Comparison Table
California Regional Water Quality Control Board 303(d) Draft Listing Methodology
(Draft Dec. 17, 01)

From Dave Smith Jan 02

	General approach	Evaluation standards/ criteria guidance	Types of Info. Considered	Determination	Min. data requirement/frequency of exceedences/age of data	QA/QC requirement	Public participation	Priority Ranking/ Schedule	Watch list/Prelim list
RB1	Weight of evidence. Summary of individual decisions.	In addition to the State Board listing/delisting factors, WQS (CTR &NTR), criteria developed by EPA, DHS, FDA, NAS, OEHHA and other gov. agencies, states, regions or countries	water column chemistry, water body physical condition, fish tissue, aquatic habitat surveys, aquatic invertebrate and fisheries, land use history (see RB1 footnote)	comparison to evaluation stds/criteria or reference water bodies. **Temp impairment:** based on maximum weekly average temp, acute threshold value at 24C and historic presence of cold water fish.	No specific requirements. Case specific depending on the media and contaminants (temporal & spatial).	Not explicitly, however data with certified QA/QC were given greatest weight in evaluation.	Solicitation	No/No	Yes when there are (1) conflicting info. or (2)insufficient info.for an impairment decision.
RB2	Precautionary Approach: Use 305(b) and CALM guidance. Emphasis is on only listing impairments which are persistent. Single hot spot or an episodic events are covered under other programs and therefore not listed. Summary of individual decisions.	In addition to the State Board listing/delisting factors, following decision hierarchy is used: (1) applicable WQS in basin plan or CTR & NTR; (2) criteria developed by EPA, DFG, DHS and other gov. agencies; (3) guidelines by FDA, NAS, ATSDR, DHS; (4) criteria by other states, regions or countries; (5) findings in peer-reviewed literature	environmental measurements, photo documentation	comparison to evaluation standards/criteria guidance. **Water quality info.:** requires an explanation how it departed from beneficial uses support. **Beach impairment:** (1) 1 bathing closure at a duration greater than a week/year **or** more than 1 bathing closure/year); **and** (2) at least one beach closure during dry season (may-oct.)	No. Case specific depending on the media and contaminants (temporal & spatial). (e.g. More samples required for water column violation vs. less samples required for bioaccumulatives in tissue) Follow the " built- in" min. data and frequency requirements in applicable numeric WQ objectives .	Yes. Only levels 3 & 4 info. (See 305(b)) are considered for listing/delisting	Solicitation	Yes/Yes, but the schedule is tentative after 2 years.	Yes when data are of lower level of info. (1 to 2) or trash impairment where there is no clear assessment methodology that links to beneficial use impairment.
RB3	Weight of evidence: list when more than 50% of samples exceed the applicable water quality objective. Individual fact sheets on each decision.	In addition to the State Board listing/delisting factors, following criteria are used: **Sediment Chemistry**: PELs and AET. **Tissue:** MTRLs. Drop previous faulty tissue listing solely based on EDLs.	Water column, tissue, sediment chemistry	focus on conventional pollutants. Individual Assessment rationales such as interpretation of narratives are unclear.	No specific requirement, however, case specific depending on the media (e.g. more water column chemistry data would be needed than fish tissue chemistry data). Emphasis on new data collected since the last list.	only consider data from certified QA/QC sources	Solicitation	Yes/Yes	No

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RB4	305(b) and weight of evidence approach. Individual factsheet on each decision compiled on a watershed basis	In addition to the State Board listing/delisting factors, **Tissue criteria:** MTRLs (other than As and Cr); **Sediment chemistry**: ERM/PEL; **Water column:** CTR **Delisting factors**: previous tissue listings based on EDLs, NAS, MIS & FDA values are dropped.	Water column chemistry, fish tissue, benthic community index, sediment chemistry, physical information, photo documentation	**Benthic community impairment**: Relative Benthic Index (RBI) <0.3 **Algae impairment**: algal cover >30%. **Sedimentation**: based on low physical habitat scores. **Unnatural foam & scum**: photographic documentation. **Water contact & non contact recreation impairment:** not meeting the geometric mean fecal coliform objective and/or 10% threshold for fecal coliform; or more than 10% of days per year of beach postings due to high bacterial indicator densities, or more than one bathing area closures or restrictions in effect during past 3 years. **MUN:** median concentration exceeds water quality standards or more than 10% of the samples exceed the objective. **Ag use and site specific assessment:** more than 10% of measurements >criteria.	**Water chemistry & bacteriological data:** a min. of 10 data points over 3-year period. **Tissue, sediment, bioassessment and toxicity**: a weight of evidence approach. **Data age varies:** 91-01.	Absent from the staff report	Solicitation; workshop	yes/yes	No

