
Biostimulatory/Biointegrity Watershed Approach

Proposed Implementation of Narrative Water
Quality Objectives

July 21, 2017



Background

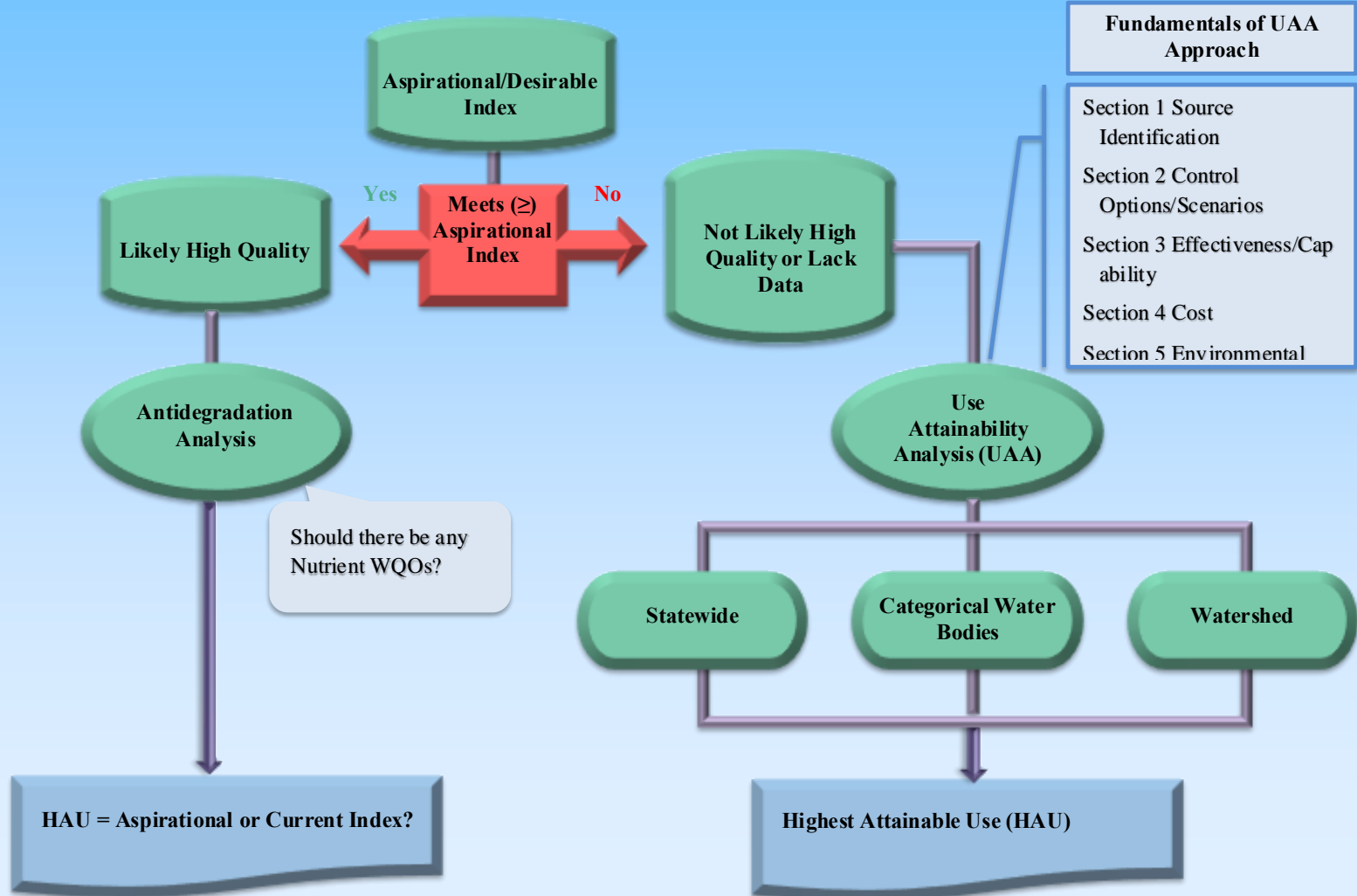
- Numerous Meetings to discuss fundamentals of “CASA Watershed Approach” – Since 2014
 - Regulated community
 - SWRCB – Board members, management, staff
 - SCCWRP
- Stakeholder Advisory Group meetings
- Independent Science Panel meetings
 - June 2015
 - April 2017

