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

1

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

2

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**

3

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**

4

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

5

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

6

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

7

Assessment Process

Step 1: Obtain data

- Public Data Solicitation Period 12/2006 - 2/2007
- 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

8

Assessment Process

Step 3: Develop Lines of Evidence

Example Pudding Creek Beach

LOE ID:	**25322**
Pollutant:	**Fecal Coliform**
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	Total
Beneficial Use:	Water Contact Recreation
Number of Samples:	85
Number of Exceedances:	3
Data and Information Type:	Pathogen Monitoring
Data Used to Assess Water Quality:	Three of the 85 single samples of fecal coliform collected at Pudding Creek Beach exceed the objective. Additionally, none of the 21 30-day geomean values exceed the objective. The single sample and geomean values are two different matrices used Mendocino County Division of Environmental Health in accordance with AB411 (Chapter 765, Statutes of 1997) requirements. Data is maintained by the State Water Board's Beach Watch program. Data is summarized by the North Coast Regional Water Board (North Coast RWQCB 2007).
Data Reference:	North Coast Beach Watch Data. Bacteria data collected by Del Norte County, Humboldt County, Mendocino County Environmental Health Division, Sonoma County Division of Environmental Health, and Marin County in accordance with AB411. Data managed by the State Water Resources Control Board's Beach Watch program at beachwatch.waterboards.ca.gov. Includes data from 2004 to 2006
Water Quality Objective/Criterion:	Per the Ocean Plan (SWRCB 2005): The following bacterial objectives shall be maintained throughout the water column. The following standard is based on the 30-day geometric mean of the five most recent samples from each site: Fecal coliform density shall not exceed 200 MPN per 100 ml. The following standard is for the single sample maximum: Fecal coliform density shall not exceed 400 per 100ml. *Note: MPN is the most probable number of coliform units.
Objective/Criterion Reference:	Water Quality Control Plan Ocean Waters of California. California Ocean Plan 2005. Sacramento, CA: State Water Resources Control Board, California Environmental Protection Agency
Evaluation Guideline:	
Guideline Reference:	
Spatial Representation:	Samples were collected at Pudding Creek Beach.
Temporal Representation:	Samples were collected weekly from April to October 2005 and April to October 2006.
Environmental Conditions:	Samples were collected during the dry season. Otherwise, there are no known environmental conditions (e.g., land use practices, fire events, storms, etc.) that are related to these data.
QAPP Information:	Samples were collected and analyzed in accordance with the Sampling and Analysis Plan and the Laboratories and Laboratory Analyses procedures described in the "Draft Guidance for Salt Water Beaches" (DHS 2006).
QAPP Information Reference(s):	Draft Guidance for Salt Water Beaches. Last Update: April 10, 2006. Initial Draft: November 1997. Division of Drinking Water and Environmental Management, California Department of Health Services

Assessment Process

Step 4: Make Decision

Example Pudding Creek Beach

WATER BODY NAME:	**PUDDING CREEK BEACH**
Water Body ID:	**CAC113200502008110132246O4**
Water Body Type:	**Coastal & Bay Shoreline**
DECISION ID	**12178**
Pollutant:	**INDICATOR BACTERIA**
Final Listing Decision:	**List on 303(d) list (TMDL required list)**
Last Listing Cycle's Final Listing Decision:	New Decision
Revision Status	Revised
Sources:	Source Unknown
Expected TMDL Completion Date:	2021
Pollutant or Pollution:	Pollutant
Weight of Evidence:	Indicator bacteria (which includes enterococcus, fecal coliform, and total coliform) is being considered for placement on the Section 303(d) list under Section 3.3 of the Listing Policy. Under this section 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. Data assessed for the 2008 Integrated Report include ocean beach bacteria data collected by the Mendocino County Environmental Health Division in accordance with AB411 (Chapter 765, Statutes of 1997) requirements. In accordance with Section 3.3 of the Listing Policy, a 4% exceedance percentage shall be used to add waters to the List. This equates to no more than 9 exceedance each for enterococcus, fecal coliform, and total coliform single sample values. This also equates to no more than 2 exceedance each for enterococcus, fecal coliform, and total coliform 30-day geomean values. Six of the 21 total coliform geomean values exceed the objective. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification for adding this water segment-pollutant combination to the Section 303(d) list (i.e., sufficient justification to list). This conclusion is based on the staff findings that: (1) The data used satisfies the data quality requirements of Section 6.1.4 of the Policy. (2) The data used satisfies the data quantity requirements of Section 6.1.5 of the Policy. (3) Enterococcus and total coliform geomean 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 Decision / Staff Recommendation:	
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)**

