
Biostimulatory/Biointegrity Watershed Approach

Proposed Implementation of Narrative Water
Quality Objectives

June 12, 2017



Background

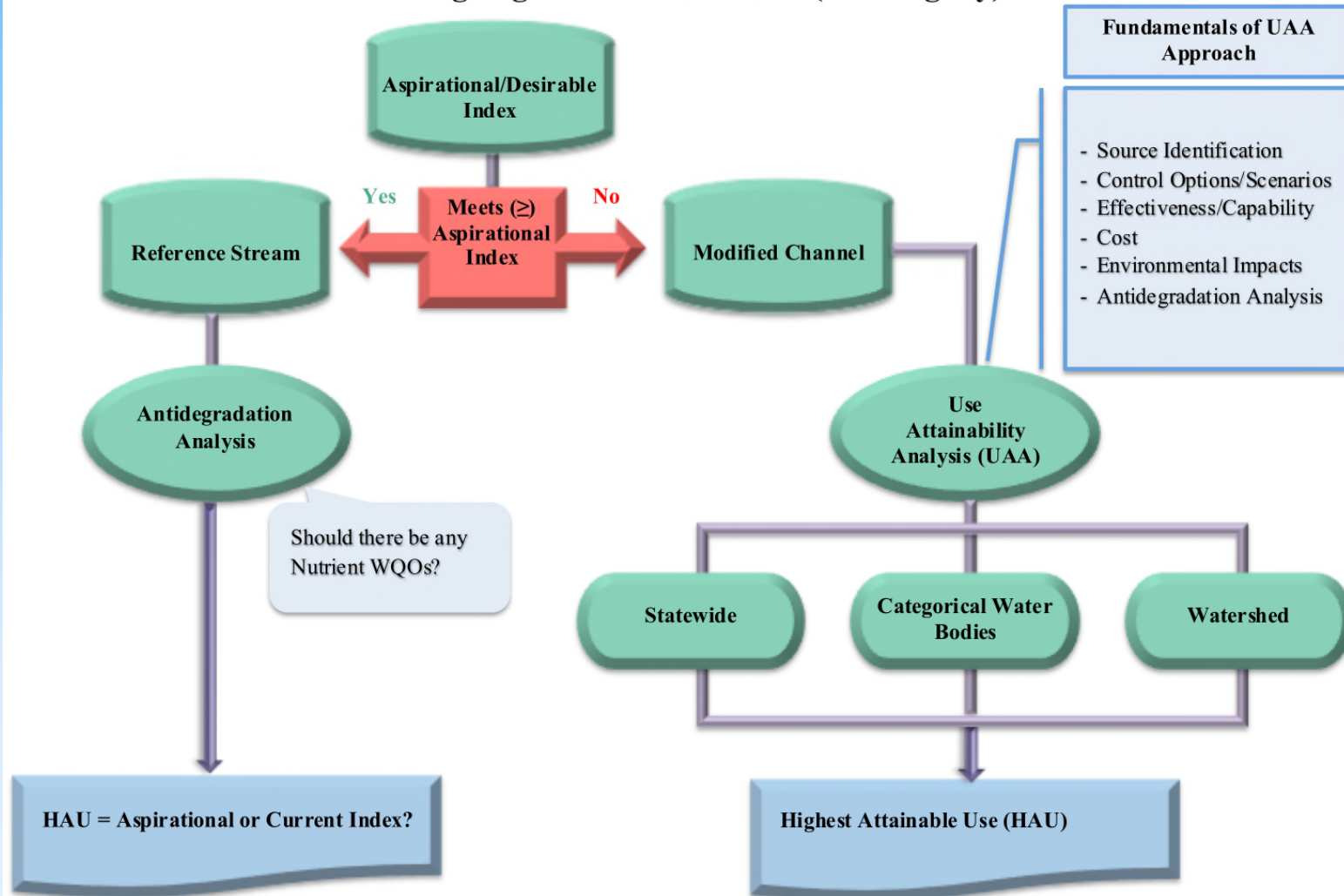
- 2013 CASA Approach – Sept Workshop
- Meetings promoting CASA Approach
 - Regulated community
 - SWRCB – Board members, management, staff
 - SCCWRP
- Stakeholder Advisory Group
- Independent Science Panel
 - June 2015
 - April 2017