Key Elements of Approach

- Address Achievability of WQOs per CA Water Code Section 13241
- Address Program of Implementation per CWC Section 13242
- Use Available USEPA WQ Standards tools –
Use Attainability Analysis
- Sound scientific basis

Highest Attainable Use

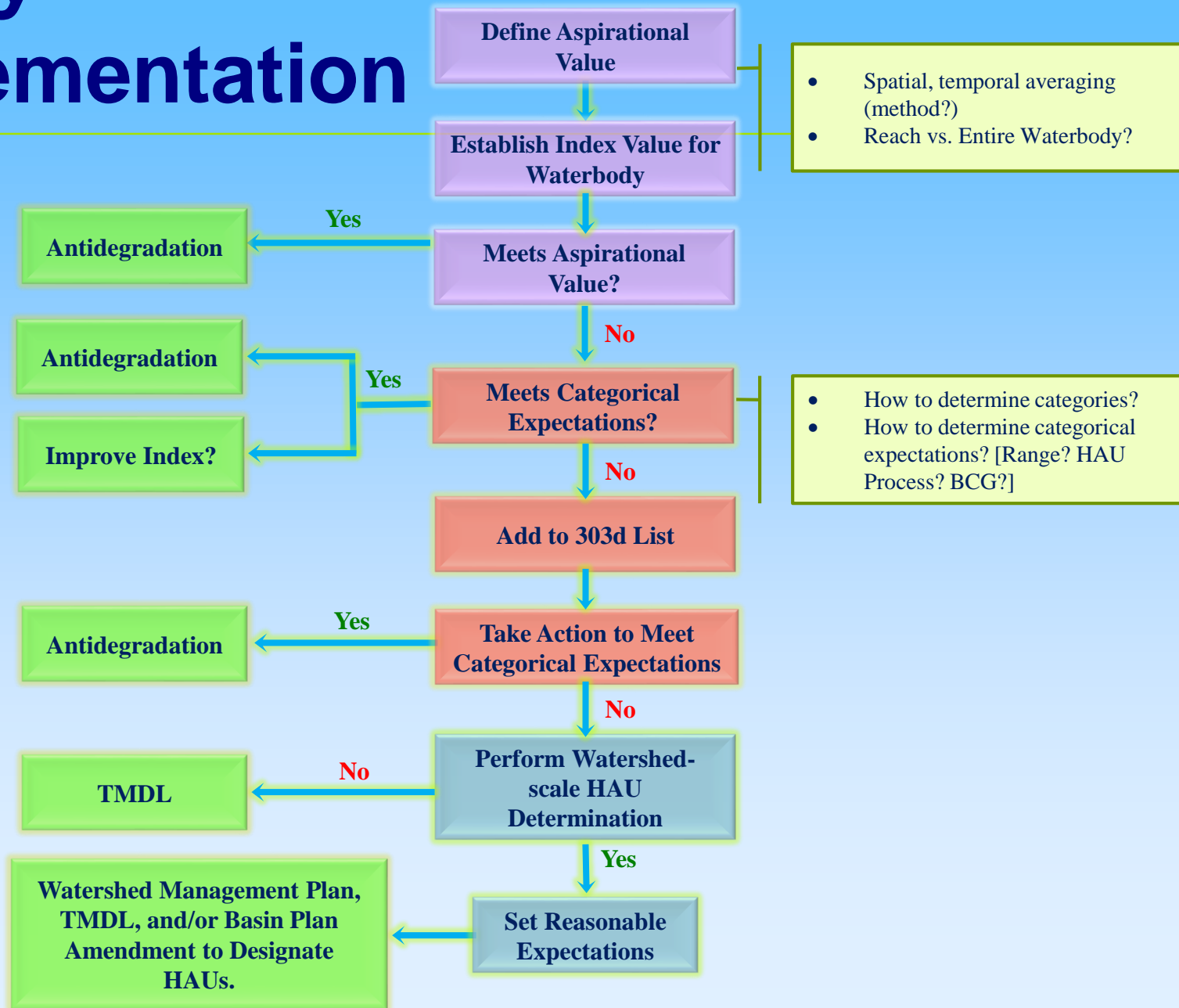
Setting Highest Attainable Use (Biointegrity)



