Agenda Item #2

Staff Recommendations for the 2008 Clean Water Act Section 303(d) List of Impaired Waters

Matt St. John and Katharine Carter
North Coast Regional Water Quality Control Board
June 3, 2009

Presentation Outline

1. New 303(d) List Format
2. About the 303(d) List
3. Assessment Process
4. Delisting recommendations
5. Listings recommendations
6. Board discussion and public comments
7. Board action
New 303(d) List Format

The 303(d) List is contained within the 2008 Integrated Report

2008 Integrated Report is a combination of:
- CWA Section 305(b) Surface Water Quality Assessment Report (includes impaired & non-impaired waters)
- CWA Section 303(d) List of Impaired Waters

About the 303(d) List

What is the 303(d) List?
- Identifies waters not meeting water quality standards
- Identifies pollutant(s) – but does not ID sources
- Includes a priority ranking
- A total maximum daily load (TMDL) is generally developed for waters on the 303(d) List
Assessment Process

DEFINITIONS

Listing Policy:
• The “Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List” (September 2004)

Functionally Equivalent Document:
• The “Functionally Equivalent Document: Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List” (September 2004)

Waterbody/Pollutant Pair:
• A segment of a waterbody plus the pollutant (e.g., Klamath River for sediment, or Eel River for temperature)

Fact Sheet:
• Includes a “Decision” and all supporting “Lines Of Evidence”
• Developed for each waterbody-pollutant pair

Assessment Process

• Current 2006 303(d) List is baseline

• **Delisting** = takes waterbody/pollutant OFF the 303(d) List

• **Listing** = puts waterbody/pollutant ON the 303(d) List

• New 2008 303(d) List proposed for adoption
Assessment Process

California Water Quality Assessment Database (CalWQA)

- Used to organize and store all data and information
- Database is new in 2008
- Greater transparency
- Generates assessment information that can be viewed online

Step 1: Obtain data
- SWAMP Data
- Data from 2006 List
- Other data collected by staff, other agencies, tribes, citizen monitoring groups, dischargers, and academic institutions

Step 2: Analyze data according to rules of the Listing Policy

Step 3: Develop “Line(s) of Evidence” in CalWQA database

Step 4: Create “Decision” in CalWQA database
Step 3: Develop Lines of Evidence

Example: Pudding Creek Beach

Step 4: Make Decision

Example: Pudding Creek Beach

Assessment Process

Data and Information

Pollutant: Indicator Bacteria

Pathogen Monitoring

- Three of the 21 total coliforms, enteredococcus, fecal coliform, and total coliform, exceed the objective. Under Section 3.3 of the Listing Policy, a single line of evidence is necessary to assess listing status. Three lines of evidence are available in the administrative record to assess indicator bacteria.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification for adding the water body-pollutant combination to the Section 303(d) list (i.e., sufficient justification to list). This conclusion is based on the staff finding that: (1) The data and evidence support the data quality requirements of Section 3.15 of the Policy; (2) The data used satisfies the data quality requirements of Section 3.15 of the Policy; (3) Enterococcus and total coliform geometric mean values exceed the objective more than the 4% allowable frequency identified in Section 3.3 of the Listing Policy; (4) Pursuant to Section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are met.

RWQCB Staff Recommendation:

After review of the available data and information, North Coast RWQCB Staff concludes that the water body-pollutant combination should be placed on the Section 303(d) List because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

SWRCB Board of Directors Staff Recommendation:

Use EPA Decision:

- USEPA Decision:
Assessment Process

Step 4: Make Decision

How did staff determine impairment?

Staff applied the rules of the Listing Policy:

- Exceedance Frequency (e.g., impairment ≥ 2 exceedances out of 20 samples)
- Weight of Evidence Approach (standards clearly not attained)

Recommendations and Next Steps

- Regional Water Board approval of Resolution No. R1-2009-0047
- State Water Board approval of each Region’s 303(d) List modifications.
- USEPA approval of statewide 303(d) List
Recommendations