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
- Sound scientific basis

Highest Attainable Use

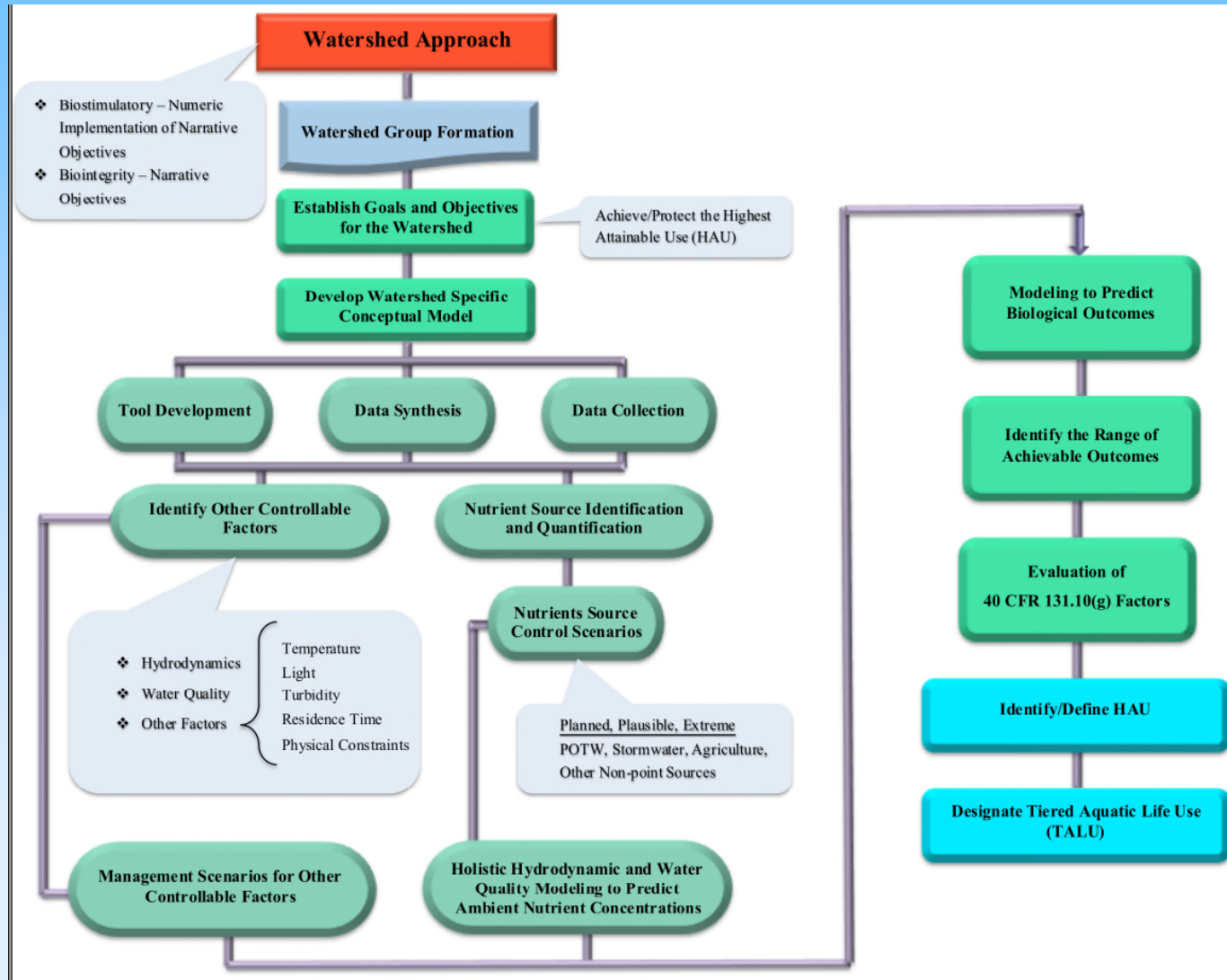
Setting Highest Attainable Use (Biointegrity)



