

SNAP* Subgroup Report

(*Stream Nutrient Assessment Procedure)

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- TIC vs. SNAP
 - Proposed SNAP
 - Proposed Decision Flow Charts)
 - Determine threat status, nutrient and/or other causes
 - Determine potential threat: underperformance relative to habitat

Stream Nutrient Assessment Procedure

SNAP

The procedure formerly known as “Box Model”

With apologies to 

TIC vs. SNAP

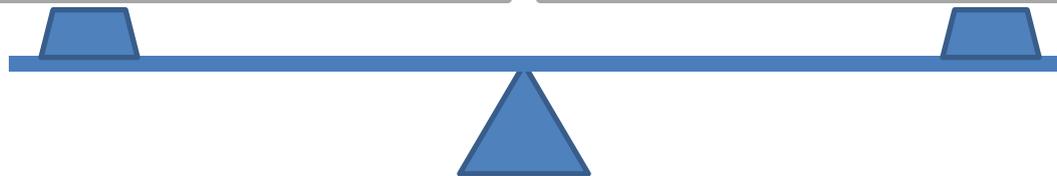
Either used to determine trophic condition status, and whether control actions should be implemented

TIC

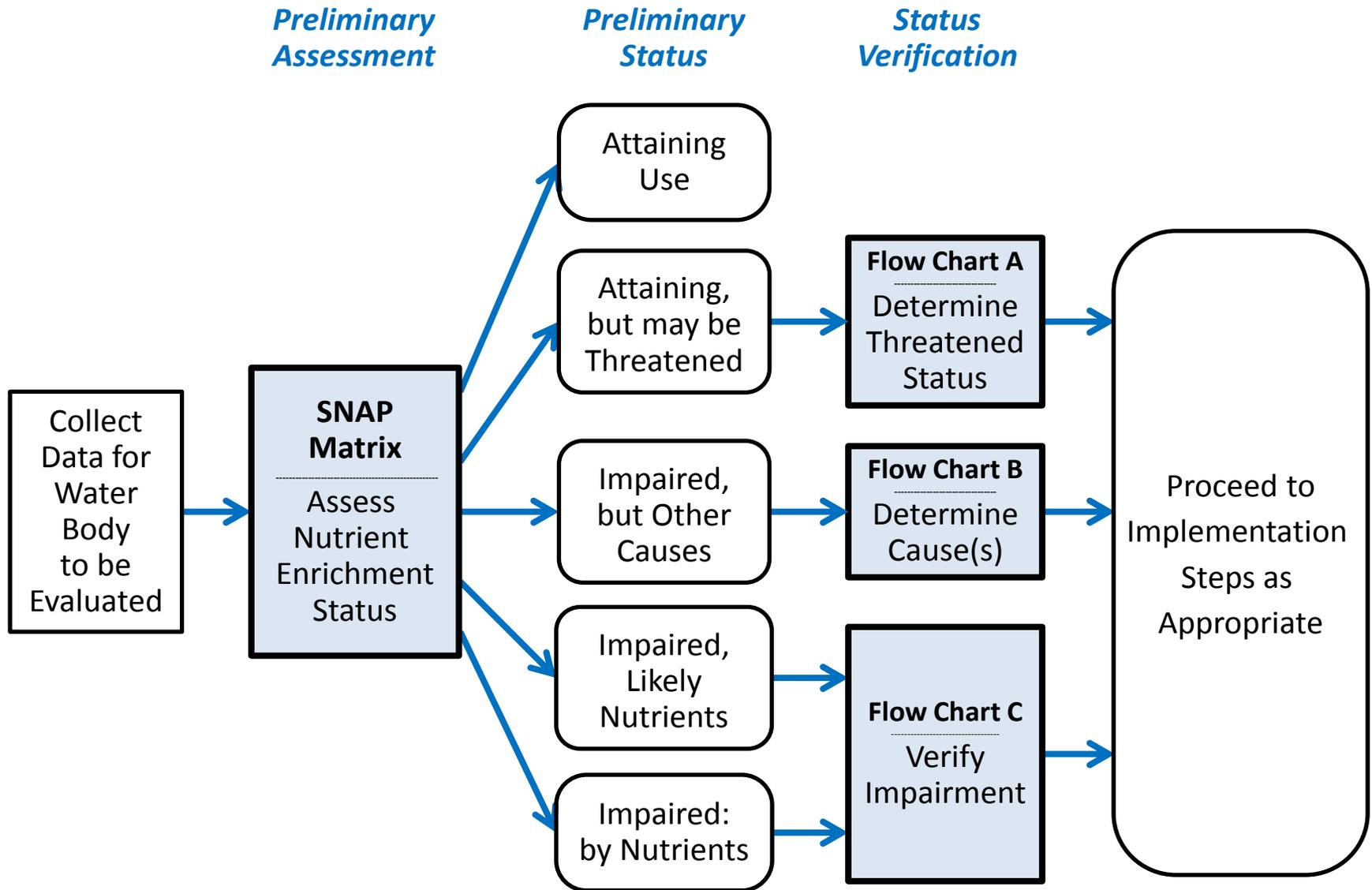
- Numeric (“bright line”)
- May be too rigid
- Name confusion:
TIC is not a criterion
- Concern about false positives or false negatives