• 550 waterbody-pollutant pair assessments
• 5 new delistings
• 17 new listings

Recommendations
Changes from Public Review Draft

<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Pollutant</th>
<th>Public Review Draft</th>
<th>Final Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klamath River</td>
<td>Sediment</td>
<td>List</td>
<td>List – reduced geographic extent</td>
</tr>
<tr>
<td>Wooley Creek</td>
<td>Temperature</td>
<td>Delist</td>
<td>Do not Delist</td>
</tr>
<tr>
<td>Mad River</td>
<td>DDE</td>
<td>List</td>
<td>Do not List</td>
</tr>
<tr>
<td>Russian River HU, Guerneville HSA</td>
<td>DDT</td>
<td>List</td>
<td>Do not List</td>
</tr>
<tr>
<td>Lower Eel HA, mainstem Eel R.</td>
<td>Aluminum</td>
<td>Do not List</td>
<td>List</td>
</tr>
<tr>
<td>Eden and Round Valley HSAs,</td>
<td>Aluminum</td>
<td>Do not List</td>
<td>List</td>
</tr>
<tr>
<td>mainstem Middle Fk. Eel R.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Main HA, mainstem Eel R.</td>
<td>Aluminum</td>
<td>Do not List</td>
<td>List</td>
</tr>
<tr>
<td>South Fork Eel HA,</td>
<td>Aluminum</td>
<td>Do not List</td>
<td>List</td>
</tr>
<tr>
<td>mainstem South Fork Eel R.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gualala HA, mainstem Gualala R.</td>
<td>Aluminum</td>
<td>Do not List</td>
<td>List</td>
</tr>
</tbody>
</table>
### Listing Recommendations

<table>
<thead>
<tr>
<th>Waterbody Hydrologic Unit</th>
<th>Waterbody Name</th>
<th>Pollutant(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bodega HU</td>
<td>Doran Regional Park</td>
<td>Indicator Bacteria</td>
</tr>
<tr>
<td>Bodega HU</td>
<td>Salmon Creek Park (South)</td>
<td>Indicator Bacteria</td>
</tr>
<tr>
<td>Eel River HU</td>
<td>Middle Fork Eel River, Wilderness HSA &amp; Black Butte River HSA</td>
<td>Sediment/Siltation</td>
</tr>
<tr>
<td>Eel River HU</td>
<td>North Fork Eel River, Upper North Fork Eel River Watershed (area north of</td>
<td>Sediment/Siltation</td>
</tr>
<tr>
<td></td>
<td>the Six Rivers National Forest boundary)</td>
<td></td>
</tr>
<tr>
<td>Russian River HU</td>
<td>Guerneville HSA, Pocket Canyon Creek</td>
<td>pH</td>
</tr>
</tbody>
</table>

### Delisting Recommendations

<table>
<thead>
<tr>
<th>Waterbody Hydrologic Unit</th>
<th>Waterbody Name</th>
<th>Pollutant(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klamath River HU</td>
<td>Middle &amp; Lower Klamath River HAs, Scott River to Trinity River Reach, mainstem</td>
<td>Microcystin</td>
</tr>
<tr>
<td></td>
<td>Klamath River HU, Iron Gate Dam to Scott River Reach, mainstem Klamath River</td>
<td></td>
</tr>
<tr>
<td></td>
<td>China Creek, Fort Goff Creek, Grider Creek, Portuguese Creek, Thompson Creek,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Walker Creek</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Middle Klamath River HA, Beaver Creek, Cow Creek, Deer Creek, Hungry Creek,</td>
<td>Sediment</td>
</tr>
<tr>
<td></td>
<td>West Fork Beaver Creek</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shasta River HA, Lake Shastina</td>
<td>Mercury</td>
</tr>
<tr>
<td>Mendocino Coast HU</td>
<td>Gualala River</td>
<td>Aluminum</td>
</tr>
<tr>
<td></td>
<td>Hare Creek Beach</td>
<td>Indicator Bacteria</td>
</tr>
<tr>
<td></td>
<td>Pudding Creek Beach</td>
<td>Indicator Bacteria</td>
</tr>
</tbody>
</table>
### Listing Recommendations