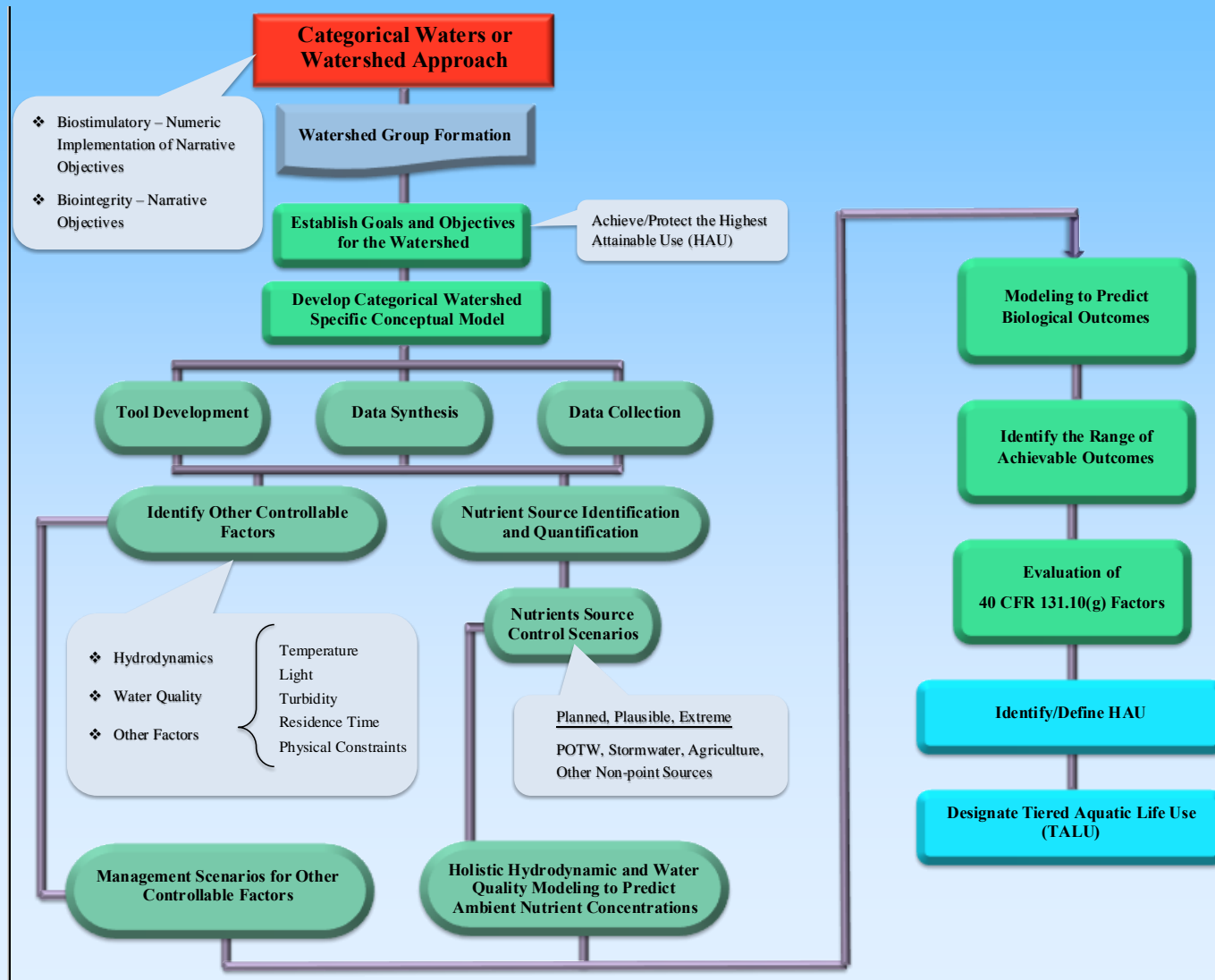
Highest Attainable Use Concept

- Ongoing SWRCB work is setting Aspirational Indices/Conditions
 - Roughly 17% of CA streams “likely high quality” (i.e. meet “aspirational” index values).
 - Maintain high quality through Antidegradation Policy
 - Other streams are either not “likely high quality” or lacking data
 - Require different approach – Categorical or Watershed
 - Address through UAA/HAU/TALU policy approach
- Can tailor site-specific index values to protect HAU as determined in a UAA at watershed scale