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RB5	Numeric criteria factsheets on Hg, metals, pathogens and pesticides. Individual factsheet on each decision.	In addition to the State Board listing/delisting factors, WQS, criteria/guidelines developed by EPA, Regional Board, State Board, other federal and state agencies, NAS, Canadian Council of Ministers of the Environment, USFDA	USGS and Toxic Substances Monitoring Program, DeltaKeeper, DPR pesticides use report, data reports from UCDavis Division of Environmental Studies, Reports provided by EBMUD., SFEI data, Sacramento River Watershed Program	see footnotes on RB5.	Metals, min. of 10 water samples & min. of 2 exceedences are required. List when there is a significant exceedences of a chronic criterion on a single day. Extent of impairment: distance between sampling points at which exceedences of criteria were found. Pathogen for e. coli, geometric means>criteria. Criteria is based on a minimum of 5 samples evenly spaced within 30 day period. Single sample hit without ongoing evidence will not be listed. In reality, calculation was made taking the geometric mean of available data points and compare to the 30 day geometric mean criteria. For total coliform/fecal coliform, use DHS standards. Pesticides: min. data requirement is 10 sample events; not list if it's a single hit.	QA/QC considered in selecting numeric criteria for narratives. QA/QC requirements on data to be considered is not specified.	Solicitation, workshops, responses to public comments	Yes/Yes	Yes, when (1) can't determine problem is reoccurring based on available data; or (2) incomparable data; or(3) more recent data doesn't indicate exceedences; or (4)controls in place will reduce to below criteria.
RB6	weight of evidence approach. however, recommendations are based on clear violation of numeric standards. No detailed description of each decision.	In addition to the State Board's listing/delisting factors, RB recognizes need to changes in WQS in some cases; uses CTR/NTR, anti-deg, fish consumption criteria and advisories, public health goals as decision criteria.	Discharge monitoring records, ambient surface water data, 305(b) report, 98 303(d) list, State Board TSMP database, fish consumption advisory, USGS database, Neveda DEP database	impairment causes by natural sources are not listed and delisted. No listing based on sediment and tissue data. No toxicity data was available.	Case by case basis; focus on data collected from 1997-2001	only data collected and analyzed by agencies, groups and known to use appropriate QA/QC procedures	Solicitation	Yes/Yes	Yes, when (1) waterbodies with data of unknown QA/QC; (2) "Threatened" waters or (3) "partially meeting beneficial uses" in 98 305(b) report.
RB7	No methodology provided. No documentation on individual decisions.	Factors considered in listing: non-attainment of WQS, public health advisories, previous 303(d) lists, and applicable bioaccumulation fish tissue guidelines. No detailed description on how the factors were considered.	Water quality data submitted by USBureau of Reclamation, USGS, DPR, USFS, water agencies, private citizen. Additional info.reviewed by the staff is unclear.	Most listings seem to be based on violations of basin plan objective, however, there is no description of methodology in the staff report. The rationale for removal of New River nutrients due to no data is potentially problematic.	Absent from the staff report	Absent from the staff report.	Solicitation	yes/yes	No

	General approach	Evaluation standards/ criteria guidance	Types of Info. Considered	Determination	Min. data requirement/frequency of exceedences/age of data	QA/QC requirement	Public participation	Priority Ranking/ Schedule	Watch list/Prelim list
RB8	1998 State Listing guidance	Basin Objectives, primary & secondary MCL for drinking water, CTR, NAS, FDA, MTRL tissue criteria, Heal the Bay Report Card, Local Beach Closure	water column, sediment chemistry, bioassessment data, water column & sediment toxicity, beach closure.	**Beach impairment**: advisory posted for more than one week (consecutive 7 days) /year . Use Heal the Bay beach report as a confirmation tool.	Requires 10 data points during 1997-2001. Weight of evidence approach to consider # of exceedences/impairment	absent from the staff report.	Solicitation; Interagency task force on listing/delistin g criteria.	yes/yes	Priority 1 waterbodies for monitoring: focused monitoring will take place sooner than Priority 2.
RB9	weight of evidence , BPJ. Individual fact sheets for each decision.	In addition to State board's listing/delisting factors, hierarchy for **water quality** objectives is as follows: Basin Plan, CTR/NTR, State Board criteria (including policy for implementation of toxic standards and California ocean plan),criteria by EPA, DFG, DHS, FDA, NAS, California bacteriological standards.	Results from NPDES monitoring, 205(j) planning studies, regional & local water quality monitoring results, TSMP, BPTCP, USDA Forest Service Monitoring, Estuary Monitoring	**Toxicity impairment:** less than 50% survival seems to be the rule of thumb ; **Water quality parameters:** Compare mean average to the Basin Objectives (treating non-detected as 0). **Tissue:** 1 composite compare to MTRL action level. **Benthic degradation:** Relative Benthic Index (RBI) <0.3. **Beach impairment:** list when exceedences were chronic: # of days of exceedences(general advisory or beach closure) > 10 days/year **or** permanent public health risk warning.	No specific requirement, depending on the conditions and natures of contaminants. (More samples required for water column violation vs. less samples required for bioaccumulatives in tissue)	"checks" built in the toxicity tests to ensure the observed toxicity is not due to artifacts such as high ammonia and hydrogen sulfide in the sediments.	Solicitation; 2 workshops	yes/yes	A separate list due to: insufficient data points, data unrepresentative of year-round conditions, exceedences can't linked to impairment of beneficial uses. No action was specified for this list.