<table>
<thead>
<tr>
<th>Waterbody Hydrologic Unit</th>
<th>Waterbody Name</th>
<th>Pollutant(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian River HU</td>
<td>Geyserville HSA, Unnamed Tributary (Stream 1) at Fitch Mountain</td>
<td>Indicator Bacteria</td>
</tr>
<tr>
<td></td>
<td>Green Valley Creek Watershed</td>
<td>Indicator Bacteria</td>
</tr>
<tr>
<td></td>
<td>Green Valley Creek Watershed</td>
<td>Dissolved Oxygen</td>
</tr>
<tr>
<td></td>
<td>Laguna de Santa Rosa</td>
<td>Indicator Bacteria</td>
</tr>
<tr>
<td>Eel River HU</td>
<td>Lower Eel River HA, mainstem Eel River</td>
<td>Aluminum</td>
</tr>
<tr>
<td></td>
<td>Lower Eel River HA</td>
<td>Dissolved Oxygen</td>
</tr>
<tr>
<td></td>
<td>Middle Fork Eel River HA, Eden Valley HSA &amp; Round Valley HSA, mainstem Middle Fork Eel River</td>
<td>Aluminum</td>
</tr>
<tr>
<td></td>
<td>Middle Main Eel River HA, mainstem Eel River</td>
<td>Aluminum</td>
</tr>
<tr>
<td></td>
<td>South Fork Eel River HA, mainstem South Fork Eel River</td>
<td>Aluminum</td>
</tr>
</tbody>
</table>

### Wooley Creek - Temperature

- **Wooley Creek HSA, tributary to Salmon River**
- **Salmon River Temperature TMDL**
  - Adopted by Regional Board June 2005
  - Approved by US EPA March 2006
- **Temperature objective: < 5°F above natural receiving water temperature**
- Temperatures can be above evaluation guideline (biological temperature criteria) and still be natural
- **Load allocation = adjusted potential effective shade**
Wooley Creek – Temperature
Recommendation: Do not delist

• Public Review Draft - inappropriate basis for delisting:
  • < 15% human disturbance ≠ natural temperatures

• Appropriate evidence required for delisting: no alteration of shade from human activity
  • TMDL estimates of adjusted potential effective shade met
  • Current effective shade = unaltered conditions

• Must follow Listing Policy process to delist
• Recommend riparian shade monitoring
• Working with USFS on MOU

Recommendations
DDT and DDE

• Staff Recommend Do Not List:
  • Mad River – DDE
  • Scott River – DDT
  • Russian River, Guerneville HSA – DDT

• Data from SWAMP: 2002 - 2006

• USEPA Evaluation Guideline: 0.00022 ug/L

• **DDE**
  - Reporting Limit (RL): 0.002 ug/L
  - Method Detection Limit (MDL): 0.001 ug/L

• **DDT**
  - Reporting Limit: 0.005 ug/L
  - Method Detection Limit: 0.002 ug/L

• DDE/DDT < RL and > MDL = Detect Not Quantifiable (DNQ)
**Recommendations**

**DDT and DDE**

- Mad River DDE - One detection (0.004 ug/L) and one DNQ (0.001 ug/L)
- Scott River DDT - Two DNQ (0.0027 ug/L & 0.003 ug/L)
- All detections/DNQ from 2002 & 2003
- All subsequent DDE and DDT samples non-detect
- No DDE or DDT detections in ANY watershed in the North Coast since 2003
- Questions about validity of data from 2002 & 2003
- Additional SWAMP sampling occurring & will be assessed in future listing cycles.
- Decision will be re-evaluated in future listing cycles

**Recommendations**

**DDT and DDE**

- Russian River, Guerneville HSA - DDT
  - One DNQ (0.003 ug/L)
- Listing Policy requires two exceedances to List
- Only one exceedance, therefore Do Not List
Delisting Recommendations

Indicator Bacteria – Ocean Beaches

- Doran Regional Park and Salmon Creek Park (south)
- Sonoma County Division of Environmental Health data
- Ocean Plan (SWRCB 2005) objectives

<table>
<thead>
<tr>
<th>Indicator Bacteria</th>
<th>Single Sample (≤ 6 of 66 samples to delist)</th>
<th>Geometric Mean (≤ 1 of 14 samples to delist)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Doran</td>
<td>Salmon Ck.</td>
</tr>
<tr>
<td>Enterococcus</td>
<td>2 of 66</td>
<td>3 of 66</td>
</tr>
<tr>
<td>Total Coliform</td>
<td>0 of 66</td>
<td>2 of 66</td>
</tr>
<tr>
<td>Fecal Coliform</td>
<td>0 of 66</td>
<td>2 of 66</td>
</tr>
</tbody>
</table>

- Per Listing Policy → Delist

Delisting Recommendations

Sediment/Siltation

- Middle Fork Eel River (Wilderness and Black Butte River HSA’s)
- Upper North Fork Eel River (area north of the Six Rivers National Forest boundary)