Policy Implementation

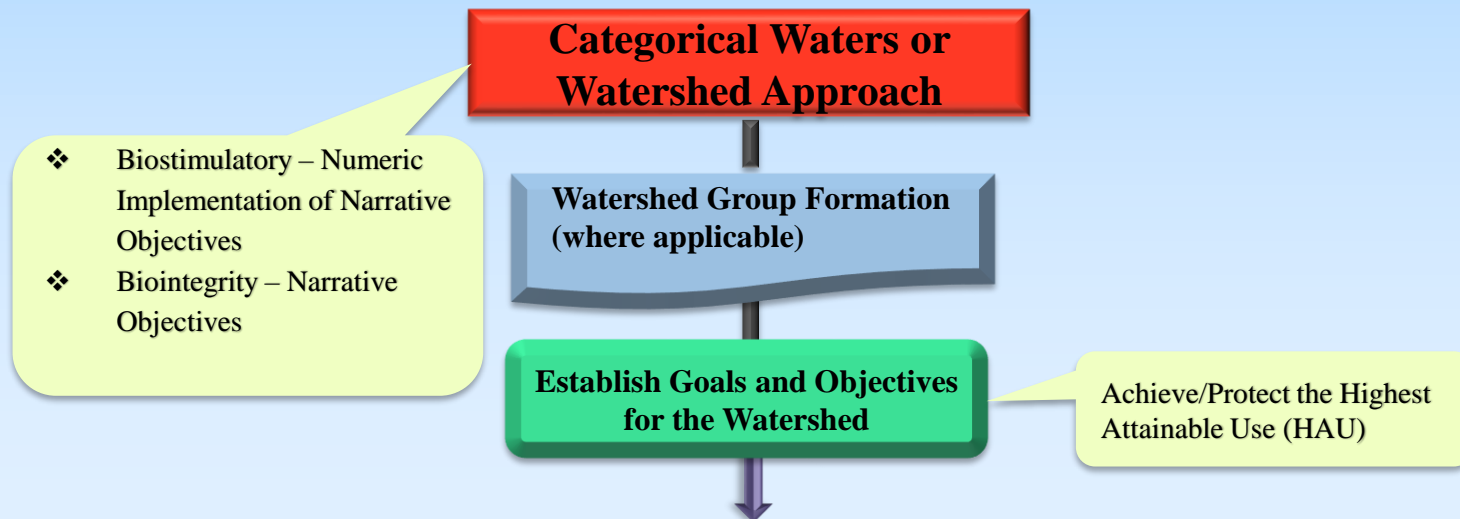


Categorical Waters or Watershed Approach

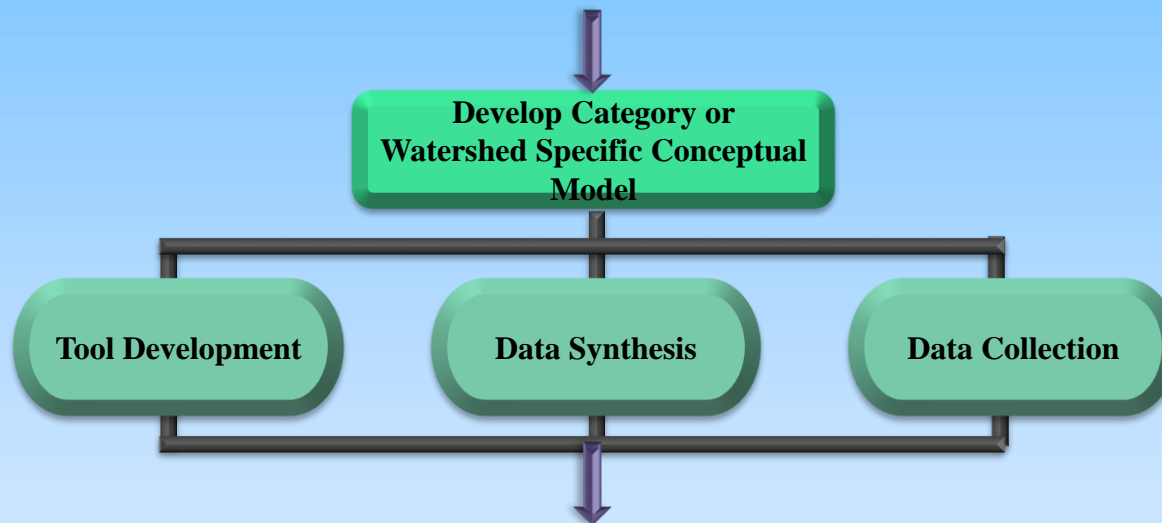


Categorical Waters/Watershed Approach

- Setting Appropriate Expectations at Categorical Water Body or Watershed scale
- Develop Categorical default values with option for watershed-scale analysis
- Meets CWA and CWC