RB1:

No delisting recommendations. 11 new additions. New additions are based on water quality parameters such as temp. d o., phosphorus, sediment and pathogens. Toxic metals, PCBs, pesticides, Hg in fish tissue are on the Watch List. References and decision rationales on individual waterbodies are adequate.

Types data sources are: water column monitoring data from regulated/unregulated discharges, volunteer/watershed monitoring groups, and Regional Water Board monitoring programs such as the Surface Water Ambient Monitoring Program. Tissue data from State Mussel Watch/Toxic Substances Monitoring Programs and Bay Protection & Toxic Cleanup program. Sediment samples from the Bay Protection and Toxic Cleanup Program and Regional Water Board studies. Fish population surveys and aquatic habitat surveys from industry representatives, Department of Fish and Game, and volunteer/watershed monitoring groups.

RB2:

Types data sources are: Regional Monitoring Program, special studies, monitoring data from regulated discharges, beach monitoring by the local health department, DPR pesticides surface water database
Use of data quality hierarchy (1) sample collection and analytical technique, (2) spatial representativeness, (3) temporal representativeness, (4) quality assurance procedures to determine Level of Information.
Only levels 3 and 4 are on 303(d) list. Levels 1 & 2 are on the watch list.
Adequate summary table for listing/delisting rationales.

Sediment listing is based on consensus of professional scientists who are familiar with listed waterbodies. There is a linkage to biology and habitat degradation.
Trash: place trash impaired waterbodies on the preliminary list.

RB4:

120 additions and 86 delisting decisions.
When compared to CTR dissolved criteria, a conversion factor was used to determine the dissolved fraction. Default hardness of 400 mg/L is used where hardness data are unavailable.

RB5:

56 additions, 1 delist action, about a dozen changes to the listing (change in size of impairment).
Clear documentation (fact sheets) on individual waterbodies.

Numeric Criteria:

Mercury: EPA 0.3 ppm methylmercury in the edible portions of fish for protection of human health is used as a criteria in tissue.
EPA 0.05 ug/L CTR is used as a criteria in surface water. Min. data set of 10 water samples and min. of 2 exceedences.

Metals:
Al: primary MCL, secondary MCL, Ag Water Quality Goals, Basin Plan objectives, CTR freshwater chronic, CTR freshwater acute
As: primary MCL, Ag Water Quality Goals, Basin Plan objectives, CTR freshwater chronic, CTR freshwater acute
Cd: primary MCL, Ag Water Quality Goals, Basin Plan objectives, CTR freshwater chronic, CTR freshwater acute
Cu: primary MCL, secondary MCL, Ag Water Quality Goals, Basin Plan objectives, CTR freshwater acute, human health (drinking water & aquatic organism consumption)
Fe: secondary MCL, Ag Water Quality Goals, Basin Plan objectives, CTR freshwater acute
Pb: primary MCL, Ag Water Quality Goals, CTR freshwater chronic, CTR freshwater acute
Mn: secondary MCL, Ag Water Quality Goals, Basin Plan objectives
Ni: primary MCL, Ag Water Quality Goals, CTR freshwater chronic, CTR freshwater acute, human health (drinking water & aquatic organism consumption)
Zn: secondary MCL, Ag Water Quality Goals, CTR freshwater chronic, CTR freshwater acute, human health (drinking water & aquatic organism consumption)

Pesticides:

For **aquatic life protection**, a mixture of water criteria were used: EPA Water Quality Advisory , CTR/NTR, DFG criteria, Canadian Council of Ministers of the Environment, and Basin Plan.
For **drinking water protection**, a mixture of water criteria were used: EPA national recommended ambient water quality criterion to protect human health from water and fish/shellfish consumption, CTR for protection for drinking water and consumption of fish/shellfish, EPA integrated risk information system, Basin Plan, OEHHA/DHS, Canadian.

