



Nutrient Criteria and Assessment

Laurie Eng

Water Quality Standards Group

Jill Csekitz

Surface Water Quality Monitoring Team

Guidance Advisory Workgroup Meeting

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Previous Assessments

- Screening levels for ammonia, nitrate, total phosphorus, ortho-phosphorus, chlorophyll *a*
 - Concern identified when screening level exceeded > 20% of the time
 - Freshwater streams
 - Tidal streams
 - Estuaries
 - Reservoirs

- Narrative Criteria for Nutrient Enrichment



TCEQ WQS 2010 Nutrient Criteria

- Appendix F Site-specific Nutrient Criteria for Selected Reservoirs
- Adopted Chlorophyll *a* Criteria for 75 reservoirs
- Not yet approved by EPA
- Based on historical data for each reservoir at the specified station of the main pool or dam site



Chlorophyll a Nutrient Criteria

- Upper prediction interval, 99th percent confidence level
 - Minimum of 30 sampling dates
 - Data from 1990-2008, older data if needed
 - Outliers removed at greater than 1.5 interquartile range (boxplot)
 - Less than values set at $\frac{1}{2}$ detection limit
 - Assumes normality with untransformed data
- Minimum default criterion of 5 micro grams per liter when the calculated criterion is lower than 5.



Reservoir Examples

Segment	Reservoir Name	Site ID	Chlorophyll <i>a</i> Criteria <small>micro grams per liter</small>
1212	Somerville Lake	11881	53.05
1216	Stillhouse Hollow Lake	11894	5.00 (2.07)
1403	Lake Austin	12294	5.00 (3.58)
1408	Lake Buchanan	12344	9.82
2116	Choke Canyon Reservoir	13019	12.05



Assessment – Site Specific

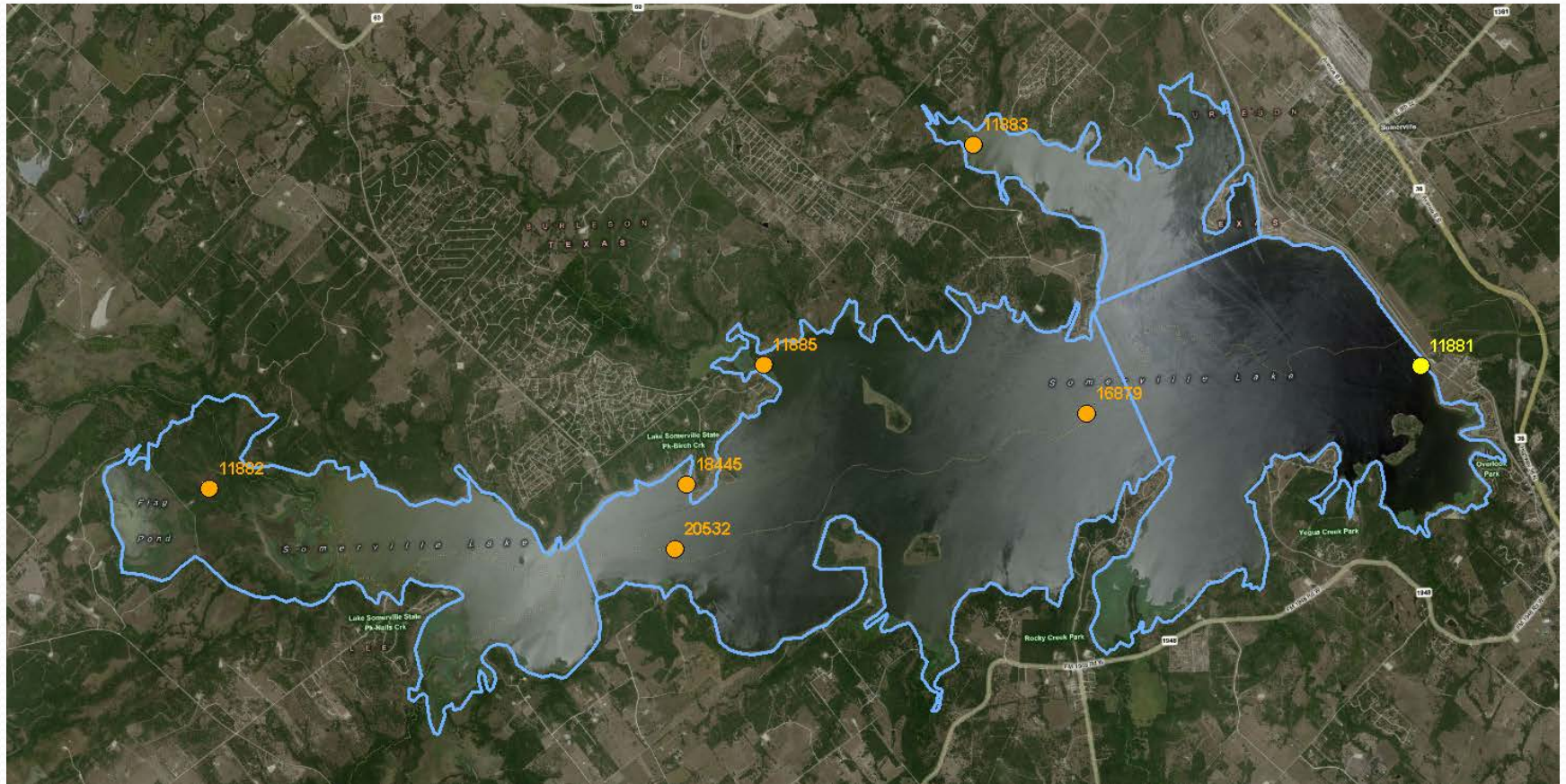
- General Uses / Nutrient Reservoir Criteria Method
- Assess only representative stations indicated in Appendix F
- Parameter codes – Chlorophyll *a*
 - 70953 Fluorometric Method
 - 32211 Spectrophotometric Method
- Results of site specific assessment will be applied to entire segment



Period of Record and Sample Size

- 7 /10 yr median of data associated with station
- $N \geq 10$, adequate data to assess
- 4 – 9, limited data (concern, no concern)
- < 4 , inadequate data

Example – Lake Somerville





Assessment – Screening Levels

- Identify concerns using existing screening levels in water bodies that do not have chlorophyll *a* criteria.
 - Freshwater and Tidal Streams, Estuaries
 - Ammonia, Nitrate, Ortho-phosphorus, Total phosphorus, Chlorophyll *a*.
- Concerns will not be assessed for reservoirs with numerical nutrient criteria in Appendix F.



Summary for Nutrients

- Use Support - Site Specific Nutrient Criteria
 - Upon EPA approval, assessments using site specific nutrient criteria will be phased in.
 - Median of chlorophyll *a* collected at station indicated in Appendix F
- Concern – Nutrient Screening Levels
 - Identification of concerns using existing screening levels: only water bodies that do not have criteria.
 - No change to these screening level values