Highest Attainable Use

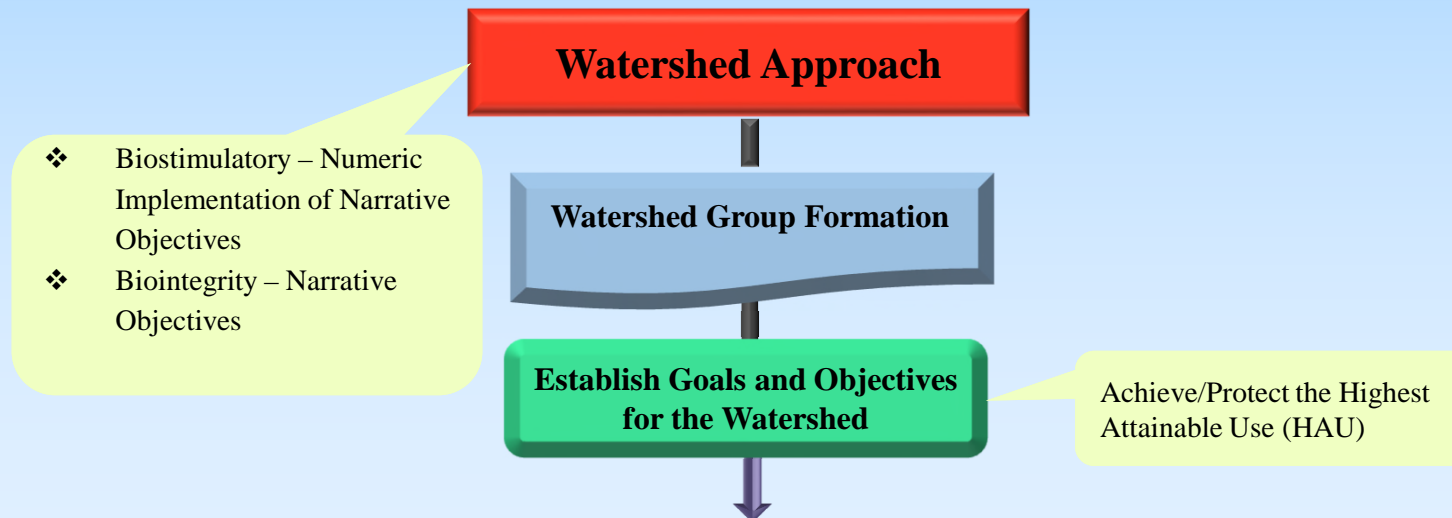
- Ongoing SWRCB work is setting Aspirational Indices/Conditions
 - 70% of CA streams are reference.
 - Keep reference reference
 - 30% streams “modified”
 - Watershed Approach
 - UAA/HAU/TALU
- State can tailor site-specific criteria to protect HAU as determined in the UAA
- State may adopt broad “Limited Use”