- TMDLs completed by USEPA (2002 & 2003)
  - established sediment load allocations
  - Load allocations used as evaluation guidelines

- Load allocations achieved = no exceedances of evaluation guideline = no impairment

- Per Listing Policy → Delist
Delisting Recommendations
Pocket Canyon Creek - pH

• Available data: 130 instantaneous measurements taken 2003-2006

• Data compared to the Basin Plan Objective for pH: 6.5-8.5

• Allowable exceedances per Listing Policy:
  • ≤ 21 exceedances out of 130 samples to delist

• Actual Exceedances of objective:
  • 6 of 130 samples exceeded objective

• Per Listing Policy → Delist

Listing Recommendations
Indicator Bacteria – Ocean Beaches

• Hare Creek Beach and Pudding Creek Beach

• Mendocino County Division of Environmental Health Data

• Ocean Plan (SWRCB 2005) objectives

<table>
<thead>
<tr>
<th>Indicator Bacteria</th>
<th>Enterococcus</th>
<th>Total Coliform</th>
<th>Fecal Coliform</th>
<th>Single Sample (Single)</th>
<th>Single Sample (Geometric)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hare Ck.</td>
<td>Pudding Ck.</td>
<td>Hare Ck.</td>
<td>≥ 4 of 36 to list</td>
<td>≥ 9 of 85 to list</td>
</tr>
<tr>
<td>Enterococcus</td>
<td>1 of 36</td>
<td>3 of 85</td>
<td>0 of 11</td>
<td>2 of 21</td>
<td>0 of 21</td>
</tr>
<tr>
<td>Total Coliform</td>
<td>0 of 36</td>
<td>3 of 85</td>
<td>0 of 11</td>
<td>6 of 21</td>
<td>0 of 21</td>
</tr>
<tr>
<td>Fecal Coliform</td>
<td>0 of 36</td>
<td>3 of 85</td>
<td>2 of 11</td>
<td>0 of 21</td>
<td>0 of 21</td>
</tr>
</tbody>
</table>

• Per Listing Policy → List
Listing Recommendations

Indicator Bacteria – Freshwater

- Unnamed Tributary to Russian River (stream 1), Green Valley Creek watershed, and Laguna de Santa Rosa
- Data collected by Regional Water Board Staff and Russian River First Flush Program

<table>
<thead>
<tr>
<th>Indicator Bacteria</th>
<th>Unnamed Tributary (stream 1)</th>
<th>Green Valley Creek watershed</th>
<th>Laguna de Santa Rosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterococcus</td>
<td>6 of 9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Coliform</td>
<td>0 of 12</td>
<td>10 of 11</td>
<td>14 of 16</td>
</tr>
<tr>
<td>Fecal Coliform</td>
<td>7 of 7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E. Coli</td>
<td>3 of 9</td>
<td>10 of 11</td>
<td>15 of 16</td>
</tr>
</tbody>
</table>

- Per Listing Policy → List
- Indicator Bacteria TMDL development for existing Russian River reaches and Santa Rosa Creek assessing these source areas

Listing Recommendations

Aluminum

- 4 Listings Eel River watershed, 1 listing Gualala River watershed
- SWAMP data
- Basin Plan Aluminum Objective: 1.0 mg/L

<table>
<thead>
<tr>
<th>Waterbody</th>
<th># exceedances = List</th>
<th># samples exceeding the objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Eel HA, mainstem Eel R.</td>
<td>≥ 2</td>
<td>4 of 15</td>
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<tr>
<td>Eden and Round Valley HSAs, mainstem Middle Fk. Eel R.</td>
<td>≥ 2</td>
<td>2 of 18</td>
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<tr>
<td>Middle Main HA, mainstem Eel R.</td>
<td>≥ 2</td>
<td>4 of 24</td>
</tr>
<tr>
<td>South Fork Eel HA, mainstem South Fork Eel R.</td>
<td>≥ 4</td>
<td>6 of 37</td>
</tr>
<tr>
<td>Gualala HA, mainstem Gualala R.</td>
<td>≥ 4</td>
<td>2 of 18</td>
</tr>
</tbody>
</table>

- Per Listing Policy → List

27

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Listing Recommendations
Middle & Lower Klamath River HAs- Sediment

• Approach to determining sediment impairment:
  • Primary evidence: instream sediment data
    (% fines, embeddedness)
  • Supporting evidence: road density information
    visual estimates of pool filling
    cumulative impacts information