11

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**

12

Recommendations

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

13

Recommendations

Changes from Public Review Draft

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

14

Delisting Recommendations

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

15

Listing Recommendations

Waterbody Hydrologic Unit	Waterbody Name	Pollutant(s)
Klamath River HU	Middle & Lower Klamath River HAs, Scott River to Trinity River Reach, mainstem Klamath River	Microcystin
	Middle Klamath River HA, Iron Gate Dam to Scott River Reach, mainstem Klamath River	Microcystin
	Middle & Lower Klamath River HAs, China Creek, Fort Goff Creek, Grider Creek, Portuguese Creek, Thompson Creek, Walker Creek	Sediment
	Middle Klamath River HA, Beaver Creek, Cow Creek, Deer Creek, Hungry Creek, West Fork Beaver Creek	Sediment
	Shasta River HA, Lake Shastina	Mercury
Mendocino Coast HU	Gualala River	Aluminum
	Hare Creek Beach	Indicator Bacteria
	Pudding Creek Beach	Indicator Bacteria

16

Listing Recommendations

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

17

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

18

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

19

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
- <u>DDE</u>
  - Reporting Limit (RL): 0.002 ug/L
  - Method Detection Limit (MDL): 0.001 ug/L

  <u>DDT</u>
  - Reporting Limit: 0.005 ug/L
  - Method Detection Limit: 0.002 ug/L
- DDE/DDT < RL and > MDL = Detect Not Quantifiable (DNQ)

20

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

21

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

22

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
-

Indicator Bacteria	Single Sample (≤ 6 of 66 samples to delist)		Geometric Mean (≤ 1 of 14 samples to delist)	
	Doran	Salmon Ck.	Doran	Salmon Ck.
Enterococcus	2 of 66	3 of 66	0 of 14	1 of 14
Total Coliform	0 of 66	2 of 66	0 of 14	0 of 14
Fecal Coliform	0 of 66	2 of 66	0 of 14	0 of 14

- Per Listing Policy → **Delist**

23

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**

24

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

25

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

Indicator Bacteria	Single Sample		Geometric Mean	
	≥ 4 of 36 to list	≥ 9 of 85 to list	≥ 1 of 11 to list	≥ 2 of 21 to list
	Hare Ck.	Pudding Ck.	Hare Ck.	Pudding Ck.
Enterococcus	1 of 36	3 of 85	0 of 11	2 of 21
Total Coliform	0 of 36	3 of 85	0 of 11	6 of 21
Fecal Coliform	0 of 36	3 of 85	2 of 11	0 of 21

- Per Listing Policy → List

26

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
- Department of Health Services (2006), USEPA (1986) and Basin Plan (2007) objectives

Indicator Bacteria	Unnamed Tributary (stream 1) ≥ 5 to list	Green Valley Ck. watershed ≥ 5 to list	Laguna de Santa Rosa ≥ 5 to list
Enterococcus	6 of 9	-	-
Total Coliform	0 of 12	10 of 11	14 of 16
Fecal Coliform	7 of 7	-	-
E. Coli	3 of 9	10 of 11	15 of 16

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

27

Listing Recommendations

Aluminum

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

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

- Per Listing Policy → List

28

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

29

Listing Recommendations

Middle & Lower Klamath River HAs- Sediment

- **Evaluation Guidelines:**

Parameter	Evaluation Guideline	Source of Evaluation Guideline
Primary Evidence		
% Fines	<15%	USFS 2001
Embeddedness	<20%	USFS 2001
Supporting Evidence		
Road density	< 2 mi / sq mi	NOAA 1996
Visual estimates of pool filling	Basin Plan Narrative Objective for Sediment	NCRWQCB 2007
Cumulative impacts		

* Area weighted average in spawning habitat

30

Listing Recommendations

Middle & Lower Klamath River HAs- Sediment

Waterbody	Primary Evidence		Supporting Evidence		
	% Fines	Embeddedness	Pool Reduction	Road Density	Cumulative Impacts
Iron Gate Dam to Scott River					
Beaver Creek	Y	Y	Y	Y	Y
Cow Creek *	Y	Y			
Deer Creek	Y	Y			
Hungry Creek	Y	Y			
West Fork Beaver Creek	Y	Y			
Scott River to Trinity River					
China Creek	N	Y			
Fort Goff Creek	N	Y			
Grider Creek	Y	Y	Y		
Portuguese Creek	N	Y			
Thompson Creek	Y	Y			
Walker Creek	Y	N	Y		

Y = Exceedance of Objective or Evaluation Guideline N = No Exceedance Blank Cell = No Data
*Waterbody located in both Oregon and California.

31

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)**
- **World Health Organization Guidelines (2003)**

Waterbody	*Microcystis aeruginosa* (100,000 cells/ml)	Microcystin toxin (water column) (8 ug/L)
Iron Gate to Scott River	4 of 14	3 of 31
Scott to Trinity River	4 of 26	2 of 21

- **Per Listing Policy → List**

32

Listing Recommendations

Microcystin

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

33

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

34

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

Waterbody	# exceedances = List	# samples exceeding the objective
Lower mainstem Eel R.	≥ 9	37 of 51
Green Valley Ck. watershed	≥ 13	17 of 77

- Per Listing Policy → List

35

Board Action

Regional Water Board staff recommend the following action:

Adoption of Resolution No. R1-2009-0047

(The 2008 303(d) List)

36