Water Quality Assessment for
Eagle Mountain Lake and Watershed

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Ambient Water Quality Testing

- In reservoir sampling of water quality at designated locations
- Watershed sampling at designated tributary locations.
- Laboratory Analysis
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Water Quality Parameters

• Chemical
  – Electrical conductivity
  – Dissolved Oxygen
  – pH
  – Fecal Bacteria
  – Nutrients
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Water Quality Parameters

• Physical
  – Temperature
  – Total suspended solids (TSS)
  – Turbidity
  – Stream Flow (discharge)
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Water Quality Parameters

• Biological Water Quality Indicators
  – Benthic Macroinvertebrates
  – Biochemical Oxygen Demand
  – Submerged aquatic vegetation
Texas Surface Water Quality

- Federal Clean Water Act Sections 305(b) and 303(d)
  - Requires state wide report on impaired water bodies
  - Biannual list is referred to as “303 (d)” list
- State of Texas has established Standards to protect the purpose for which water bodies will be used
- Designations for 303(d) list
  - 5a: TMDL is underway or has been scheduled
  - 5b: Review of water quality standards for water body will be held prior to a TMDL
  - 5c: Additional data will be collected before a TMDL is scheduled
2008 Texas Water Quality Inventory

• Eagle Mountain Reservoir (0809) – 305(b) concern
  – Chlorophyll-a
  – Ammonia
  – Dissolved Oxygen

• Eagle Mountain Watershed – (0810) – 303(d) impaired for bacteria
  – West Fork Trinity River below Bridgeport
  – Big Sandy Creek
  – Garrett Creek
  – Martin Branch
  – Salt Creek
Water Use Categories

- **Aquatic Life**
  - Designated to protect aquatic species
  - Dissolved Oxygen, toxic chemicals

- **Contact Recreation**
  - Estimates the relative risk of swimming and other water sports

- **Public Water Supply**
  - Indicator of whether water is available as a source for a public water system
  - Metals, pesticides, other toxic chemicals

- **Fish Consumption**
  - Protect public from consuming fish that may be contaminated
Water Quality Standards

• Used by TCEQ regulatory programs to establish reasonable limits on permitted dischargers
• Numeric Standards
  – Segment specific numbers
• Narrative Standards
  – Descriptive standards to protect aesthetics and designated uses
  – Screening limits non-segment specific numeric standard for nutrients
Criteria Applicable to Eagle Mountain

- Numeric Criteria
  - Dissolved Oxygen
  - pH

- Narrative Criteria
  - Nitrogen
  - Phosphorus
  - Excessive Algal Growth
  - Chlorophyll-α
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**Nutrients**

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

- Bacteria derived from the waste of warm-blooded mammals.
- Indicator of harmful pathogens such as *E Coli.*
# Surface Water Quality Standards

<table>
<thead>
<tr>
<th>Substance</th>
<th>Eagle Mountain Lake Concentration</th>
<th>Proposed Criteria</th>
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<tbody>
<tr>
<td>Chlorophyll-(a)</td>
<td>16.3 (\mu)g/L</td>
<td>21.19 (\mu)g/L</td>
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<td>Nitrogen</td>
<td>.79 mg/L</td>
<td>.995 mg/L</td>
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<td>Phosphorus</td>
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<td>Dissolved Oxygen</td>
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<td>5.0 mg/L</td>
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<td>pH</td>
<td>7.8</td>
<td>6.5-9</td>
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Bacterial Concerns in Eagle Mountain Watershed