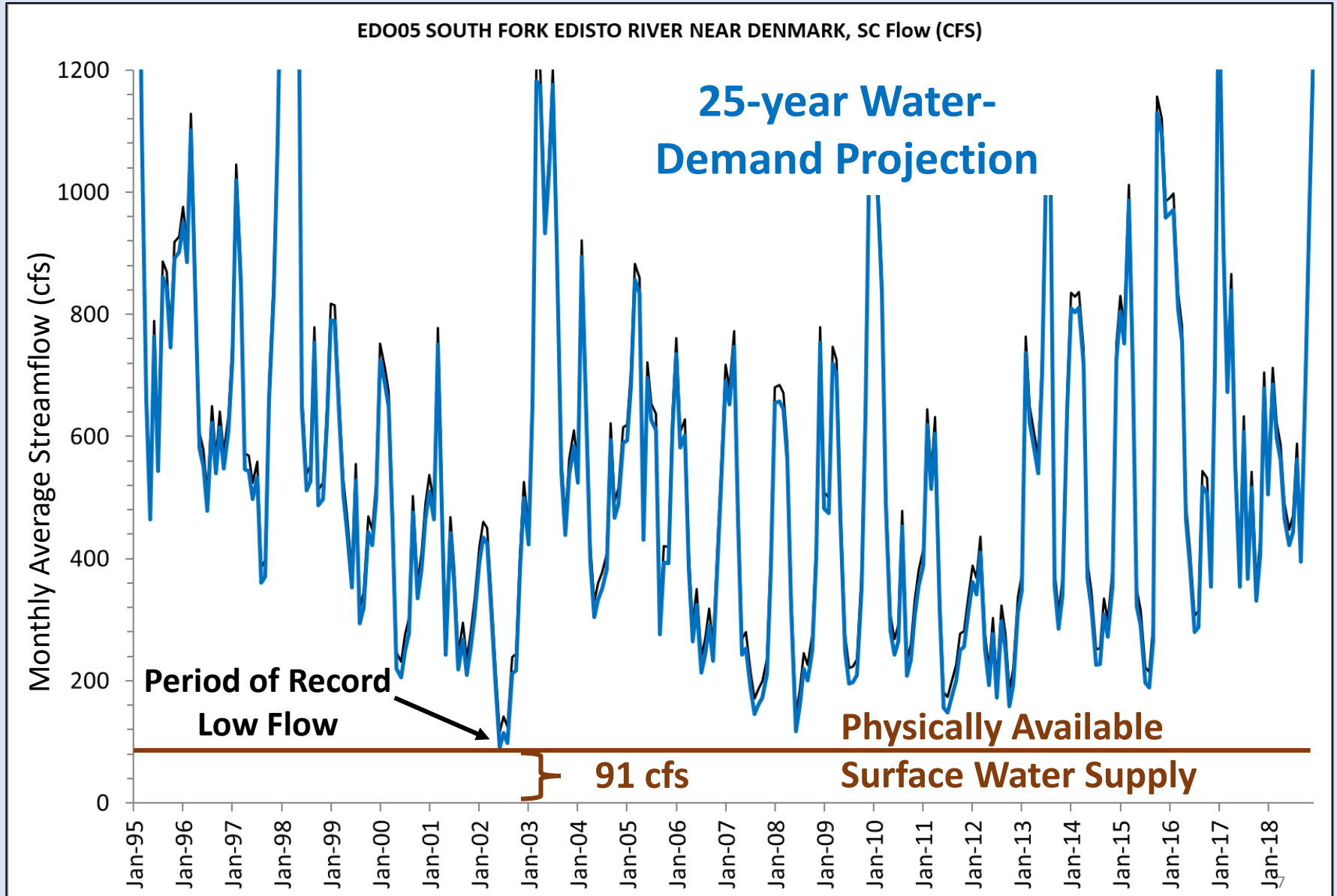
# Surface Water Supply



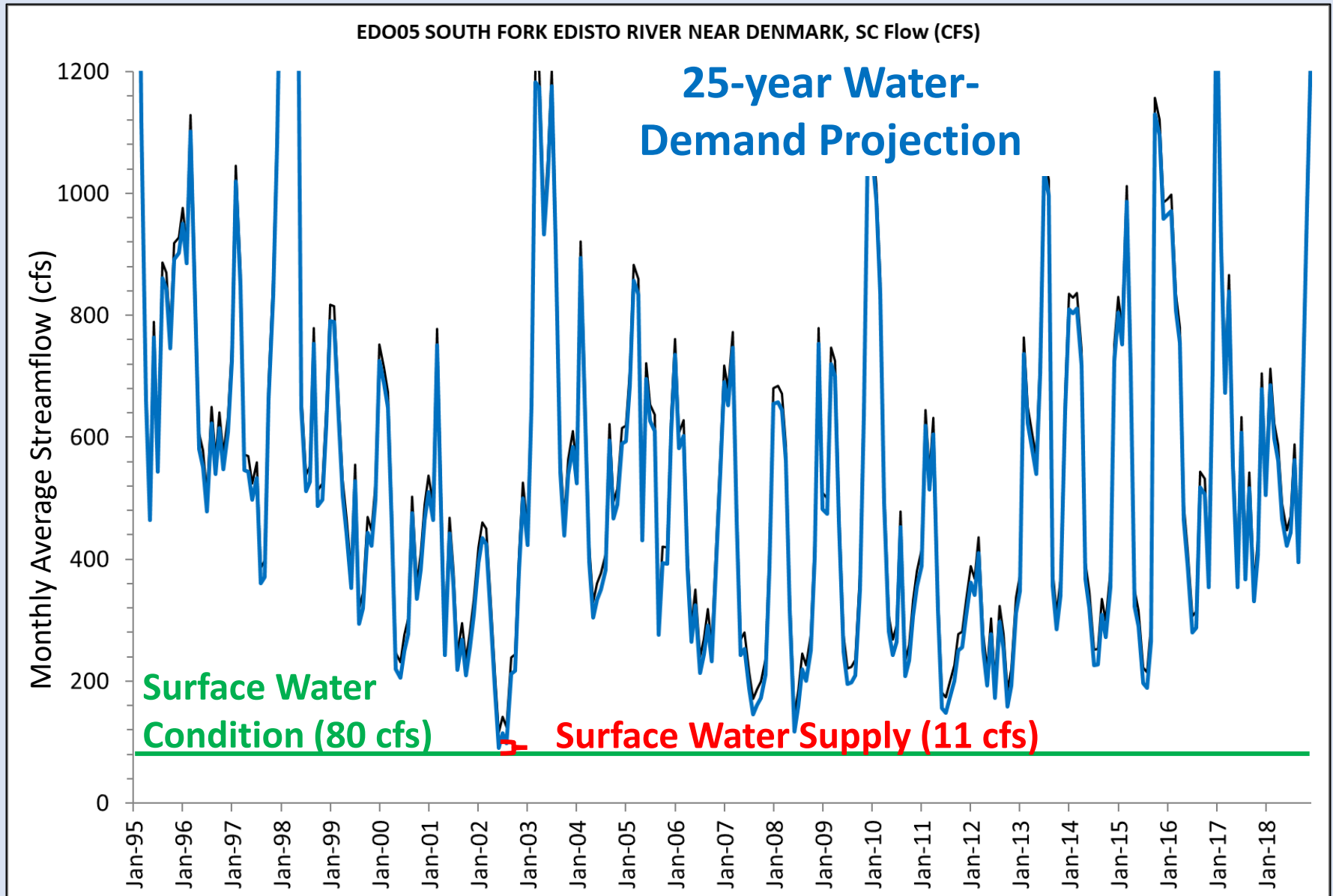
*Maximum amount of water available for withdrawal 100% of the time at a location on a surface water body without violating any applied Surface Water Conditions on the surface water source and considering upstream demands.*