  Instream sediment data exceeding evaluation guideline = Impaired

• Situation-Specific Weight of Evidence Listing Factor
  Section 3.11 of the Listing Policy

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Listing Recommendations
Middle & Lower Klamath River HAs- Sediment

• Evaluation Guidelines:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Evaluation Guideline</th>
<th>Source of Evaluation Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Fines</td>
<td>&lt;15%</td>
<td>USFS 2001</td>
</tr>
<tr>
<td>Embeddedness</td>
<td>&lt;20%</td>
<td>USFS 2001</td>
</tr>
<tr>
<td>Supporting Evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road density</td>
<td>&lt;2 mi / sq mi</td>
<td>NOAA 1996</td>
</tr>
<tr>
<td>Visual estimates of pool filling</td>
<td>Basin Plan Narrative</td>
<td></td>
</tr>
<tr>
<td>Cumulative impacts</td>
<td>Objective for Sediment</td>
<td>NCRWQCB 2007</td>
</tr>
</tbody>
</table>

* Area weighted average in spawning habitat
Listing Recommendations
Middle & Lower Klamath River HAs- Sediment

<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Primary Evidence</th>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Fines</td>
<td>Embeddedness</td>
</tr>
<tr>
<td>Iron Gate Dam to Scott River</td>
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<td></td>
</tr>
<tr>
<td>Beaver Creek</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Cow Creek *</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Deer Creek</td>
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</tr>
<tr>
<td>Hungry Creek</td>
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<tr>
<td>West Fork Beaver Creek</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Scott River to Trinity River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chico Creek</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>Fort Goff Creek</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Grider Creek</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Portuguese Creek</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Thompson Creek</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Walker Creek</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y = Exceedance of Objective or Evaluation Guideline, N = No Exceedance, Blank Cell = No Data

*Waterbody located in both Oregon and California.

Listing Recommendations
Microcystin

- Proposed Listing: mainstem Klamath River, Iron Gate to Trinity River

- Data collected by Karuk Tribe and Yurok Tribe:
  - *Microcystis aeruginosa* (water column)
  - microcystin toxin (water column)
  - microcystin toxin (fish tissue)


<table>
<thead>
<tr>
<th>Waterbody</th>
<th><em>Microcystis aeruginosa</em> (100,000 cells/ml)</th>
<th>Microcystin toxin (water column) (8 ng/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Gate to Scott River</td>
<td>4 of 14</td>
<td>3 of 31</td>
</tr>
<tr>
<td>Scott to Trinity River</td>
<td>4 of 26</td>
<td>2 of 21</td>
</tr>
</tbody>
</table>

- Per Listing Policy → List
What is the relationship to current Klamath River TMDLs?

• TMDLs currently being developed for:
  - Entire River - temperature, dissolved oxygen, and nutrients
  - Reservoirs - above plus microcystin

• TMDLs address the root causes of microcystin impairment in river

Listing Recommendations

Microcystin

Listing Recommendations

Mercury

• Lake Shastina

• Fish tissue samples collected by the Department of Water Resources

• USEPA Water Quality Criterion Guideline (2001):
  • Tissue concentration ≤ 0.3 mg/kg (protect human health)

• Listing Policy guidelines for listing:
  • ≥ 2 exceedances out of 3 samples, listing required

• Actual Exceedances of guideline:
  • 2 of 3 samples exceeded the evaluation guideline

• 2007 preliminary SWAMP data confirms impairment

• Per Listing Policy → List
Listing Recommendations

Dissolved Oxygen

- Lower mainstem Eel River and Green Valley Creek watershed
- Samples collected Wiyot Tribe and Community Clean Water Institute
- Basin Plan Objective (SPWN):
  - Spawning, incubation, & emergence occurring: 9.0 mg/L
  - No spawning, incubation, & emergence: 7.0 mg/L

<table>
<thead>
<tr>
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<th># exceedances = List</th>
<th># samples exceeding the objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower mainstem Eel R.</td>
<td>≥ 9</td>
<td>37 of 51</td>
</tr>
<tr>
<td>Green Valley Creek</td>
<td>≥ 13</td>
<td>17 of 77</td>
</tr>
</tbody>
</table>

- Per Listing Policy → List

Board Action

Regional Water Board staff recommend the following action:

Adoption of Resolution No. R1-2009-0047
(The 2008 303(d) List)