Recomputation of Ambient Water Quality in the Santa Ana River Watershed

BMPTF: April 24, 2019
BMPTF is achieving critical objectives for the Watershed

Powerful tool in managing the water resources in the Santa Ana Watershed.

- Identifies TDS/Nitrate Trends
- Permitting Reuse Projects
- Identification of areas of potential concern
- Supports SAR Wasteload Allocations
- Assessment of assimilative capacity
- Regional Board and Stakeholder Collaboration
4: Interpretive Tools
  ✓ Innovative Interpretive Tools
1: Data Gathering

Data Compilation

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<tr>
<th>Agency</th>
<th>Letter Mailed</th>
<th>Letter Received</th>
<th>Acknowledged Data Contact</th>
<th>Acknowledged Response</th>
<th>Received Data</th>
<th>Data Requested</th>
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<tbody>
<tr>
<td>Banning, City of</td>
<td>8/17/2016</td>
<td>9/14/2016</td>
<td><a href="mailto:elia@ci.banning.ca.us">elia@ci.banning.ca.us</a></td>
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<tr>
<td>Beaumont, City of</td>
<td>8/17/2016</td>
<td>9/8/2016</td>
<td><a href="mailto:ajakher@ci.beaumont.ca.us">ajakher@ci.beaumont.ca.us</a></td>
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<td>Chino Basin Watermaster</td>
<td>8/17/2016</td>
<td></td>
<td><a href="mailto:kavounas@cbwm.org">kavounas@cbwm.org</a></td>
<td>YES</td>
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</tbody>
</table>

QA/QC, Process, and Upload Recent Data

Ambient Water Quality Trend Charts for TDS, Nitrate, and Groundwater Elevation for the Recomputation Period 1996 to 2015

Well ID: 1001558

Management Zone: 1001558

TDS Concentration (mg/L)

Nitrate Concentration (mg/L)

Groundwater Elevation (ft)

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Near-Term Schedule

**APRIL**
- BMPTF Meeting April 24

**MAY**
- May 1st RB Sends Data Request
- May 31st Data due to WSC
- MAY 14 BMPTF Meeting

**JUNE**
- Process and Upload Data June 28
- June BMPTF Meeting
2: Point Statistics

- Calculate Water Quality Point Statistics
- Groundwater Elevation Contours
- Nitrate, TDS Concentrations

**Flowchart:**

- **STEP 1:** Check if $n < 3$.
  - **Yes:** Mean
  - **No:** **STEP 2**

- **STEP 2:** Apply Shapiro-Wilk Test.
  - **Pass:** **STEP 3**
  - **Fail:** **STEP 4**

- **STEP 3:** If $n < 2$ and MDV's 5th (NO₃) or 10th (TDS) Value.
  - **Yes:** **STEP 5**
  - **No:** **STEP 6**

- **STEP 4:** Mean + $t \times SE$(UCL94)

- **STEP 5:** MDV's 5th (NO₃) or 10th (TDS).
  - **Yes:** **STEP 6**
  - **No:** **STEP 7**

- **STEP 6:** MDV's < 2 and Shapiro-Wilk Test on Logs.
  - **Yes:** **STEP 7**
  - **No:** **STEP 8**

- **STEP 7:** Remove MDV

- **STEP 8:** Median

**Abbreviations:**

- MDV: Most discordant value from median
- GSE: Geometric standard error
- SE: Standard error at student's t
- UCL94: 94% upper confidence limit of mean
- GM: Geometric Mean
3: AWQ Computations

- Groundwater Elevation Contours
- Nitrate, TDS Concentrations
- Compute ambient water quality for GMZs

Explanation:

Groundwater Management Zone
1996-2015 NO₂⁻N AWQ (mg/L)

*SWO: Surface Water Objectives Apply
N/A: Not enough data were available to calculate AWQ values.

- RWQCB Boundary
- Groundwater Management Zone Boundary
- Recharge Basin

Rivers and Streams
NO₂⁻N Concentration
- < 1.0 mg/L
- 10 mg/L
- > 20 mg/L

Concentration undetermined

Note: Grid cell size is 400 x 400 meters. For layered GMZs (Orange County, Chino-North, & Bunker-Hill Pressure Zones) the volume-weighted concentrations are calculated and displayed.
4: Interactive Interpretive Tools
QUESTIONS?