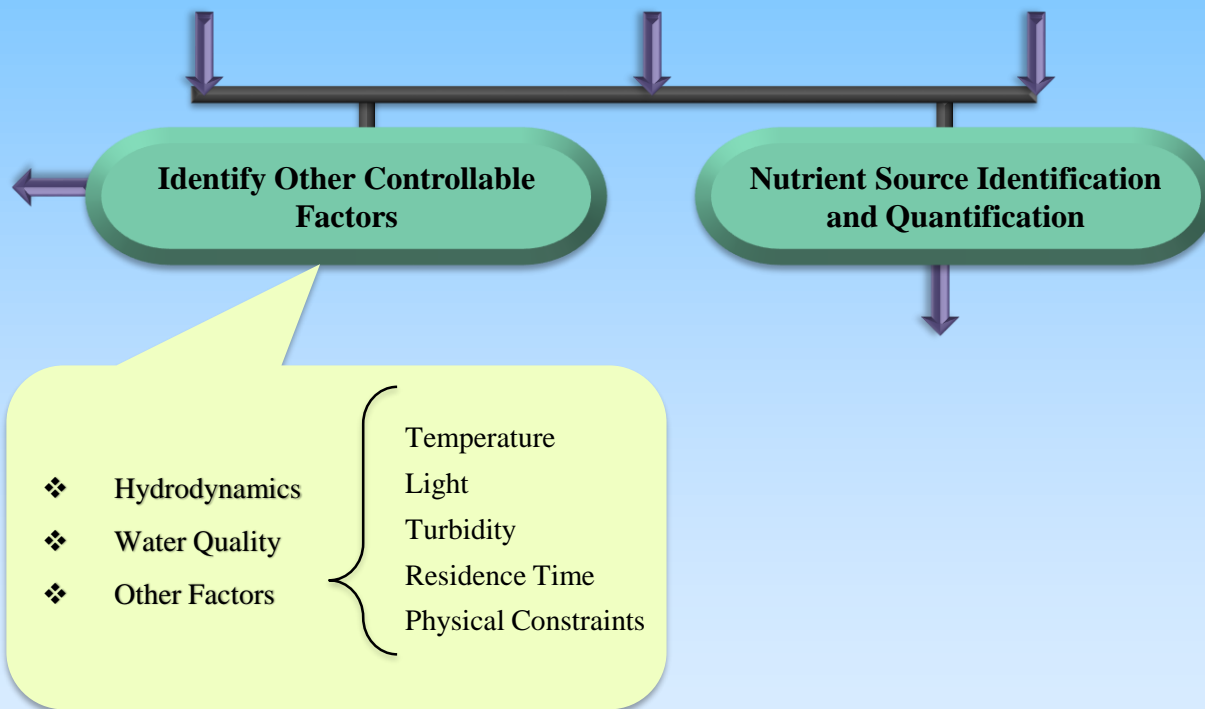
Conceptual Model



Conceptual Model

- Relationships of watershed factors to B/B
 - Nutrient sources and cycling
 - Hydrologic characteristics
 - Geologic conditions
 - Riparian shading
 - Stream gradients
 - Channel conditions
 - Other factors [e.g. Invasive species]
- Determine required data synthesis, monitoring, and modeling efforts

