Updates

EPA Health Advisories – June 2015

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News Releases By Date

EPA Issues Health Advisories to Protect Americans from Algal Toxins in Drinking Water

Release Date: 05/06/2015
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WASHINGTON – The U.S. Environmental Protection Agency (EPA) today issued health advisory values that states and utilities can use to protect Americans from elevated levels of algal toxins in drinking water. Algal blooms in rivers, lakes, and bays sometimes produce harmful toxins. Because utilities often use these water bodies as sources of drinking water, EPA has determined algal toxin levels in tap water that are protective of human health based on the best available science. EPA is also recommending how utilities can monitor and treat drinking water for algal toxins and notify the public if drinking water exceeds protective levels.

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Recent additions

09/23/2015 Kansas City and St. Louis, Mo., and State of Missouri to Receive

Safe Drinking Water Act
Amendments -2015

Drinking Water Protection Act

(Sec. 2) This bill amends the Safe Drinking Water Act to direct the Environmental Protection Agency (EPA) to develop and submit to Congress a strategic plan for assessing and managing risks associated with algal toxins in drinking water provided by public water systems. Cyanobacteria, also known as blue-green algae, have the ability to produce cyanotoxins, or algal toxins. When certain conditions are favorable, algae can rapidly multiply causing blooms, or dense surface scums, that may be toxic.

The plan must include steps and time lines to:

- evaluate the risk to human health from drinking water contaminated with algal toxins;
- establish, publish, and update a comprehensive list of algal toxins that may have an adverse effect on human health, taking into account likely exposure levels;
- summarize the known adverse human health effects of algal toxins and the factors that cause toxin-producing cyanobacteria and algae to grow rapidly and make toxins;
- determine whether to publish health advisories for algal toxins and establish guidance regarding feasible analytical methods to quantify the presence of algal toxins and guidance regarding the frequency of monitoring necessary to determine if the algal toxins are present;
- recommend feasible treatment options, including procedures, equipment, and source water protection practices; and
- enter into cooperative agreements with, and provide technical assistance to, affected states and public water systems to manage risks associated with algal toxins.

Chowan River Bloom - 2015

Harmful Algal Bloom Health Risk Evaluation - Cyanobacteria

Date: 9/18/15
Location: Chowan River; Bertie County
Bloom Organism: Microcystis Aeruginosa
Microcystin concentration: 54.39 µg/L Cyanobacterial abundance: Not Available cells/mL Chlorophyll-*a* Concentration: Not Available µg/L

Probability of acute health effects by cyanobacteria abundance, microcystin concentration, and chlorophyll-*a* concentration based on World Health Organization guideline values for recreational activities[1]:

Probability	Microcystin Concentration	Cyanobacterial Abundance	Chlorophyll-*a*
Low	< 10 µg/L	< 20,000 cells/ml	< 10 µg/L
Moderate	10 - 20 µg/L	20,000 – 100,000 cells/ml	10 – 50 µg/L
High	20 - 2,000 µg/L	100,000 – 10,000,000 cells/ml	50 – 5,000 µg/L
Very High	> 2,000 µg/L	> 10,000,000 cells/ml	> 5,000 µg/L

N.C. DHHS recommends the following steps to safeguard pets and children from harmful cyanobacterial (blue-green algal) blooms[2]:

- Keep children and pets away from waters that appear discolored or scummy.
- Do not handle or touch large accumulations ("scums" or mats) of algae.
- Do not water ski or jet ski over algal mats.
- Do not use scummy water for cleaning or irrigation.
- If you accidently come into contact with an algal bloom, wash thoroughly with soap and water.
- If your pet appears to stumble, stagger, or collapse after being in a pond, lake or river, seek veterinary care immediately.
- If your child appears ill after being in waters containing a bloom, seek medical care immediately.
- If you are unsure whether or not a bloom is present, it is best to stay out of the water.