Watershed Approach Implementation

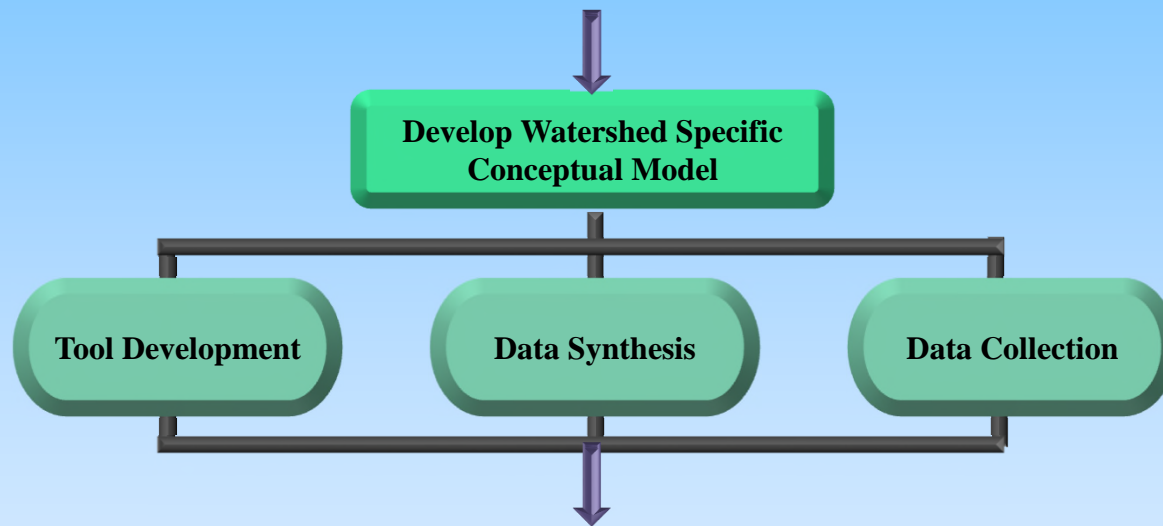


Watershed Approach Implementation

- Watershed specific solution
- Burden shifted to people in the watershed
 - Similar to SGMA, CVSALTS, Stormwater WQIP
- Meets CWA and CWC