# Impacts on Physically Available Surface Water Supply from Increased Demand



# Impacts on Surface Water Supply from Increased Demand

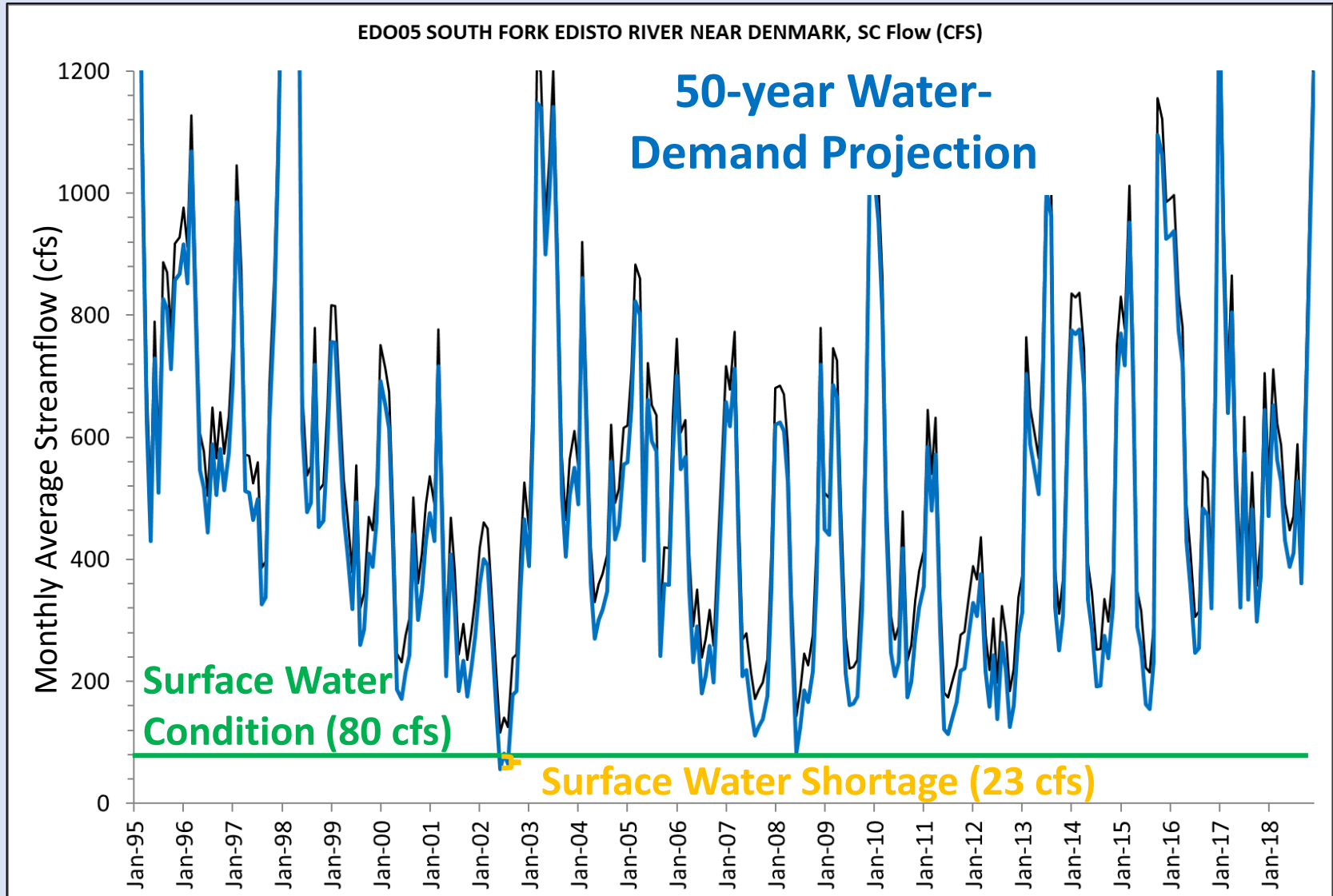