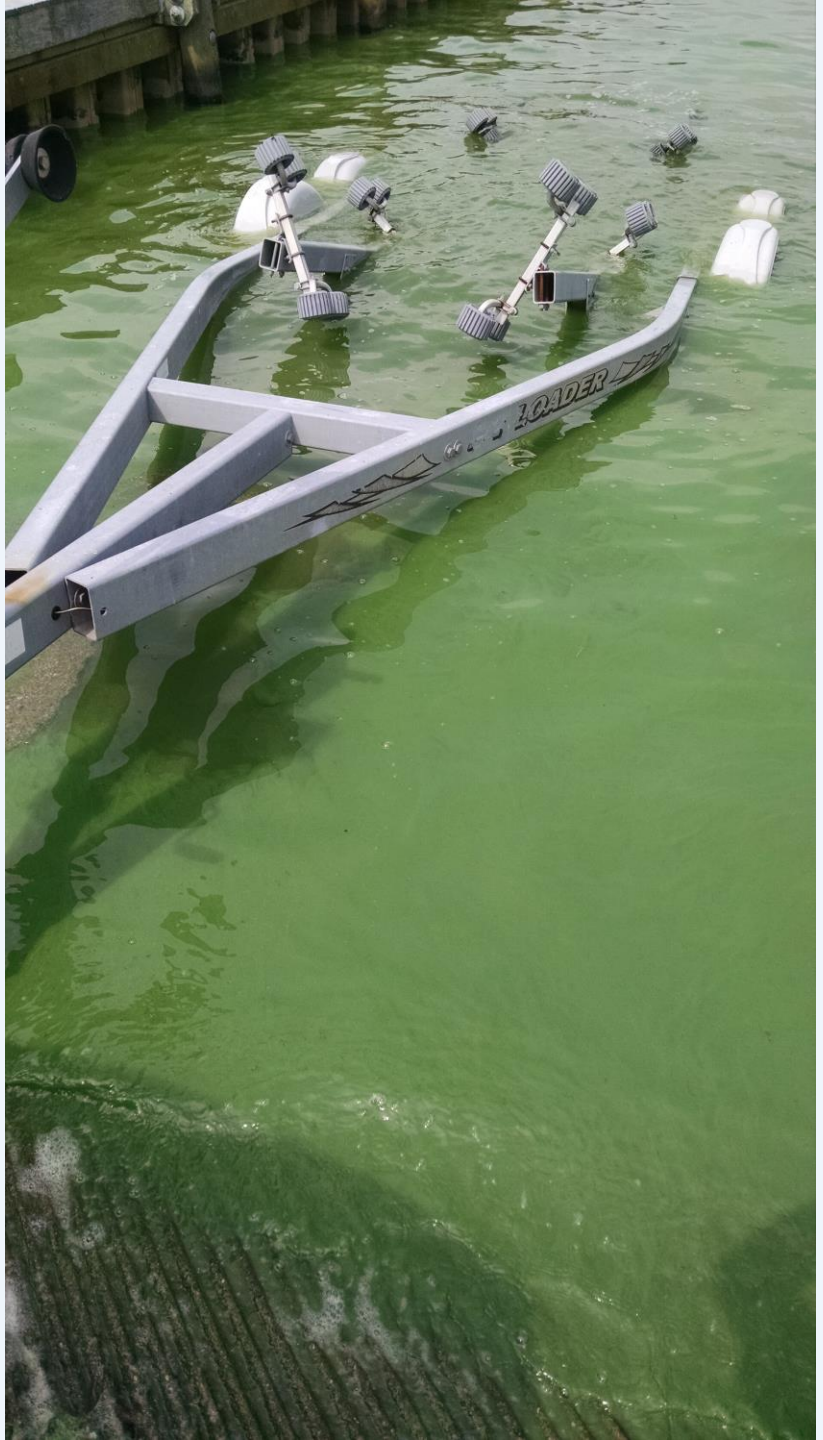
Comments:
Microcystin is the most frequently observed and tested cyanotoxin. Other cyanotoxins may or may not be present such as cylindrospermopsin, anatoxin-*a*, and saxitoxin.