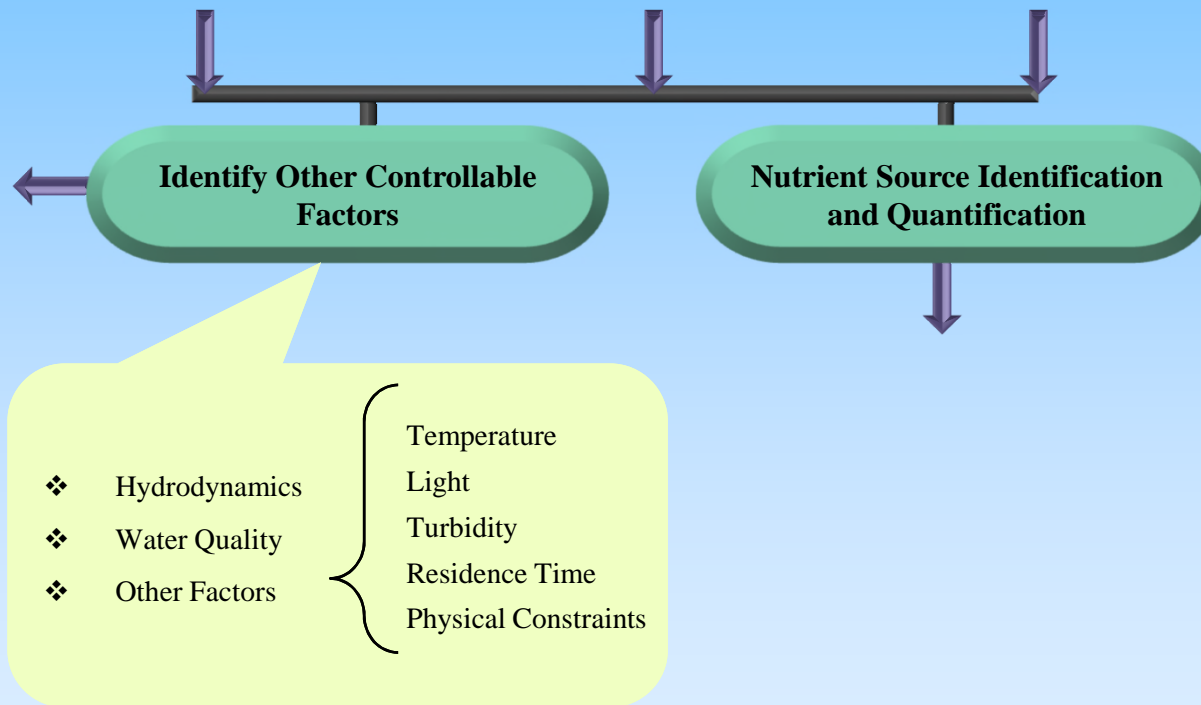
Watershed Conceptual Model



Watershed 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

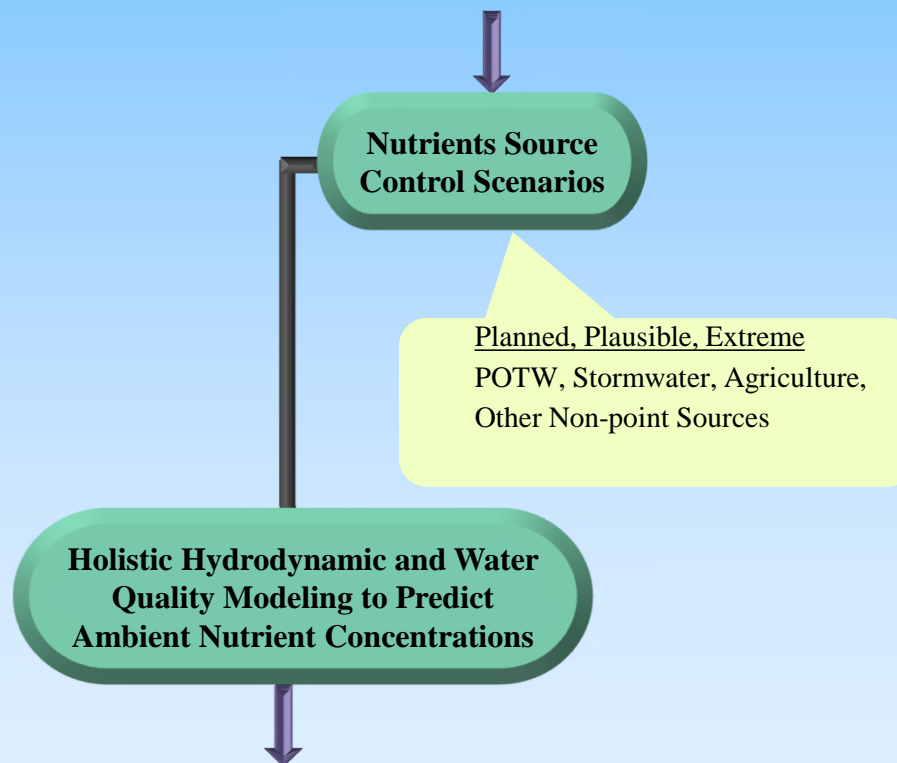
Quantification of Influencing Factors



Quantification of Influencing Factors

- 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