SNAP

- Narrative
- Potentially more flexible
- More easily accommodates unique situations
- Decision tables provide greater transparency



Stream Nutrient Assessment Procedure (SNAP)



Proposed Stream Nutrient Assessment Procedure (SNAP)

1	2	3	4	
Biological Criteria	DO Swing	Benthic Chlorophyll	Trophic Condition Status	
All indices attaining or non-significant departure	Normal or low swings (≤ 6.5 mg/l)	Low to moderate (≤ 320 mg/m ²)	Attaining use / not threatened	
		High (> 320 mg/m ²)	Attaining use, but may be threatened	See Flow Chart A
	Wide swings (> 6.5 mg/l)	Low (≤ 182 mg/m ²)		
		Moderate to high (> 182 mg/m ²)		
Non-attaining (one or more indices below non-significant departure)	Normal or low swings (≤ 6.5 mg/l)	Low to moderate (≤ 320 mg/m ²)	Impaired, but cause(s) other than nutrients	See Flow Chart B
		High (> 320 mg/m ²)	Impaired / likely nutrient enriched	See Flow Chart C
	Wide swings (> 6.5 mg/l)	Low (≤ 182 mg/m ²)		
		Moderate to high (> 182 mg/m ²)	Impaired / Nutrient enriched	

FLOW CHART A.

Decision matrix for determining when biologically attaining condition status is threatened by nutrients

Key Questions:

- Are adjacent sites impaired?
- Do one or more biological indicators under-perform relative to available habitat? → *TABLE A1*
 - ↘ Are stressors unrelated to nutrients elevated and responsible for observed conditions?
 - ↘ Is the reach or site improving due to nutrient management?
 - ↘ Are nutrients from a defined source attenuated along elevated reach? → *TABLE A2*
- Is biological condition deteriorating?
 - ↘ Are stressors unrelated to nutrients elevated and responsible for observed conditions?

FLOW CHART B.

Decision matrix for determining when biological impairment is caused by stressors other than nutrients

Key Questions:

- Are stressors unrelated to nutrients elevated?
- Are adjacent sites impaired?
 - ↘ Are stressors at adjacent sites unrelated to nutrients elevated?
 - ↘ Do natural conditions dictate status (e.g., wetland, coldwater)
- Do natural conditions dictate status (e.g., wetland, coldwater)?

FLOW CHART C.

Decision matrix for confirming whether biological impairment is caused by nutrients

Key Questions:

- Are stressors unrelated to nutrients elevated?
 - ↘ Would abatement alone of stressors unrelated to nutrients restore biological condition?
 - ↘ Would additional abatement of nutrient stressors restore biological condition?
- Would abatement of nutrient stressors restore biological condition?

Question: Why no “nutrients” in proposed SNAP?

- Based upon Ohio EPA’s development and survey data
 - In statistical comparison with DO and chlorophyll, nutrient concentration provides lowest value as a predictor
 - Too many instances of confounding nutrient concentrations in actual data:
 - Full attainment with high nutrient concentrations, *OR*
 - Impaired with low nutrient concentrations
 - Other eutrophication factors interact with nutrients as causative factors:
 - Canopy cover
 - Stream morphology
 - Riparian buffer
- **BUT...** The entire SNAP with decision Flow Charts evaluates nutrient trophic condition, threatened status & nutrients vs. other stressors