HIGH Probability of adverse health outcomes due to microcystin Toxin

References:
[1] http://www2.epa.gov/nutrient-policy-data/guidelines-and-recommendations
[2] http://epi.publichealth.nc.gov/oee/algae/protect.html

MMS 9/18/15

Occupational and Environmental Epidemiology Branch
Division of Public Health
North Carolina Department of Health and Human Services



Upcoming Webinar

Watershed Academy Webcast on Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants

Please join us for a webcast on October 15 at 1:00pm to 3:00pm Eastern on a recently released draft report on "Case Studies on Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants."

As many studies have shown, nutrient pollution is one of America's costliest and most challenging water quality problems. However, many of the nation's wastewater treatment plants (WWTPs) were not designed for nutrient removal and major retrofits may be a significant hurdle. The recent EPA draft report showcases a number of communities that were able to achieve better nutrient treatment at WWTPs through relatively low-cost modifications without requiring costly infrastructure upgrades. Nitrogen discharge levels in 12 case study plants were reduced by about 20 to 70%. Two case studies also documented low-cost phosphorus reduction of 40 to 58%. In many cases, these facilities also reduced energy consumption and lowered operational costs. The webcast will give listeners a broad overview of the report, and will highlight two of the case studies in Crewe, VA and Victor Valley, CA.

EPA is also interested in learning of additional communities' successes and intends to update this document to help more of the nation's WWTPs make progress towards additional nutrient reductions. Comments and additional case studies can be submitted by December 15, 2015 to POTWOptiNP@epa.gov. The draft report is available at: http://www2.epa.gov/nutrient-policy-data/reports-and-research#reports.

Register today.

Data Summaries

1. Overview of NC reservoir/lakes data – *completed*
2. Overview of Albemarle Sound data – *ongoing*

Estuarine Literature Review

- Itemized lists, DOIs, groupings of scientific literature/reports regarding nutrients in estuaries – *not quite finished*