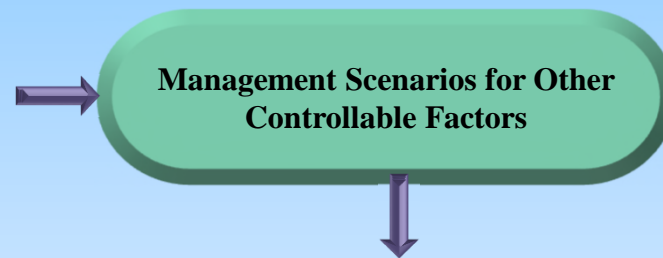
Model Development



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

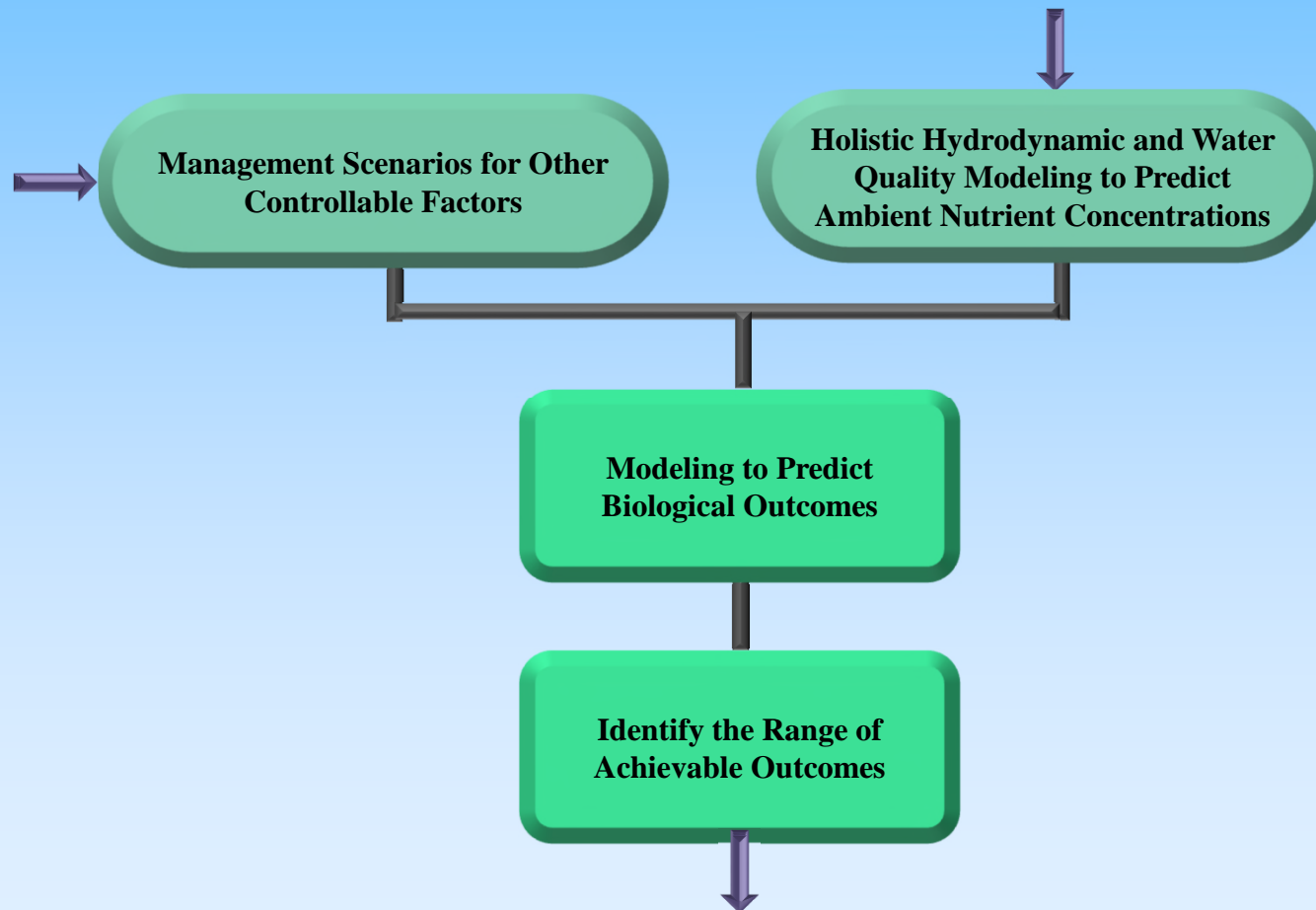
Development of Management Scenarios



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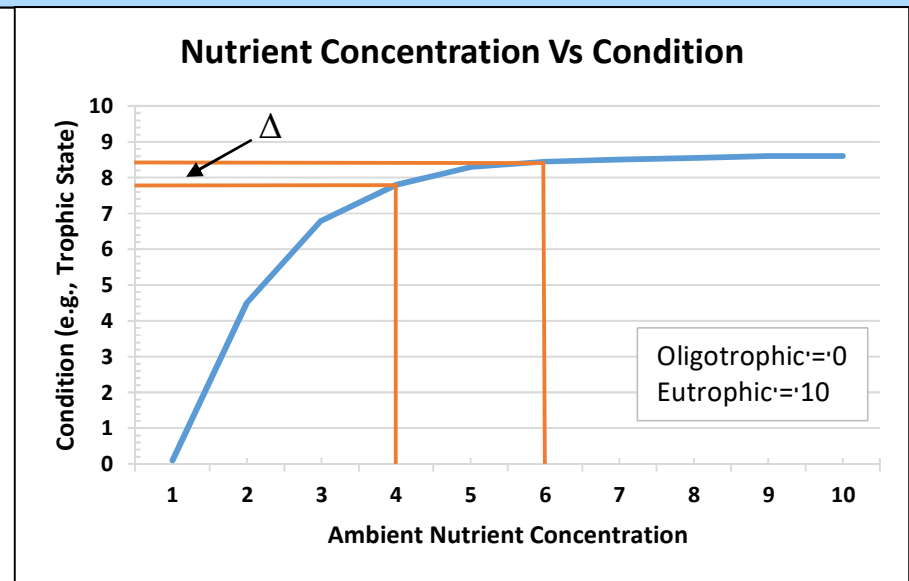