Ammonia:

Criteria: CDFG, NH_3<0.02 mg/L for undissociated ammonia. Acute toxicity for various freshwater fish 0.1-4.0 mg/L.

D.O.:

Basin Plan 5 mg/L. Frequency and so forth are unclear (specified in the Basin Plan?).

Region 6:

Delist 34 water body/pollutant combos, add151 waterbody/pollutant combos to the Watch List.

Region 9:

No delisting. Adding 24 new waterbodies, 15 new pollutants. Adding 4 new pollutants to previously listed waterbodies.

State Water Resources Control Board

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Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at http://www.swrcb.ca.gov.

March 13, 2002

Mr. David Smith
U.S. Environmental Protection Agency
Region 9
Water Division
75 Hawthorne Street
San Francisco, CA 94105

TRANSMITTAL OF DRAFT SWRCB STAFF REPORT: REVISION OF THE CLEAN WATER ACT SECTION 303(D) LIST OF WATER QUALITY LIMITED SEGMENTS. VOLUMES 1 – 4.

Dear Mr. Smith:

Enclosed please find a copy of the above-referenced report. This is a first rough draft of the report, being provided to you as a courtesy. We anticipate release of the final draft for public review on April 2, 2002. If you have any questions, please contact me at (916) 341-5560.

Sincerely,

Craig J. Wilson, Chief
Monitoring and TMDL Listing Unit
Division of Water Quality

Enclosures

DAVE SMITH: USEPA 3/15/02

1. This proposal so much better, more coherent than last time
2. WATCH LIST: many good ones enough to list.
3. Where are priorities?
4. EPA will comment water-by-water.
5. Need greater documentation on where we disagree on controversial listings
6. Need to write down your specific decision making rules.

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Streams Contaminated with Drugs

Medications That Help Us May be Harming our Waters

By Jennifer Warner
WebMD Medical News

March 13, 2002 -- You may want to think twice before taking a sip from that pristine-looking mountain stream or sampling the local trout. A new, national survey of America's streams shows most contain a laundry list o contaminants ranging from detergent to prescription drugs and sex hormones.

In the first-ever nationwide study of pharmaceuticals, hormones, and other contaminants in our streams, researchers at the U.S. Geological Survey used new testing methods to measure the levels of these contaminants in 139 streams in 30 states from 1999-2000.

What they found in America's streams is like a snapshot of our national medicine cabinet: aspirin, Tylenol, prescription medicines for heart problems and high blood pressure, and female sex hormones used in hormone replacement therapy and birth control pills.

In addition to medications, the most commonly found compounds included caffeine, cotinine (a product created by the breakdown of nicotine), the insect repellant DEET, triclosan (the active ingredient in antibacterial soaps and detergents), a flame retardant, and steroids that indicate fecal matter contamination.

Although the concentrations of most compounds were low -- usually less than one part per billion -- prior studies have suggested that exposure to levels even lower than those found in this study can have harmful effects on fish and other aquatic species. The effects on humans, if any, have not yet been determined.

Researchers screened for a group of 95 organic wastewater contaminants and found 82 of them in at least one stream. More than a third of the streams sampled contained 10 or more contaminants, and one stream alone contained 38 different chemicals.

2/'02

From 1990 WQA

7.	Fact Sheet	This column indicates whether a fact sheet (a State Board management tool) has been prepared. Fact sheets have been created for waterbodies classified as impaired, or if the waterbody is of high priority.
8.	Problem Description/Comments	"Problem Description/Comments" has been used to give a brief explanation of the reason for particular classification.
9.	Problem Source	The problem source, for waterbodies with water quality problems, is either Point or Nonpoint or both. Where left blank, no problems have been identified.
10.	Federal Lists	Environmental Protection Agency lists required by various sections of the Clean Water Act. An X in the list column indicates that the waterbody or a portion thereof appears on the indicated list.
	131.11	Segments which may be affected by toxic pollutants, or segments with concentrations of toxic pollutants that warrant concern.
	303(d)	List of Water Quality Limited Segments where numeric or narrative water quality objectives are not being maintained and/or where beneficial uses are not fully protected after application of Best Available Treatment/Best Control Technology (BAT/BCT).
	304(M)	So-called "mini-list" of waters not meeting State adopted numeric water quality objectives due to toxic sources after implementation of BAT/BCT.
	304(S)	So-called "short-list" of waters not achieving water quality standards due to point source discharges of toxic pollutants after implementation of BAT/BCT.
	304(L)	So-called "long-list" of waters designated as impaired because narrative or numeric objectives are violated or beneficial uses are impaired similar to CWA Section 303(d).
	314	A list of lake priorities for restoration.
	319	A list of impaired surface waterbodies from nonpoint source problems due to both toxic and nontoxic pollutants.