# Surface Water Shortage



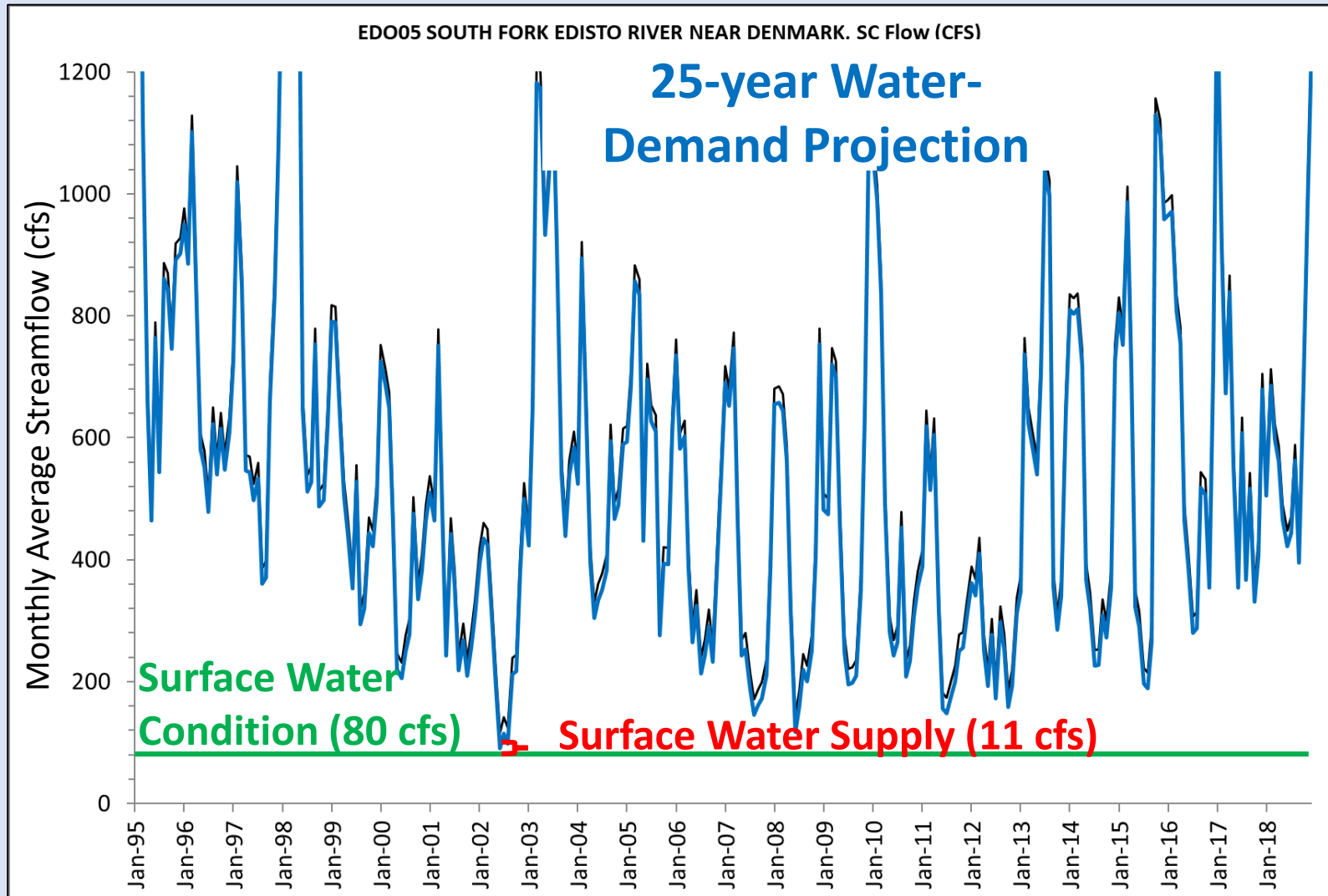
*Occurs when the water demand exceeds the Surface Water Supply for any water user in the basin.*