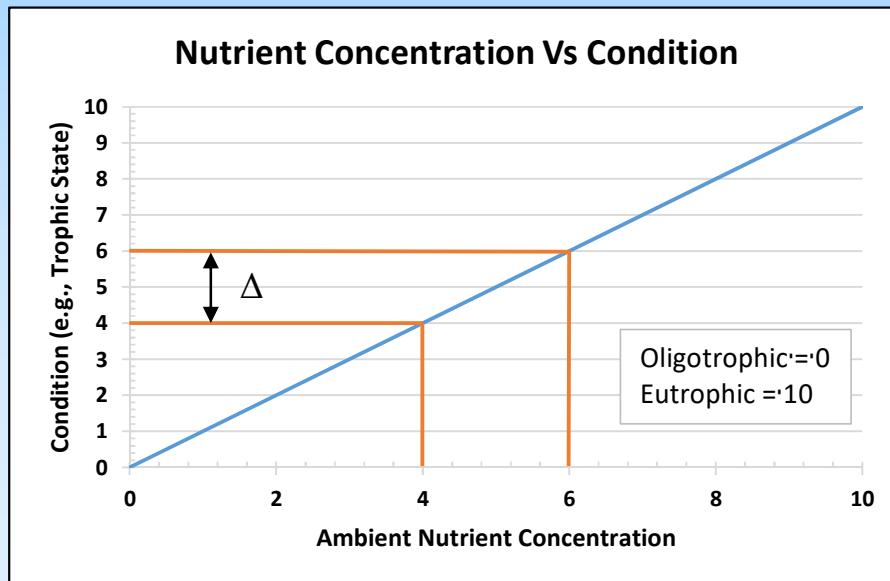
- Local Stakeholder driven process
 - Planned
 - Plausible
 - Extreme
- Watershed management
 - Nutrient load controls
 - Shading
 - Erosion control, buffers, wetlands
 - Flow management
 - Invasive species management