High Rock Lake: Criteria Development - *under consideration*

Reservoir and Lakes Data Summary

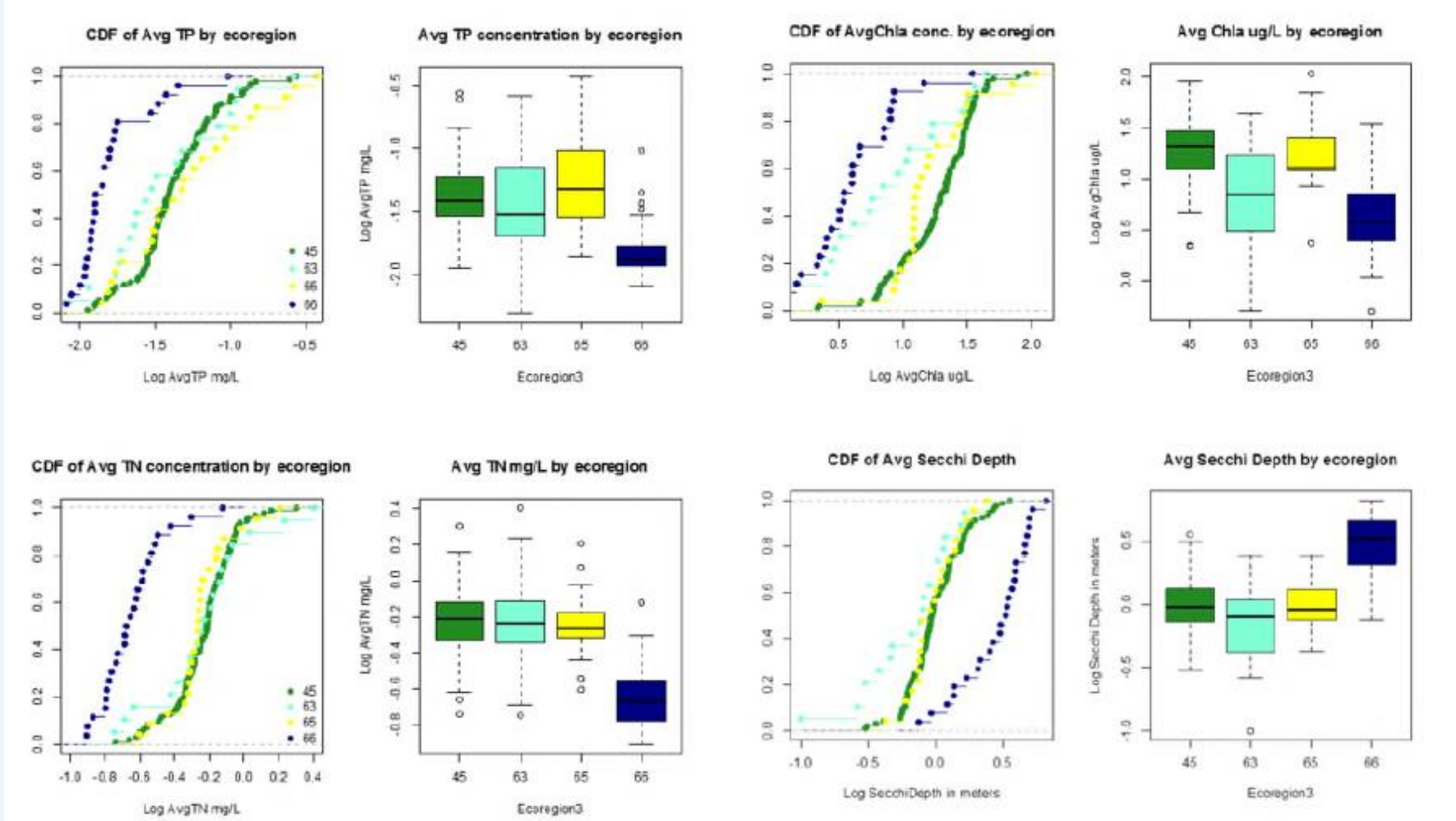
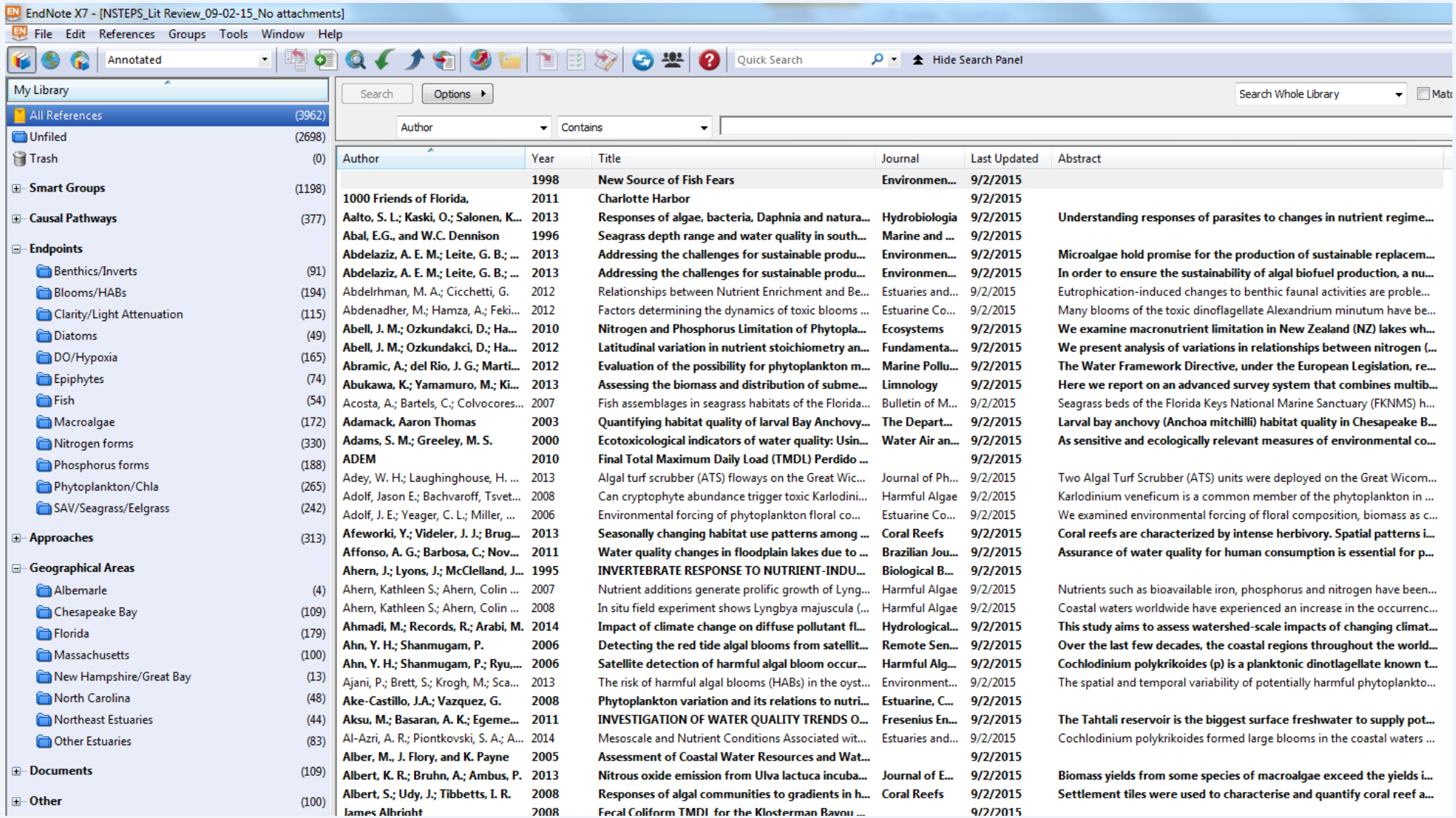