# Reaches of Interest

*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.*



# Methods for Evaluating Surface Water Availability



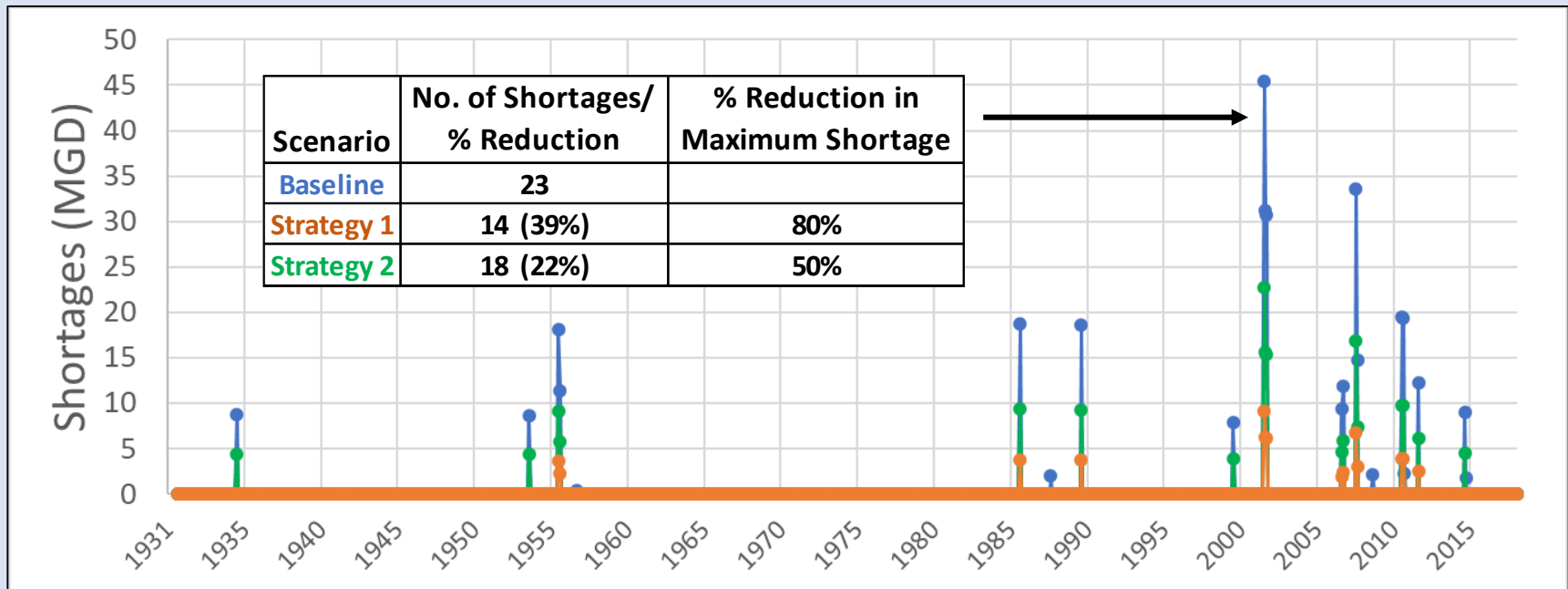
- RBCs will determine (Phase II):
  - Surface Water Conditions, if any
  - Surface Water Supply at nodes of interest
  - All Surface Water Shortages
  - Reaches of Interest
- Surface Water Management Strategies will be developed and evaluated (Phase III):
  - **Surface Water Management Strategy** – *any water management strategy proposed to eliminate a Surface Water Shortage, reduce a Surface Water Shortage, or generally increase Surface Water Supply.*
    - Examples: conservation measures, conjunctive use, new supplies, etc.
    - Effectiveness and feasibility of each strategy will be evaluated.
    - Impacts of strategies on Reaches of Interest will be evaluated.
- *River Basin Plan will document Surface Water Supply, Shortages, Reaches of Interest, and recommended Surface Water Management Strategies.*

# Performance Measures



To facilitate analyses, RBCs may also:

- Develop **Performance Measures** – quantitative measures of change in a user-defined condition from an established baseline used to assess the performance of a proposed water management strategy or combination of strategies.
  - % Change in monthly minimum flow or 5<sup>th</sup> percentile flow
  - % Change in Surface Water Supply
  - % Change in number and/or magnitude of Surface Water Shortages
  - Impacts on Regulatory Minimum Instream Flow (20-30-40% MDF)



# Strategic Nodes



- Designated by RBC and designed to facilitate analyses.
- Definition: a location on a surface water body or aquifer designated to evaluate the cumulative impacts of water management strategies for a given model scenario and serves as a primary point of interest from which to evaluate a model scenario's *Performance Measures*.

- Examples:
  - USGS streamflow gage locations
  - Outlets of tributaries of interest