Evaluate Effects of Management

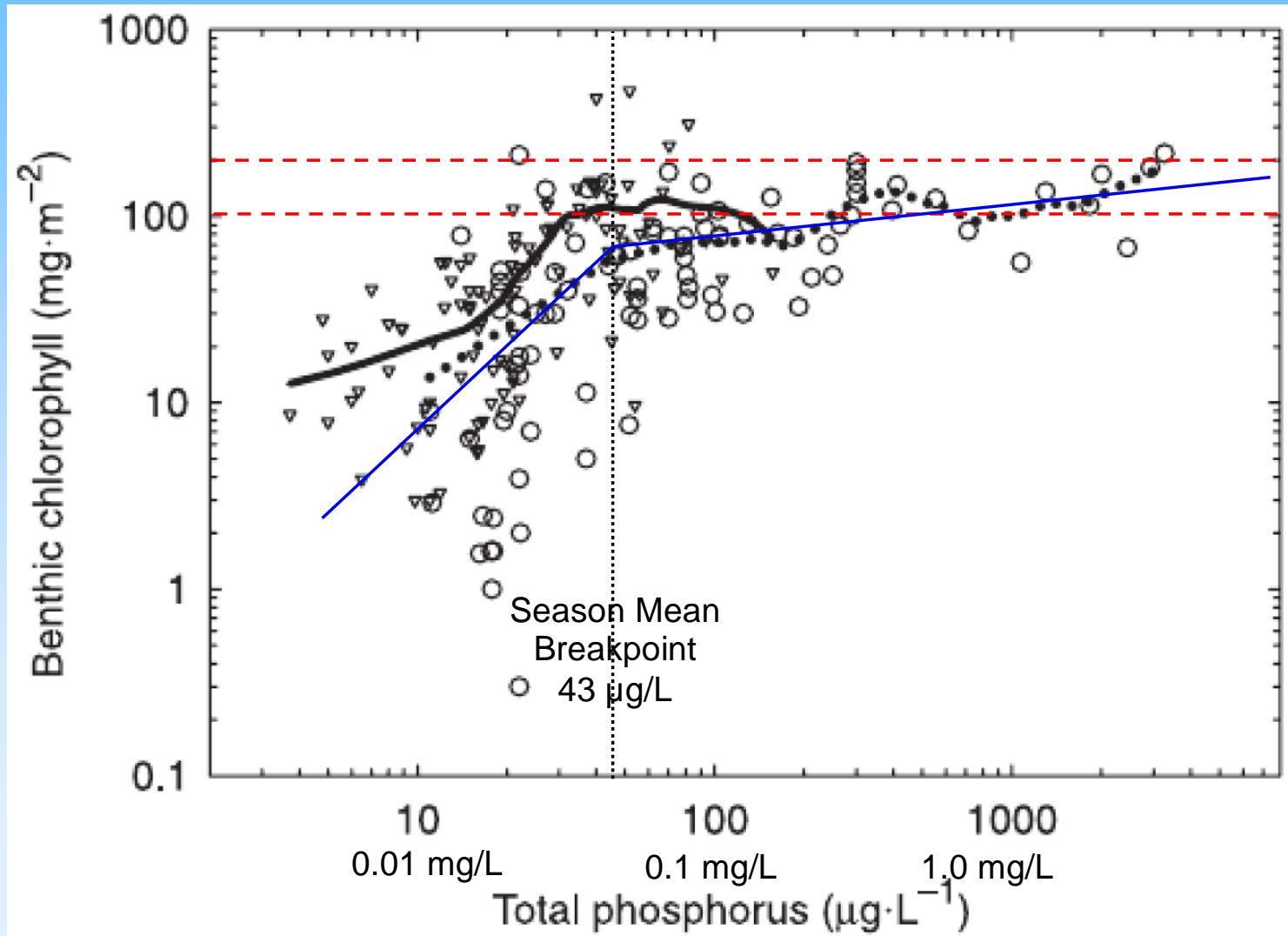


Evaluate Effects of Management

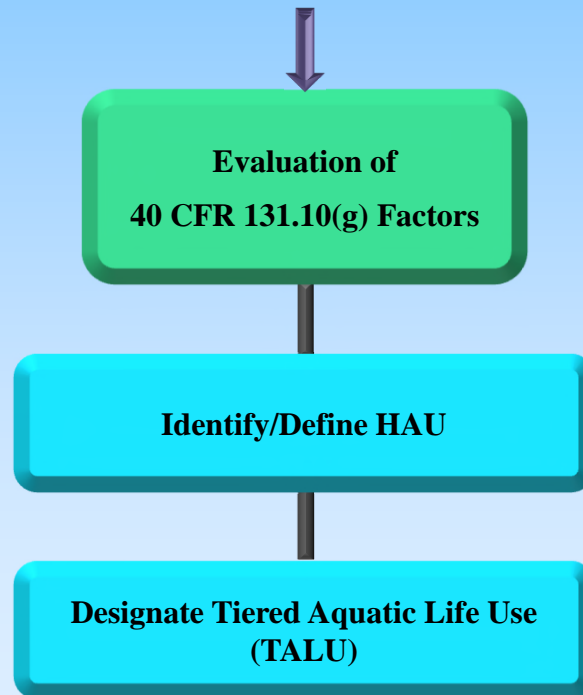
- Use of modeling tools to determine biological outcome to changes from Management
- Evaluate impacts to beneficial use attainment.



Typical Algae-Nutrient Response



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

- Regulated Community Input/Pilots?
- Presentation to SWRCB/SCCWRP
- Presentation to Independent Science Panel
- Craft Policy Implementation Language
- Other Asks?
 - Categorical Approach?
 - Conceptual Model?
 - Modeling Tools?
 - Guidance document?