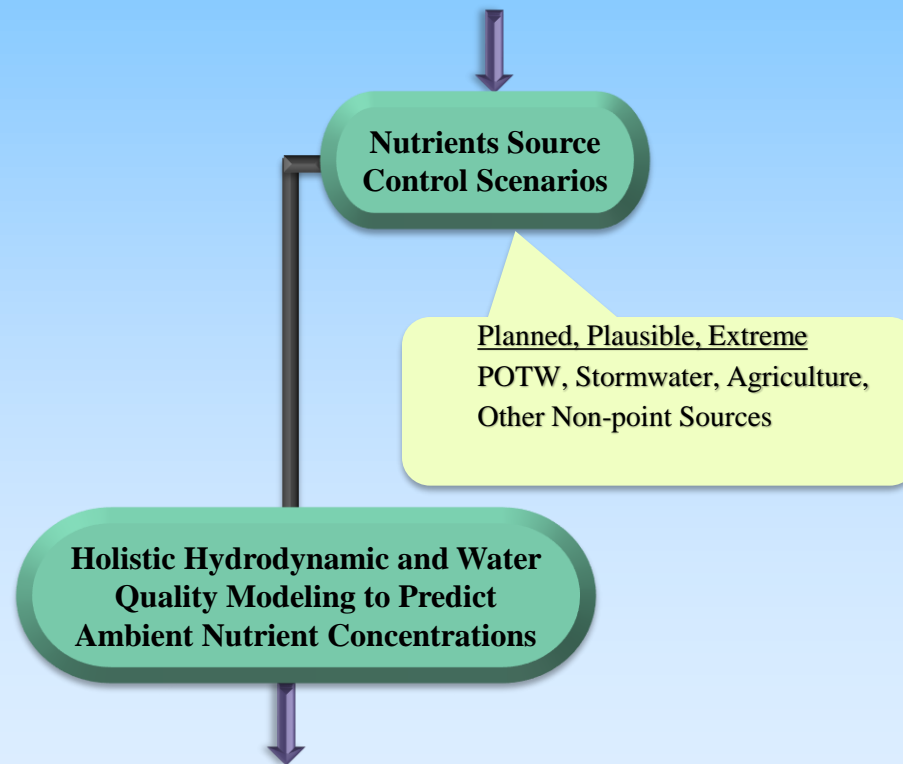
Quantification of Influencing Factors



Quantification of Influencing Factors

- Categorical or Local data
- Link ambient nutrient levels and other factors to biological indices and biostimulation
- Implement monitoring
 - Support for modeling tools
 - Validate watershed management influences on biological indices

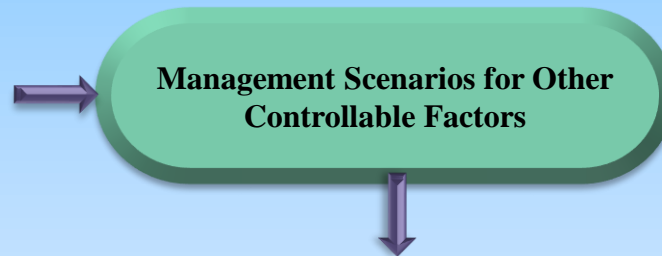
Model Development



Model Development

- Predictive model(s) for biological response to watershed management
 - Nutrients
 - Flow regimes
 - Temperature
 - Light
 - Invasive species
- Include nutrient source controls and other factors