Figure 7. Classification of NC lakes by ecoregions in relation to nutrient, chlorophyll concentrations and Secchi depth (m). All variables are $\log_{10}$-transformed, explaining the negative values. Ecoregions are: 45 – Piedmont, 63 – Middle Atlantic Coastal Plain, 65 – Southeastern Plains, and 66 – Blue Ridge (See Figure 1)

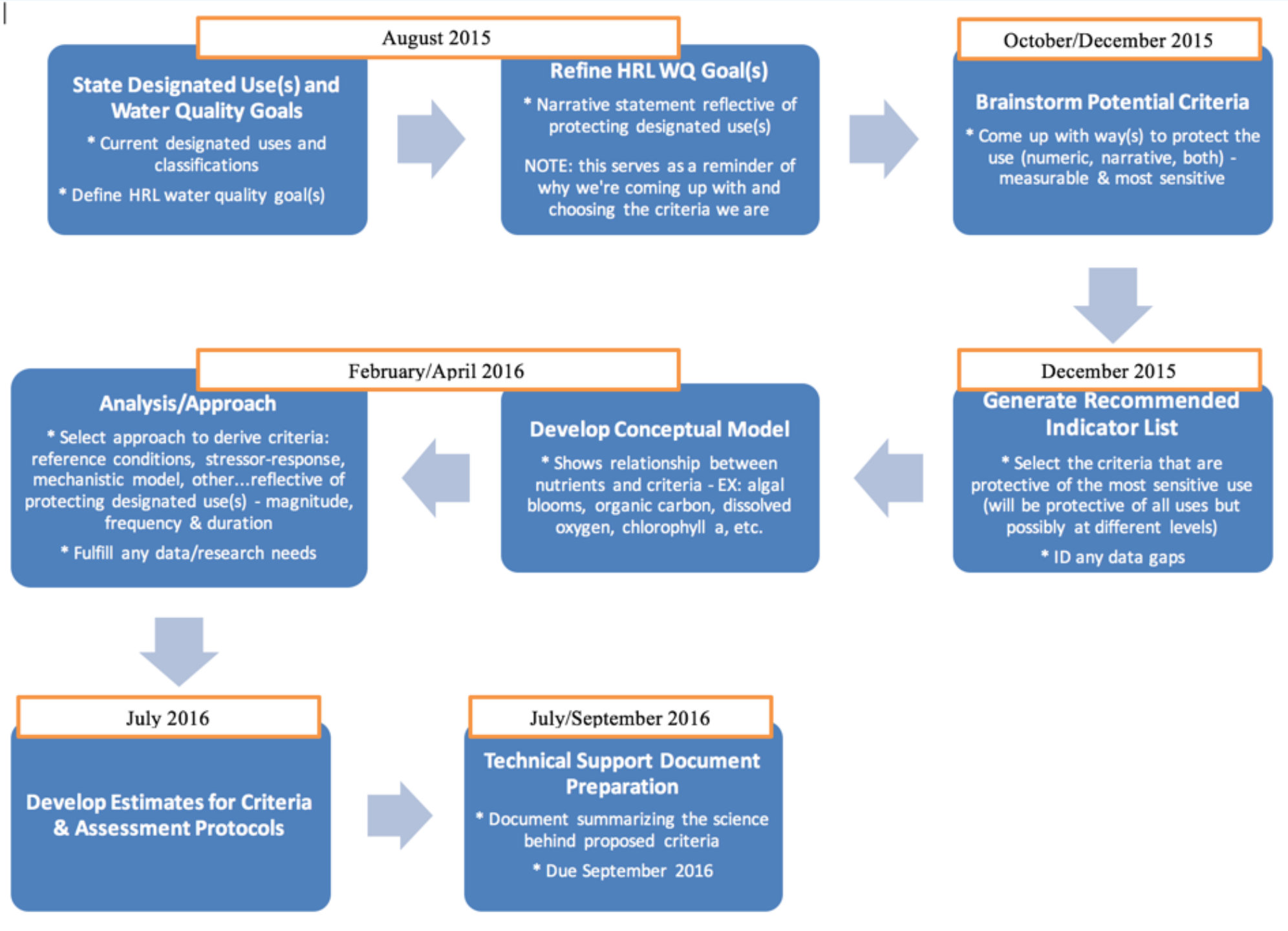
Literature Review - Estuaries



High Rock Lake Water Quality Goal

To provide for the protection of designated uses in the HRL reservoir by defining and proposing the appropriate level of algal related indicators for each of the following uses:

- Aquatic Life
- Fishing
- Fish Consumption
- Wildlife
- Secondary Recreation (e.g. wading, boating)
- Agricultural uses (e.g. irrigation)
- Water Supply
- Lower lake: Primary Recreation – full human body contact (e.g. swimming, water skiing)


August 2015
State Designated Use(s) and Water Quality Goals
* Current designated uses and classifications
* Define HRL water quality goal(s)
Refine HRL WQ Goal(s)
* Narrative statement reflective of protecting designated use(s)
NOTE: this serves as a reminder of why we're coming up with and choosing the criteria we are
October/December 2015
Brainstorm Potential Criteria
* Come up with way(s) to protect the use (numeric, narrative, both) - measurable & most sensitive
December 2015
Generate Recommended Indicator List
* Select the criteria that are protective of the most sensitive use (will be protective of all uses but possibly at different levels)
* ID any data gaps
Develop Conceptual Model
* Shows relationship between nutrients and criteria - EX: algal blooms, organic carbon, dissolved oxygen, chlorophyll a, etc.
February/April 2016
Analysis/Approach
* Select approach to derive criteria: reference conditions, stressor-response, mechanistic model, other...reflective of protecting designated use(s) - magnitude, frequency & duration
* Fulfill any data/research needs
July 2016
Develop Estimates for Criteria & Assessment Protocols
July/September 2016
Technical Support Document Preparation
* Document summarizing the science behind proposed criteria
* Due September 2016