

North Central Texas
Water Quality Project

**Eagle Mountain Reservoir
Water Quality Recap**


Darrel Andrews
Environmental Services Assistant Director
Tarrant Regional Water District



North Central Texas
Water Quality Project

Eagle Mountain Watershed

- Watershed size – 860 square-miles
- Lake Surface area - 8702-acres
- Lake Conservation Storage - 182,505 ac/ft
- Mean Depth – 21 ft
- Maximum Depth – 55 ft
- Shoreline – 83.5 miles



North Central Texas
Water Quality Project

Texas Surface Water Quality Standards

Substance	Eagle Mountain Reservoir Concentration	TCEQ Standard
Chlorophyll-a	16.3 ug/L	17.78 ug/L*
Phosphorus	.059 mg/L	.069 mg/L**
Dissolved Oxygen	7.5 mg/L	5.0 mg/L
pH	7.8	6.5-9

* Proposed draft Criteria – Jan 7, 2009
** Proposed Screening level – Jan 7, 2009

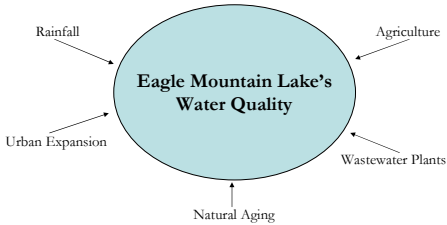
North Central Texas
Water Quality Project

Eutrophication

- Aging of a lake or reservoir that can be natural or enhanced by man’s activities.
- Nutrients feed excessive plant growth.
- Decomposing plants starve water of oxygen.

North Central Texas
Water Quality Project

Controlling Eutrophication



North Central Texas
Water Quality Project

Criteria Applicable to Eagle Mountain

- Numeric Criteria
- Narrative Criteria

North Central Texas Water Quality Project

Numeric Criteria

Dissolved Oxygen

- Concentrations correlated with the occurrence and diversity of aquatic life in water
- Average daily minimum criteria – 5.0 mg/L.

pH

- General water quality indicator
- Major factor affecting most chemical and biological reactions
- 6.5 – 9.0 mg/L.

North Central Texas Water Quality Project

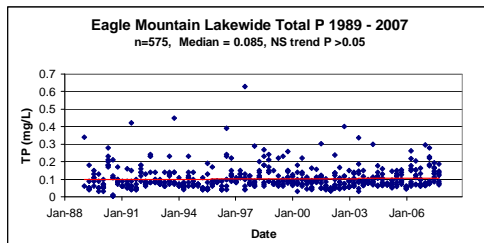
Narrative Criteria

Nutrients

- Compounds which stimulate and sustain the growth and development of aquatic plants and algae
- Nitrogen
- Phosphorus

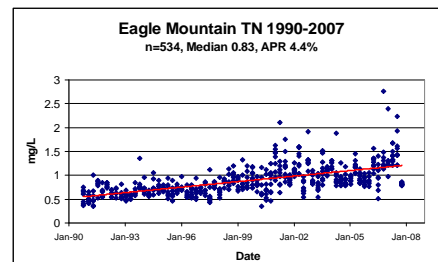
North Central Texas Water Quality Project

Eagle Mountain Phosphorus Trend



North Central Texas Water Quality Project

Eagle Mountain Nitrogen Trend



North Central Texas Water Quality Project

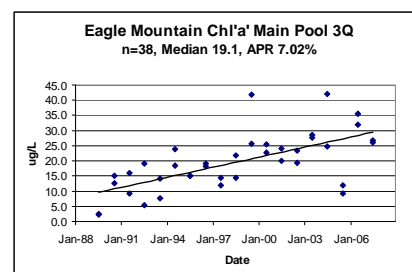
Proposed Numeric Criteria - Chlorophyll-*a*

- Chlorophyll-*a* is the primary photosynthetic chemical found in algae and an indicator of the free floating algae in water
- Chlorophyll-*a* in the water column also reduces the amount of light available to rooted aquatic plants
- TCEQ proposed Chl*a* Criteria: 17.78 ug/L*
- Annual Median Water Intake (Chl-*a* is controlled through measures that limit the loadings of nitrogen & phosphorus

*Per draft TCEQ Nutrient Criteria – Jan 7, 2009

North Central Texas Water Quality Project

Eagle Mountain Chlorophyll *a* Trend



North Central Texas
Water Quality Project



Trending Conclusions

- Clarity of the Reservoir is Improving
- Nutrient levels are Increasing
- Chl “a” or algae is Increasing

North Central Texas
Water Quality Project



Water Quality Concerns

- Sediment Loading
- Nutrient Loading
- Bacteria