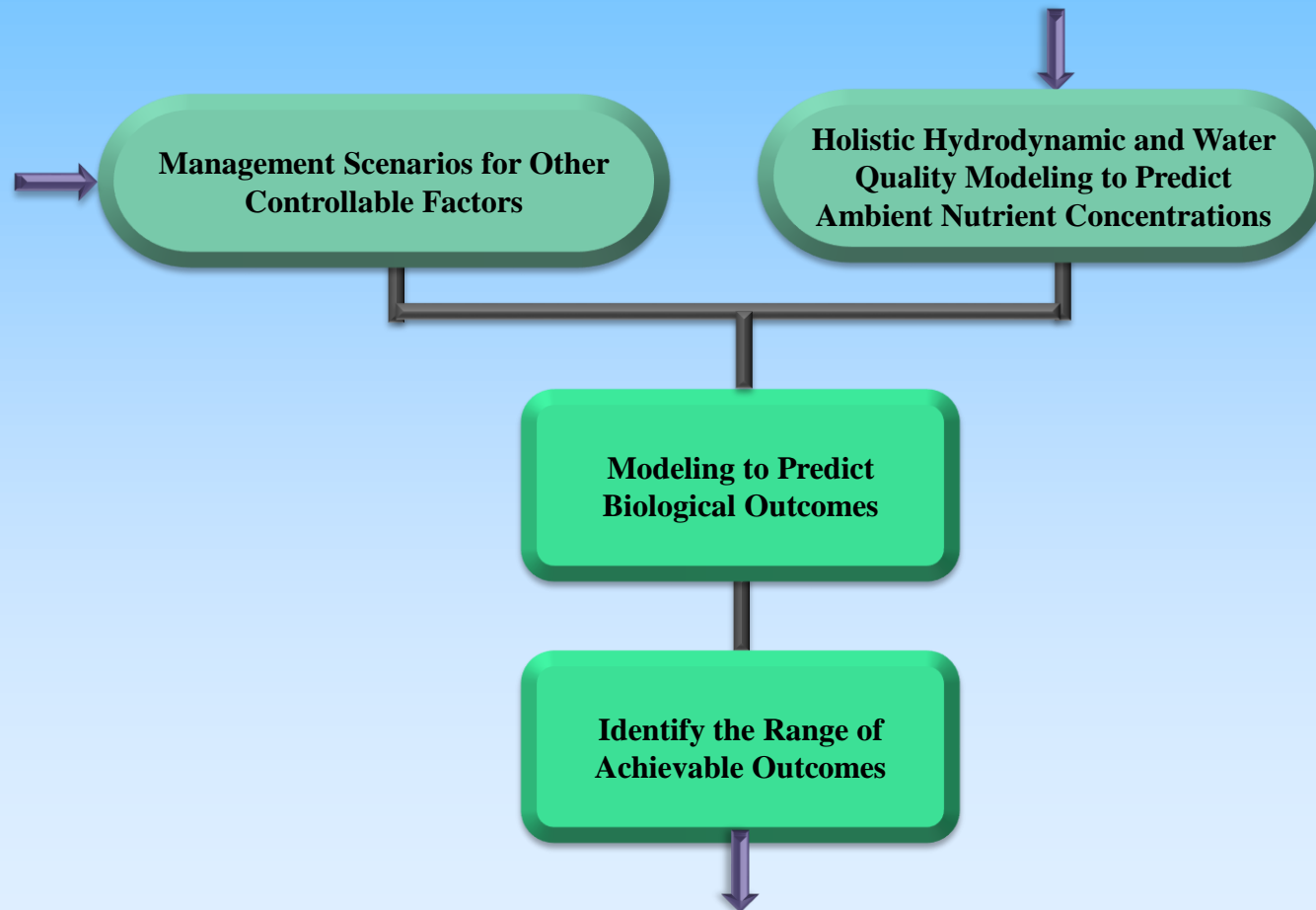
Development of Management Scenarios



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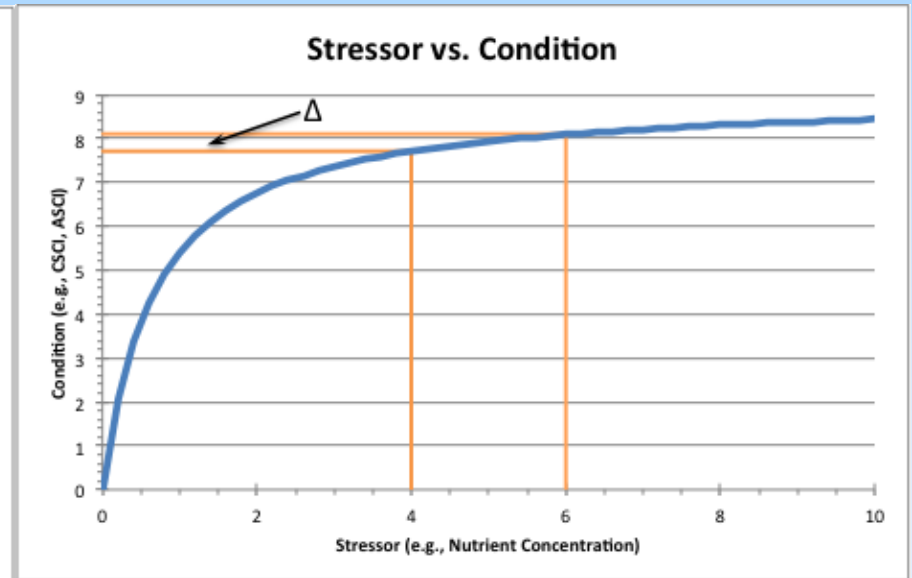
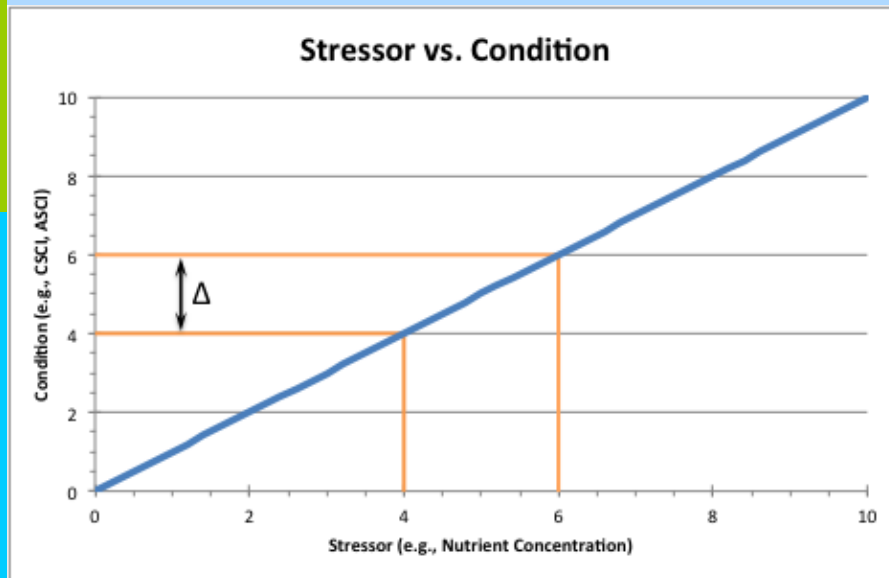
- Range of Scenarios
 - Planned
 - Plausible
 - Extreme
- Watershed management
 - Nutrient load controls
 - Shading
 - Erosion control, buffers, wetlands
 - Flow management
 - Invasive species management

Evaluate Effects of Management

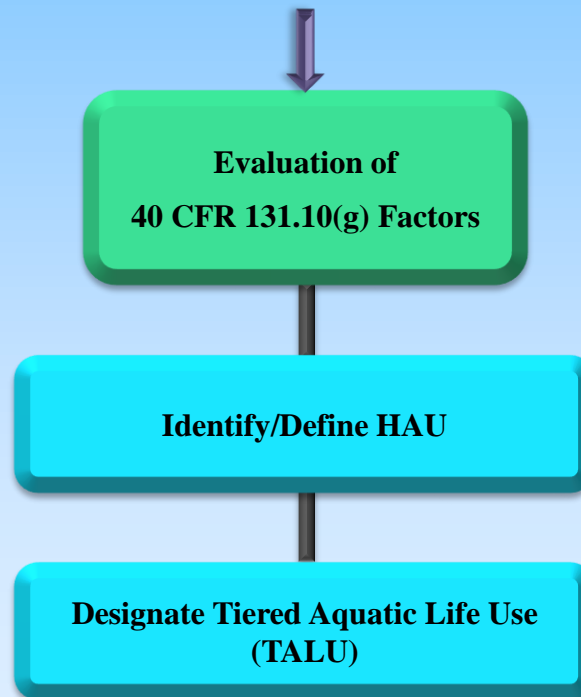


Evaluate Effects of Management

- Use of modeling tools to determine biological outcome to changes from Management
- Evaluate impacts to beneficial use attainment.



Identification of Highest Attainable Use and Metrics



Identification of Highest Attainable Use and Metrics

- Six 40 CFR 131.10(g) factors for prevention of use
 - Naturally occurring pollutant
 - Flow or water levels
 - Human-caused conditions that cannot be remedied
 - Dams, diversions, or other hydrologic modifications
 - Physical conditions/natural features of waterbody
 - Controls more stringent than Section 201(b) and 306 would be required

Summary

- Solution-oriented framework
- Development of scientifically defensible information and modeling
- Synthesis to determine achievable/attainable water quality benefits and beneficial use improvements
- Determine HAUs to set appropriate TALUs and associated objectives

Questions/Next Steps

- Craft Policy Implementation Language
- Science Needs
 - Categorical Approach
 - Conceptual Model
 - Modeling Tools
 - Guidance document