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LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD (LARWQCB)

Agenda Item No. 6, May 31, 2001
Discussion of 2002 Water Quality Assessment Effort and
Update of 303(d) List of Impaired Waterbodies

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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

**Pasadena, California
May 31, 2001
Special Board Meeting**

- ITEM:** 6
- SUBJECT:** Discussion of 2002 Water Quality Assessment effort and update of 303(d) List of Impaired Waterbodies.
- PURPOSE:** To discuss the schedule and process for updating our Regional Water Quality Assessment and 303(d) List of impaired waterbodies.
- BACKGROUND:** The federal Clean Water Act (Sections 305(b) and 303(d)) requires states to assess the quality of waters within the state and prepare a list of waterbodies not attaining water quality standards (known as the 303(d) list of water quality limited segments, or impaired waterbodies).
- CURRENT STATUS:** Staff began soliciting data for the 2002 Water Quality Assessment and 303(d) List in fall 2000. On March 5, 2001, the Regional Board sent another letter to over 1,200 interested parties soliciting water quality data. The deadline for submitting data was May 15, 2001. Staff are in the process of importing the data received into the Regional Board's database system. Once the data is imported, staff will begin analyzing the data to determine whether waterbodies are achieving water quality standards.
- Staff will present recommendations to the Regional Board in the fall, and will then forward the Region's 303(d) list to the State Board for final approval in early 2002.
- DISCUSSION:** In the Regional Board's recent water quality assessments, staff have referred to water quality assessment guidelines developed by US EPA as well as clarifying guidance issued by US EPA and the State Board.¹ Attached is an excerpt from the 1996 Water Quality Assessment, which explains the water quality assessment guidelines that were used. Staff intends to again use this guidance as a starting point for preparing the 2002 Water Quality Assessment and 303(d) List. However, staff will review and revise these guidelines as appropriate based on more recent EPA guidance, a review of other states' methodologies (as time allows), and public input.

¹ US EPA. 1997. "Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Report) and Electronic Updates: Supplement." EPA-841-B-97-002B. September 1997; TMDL Workgroup. 1997. "1998 Clean Water Act Section 303(d) Listing Guidelines for California."

ATTACHMENTS:

1. Water quality assessment guidelines excerpted from "1996 Water Quality Assessment and Supporting Documentation"

**Excerpted from "Regional Water Quality Control Board, Los Angeles Region
1996 California Water Quality Assessment - 305(b) Report
Supporting Documentation for Los Angeles Region"**

Assessment methodology

The Regional Board's water quality assessment follows USEPA (1995) guidance as outlined in the *Guidelines for Preparation of the 1996 State Water Quality Assessments (305(b) Reports)*. The guidance specifies that seven broad beneficial use categories be assessed under the federal guidance; the federal beneficial uses in this assessment report and the corresponding State beneficial uses are shown in Table 1.

Each of these federal beneficial uses is assessed according to the following designations: fully supporting, fully supporting but threatened, partially supporting, not supporting, and not assessed. The fully supporting but threatened category relates to waterbodies where a use is supported but may not be in the future (because of anticipated sources or adverse pollution trends) unless pollution prevention or control action is taken. Waterbodies that are assessed as partially supporting and not supporting are considered "impaired." In addition, the terms "partially supporting" and "not supporting" are federal terms and roughly equate to "intermediate" and "impaired" terms used by the state in preparing previous water quality assessments for the Los Angeles Region.

Table 1. Correlation between California Beneficial Uses and USEPA 305(b) Beneficial Uses.

State Beneficial Use as designated in 1994 Basin Plan	Federal Beneficial Use assessed in this report
Commercial and sport fishing Aquaculture	Fish consumption
Shellfish Harvesting	Shellfish harvesting
Warm freshwater habitat Cold freshwater habitat Inland saline water habitat Freshwater replenishment Estuarine habitat Wetland habitat Marine habitat Wildlife habitat Preservation of biological habitat Rare, threatened, or endangered species Migration of aquatic organisms Spawning, reproduction, and/or early development	Aquatic life use support
Water contact recreation	Swimming or primary contact recreation use
Non-contact recreation	Secondary contact recreation use
Municipal and domestic supply Ground water recharge (<i>where appropriate</i>)	Drinking water supply (raw data)
Agricultural supply Ground water recharge (<i>where appropriate</i>)	Agriculture

Hydropower Generation	Not assessed in this report
Navigation	
Industrial process supply	
Industrial service supply	

When comparing data against standards, the "worst case approach" is used. That is, if one parameter, such as temperature, ammonia, or an organic chemical, indicates impairment for a particular use, the waterbody is designated as impaired for the use affected by this parameter. For example, a waterbody that is not supporting the aquatic life use due to high ammonia concentrations and is partially supporting the use due to elevated metal concentrations would be given an overall classification of "not supporting." Exceptions to this are as follows:

1. For the drinking water use, if constituents (with the exception of volatile organic chemicals) exceed *secondary standards* (i.e., secondary MCLs), and thus are not supporting the use, the overall use is classified as "fully supporting but threatened." If constituents less frequently exceed secondary standards and thus are partially supporting the use, the overall use is classified as "fully supporting."
2. For the contact recreation use, if constituents exceed *secondary drinking water or taste and odor standards* (i.e., pH, turbidity, color, ammonia) and thus are not supporting the use, the overall use is classified as "partially supporting." If these constituents less frequently exceed the secondary standards and thus are partially supporting the use, the overall use is classified as "fully supporting but threatened."
3. For the secondary contact recreation use, if *color or turbidity* are elevated and are not or are partially supporting the use, the overall use is classified as "fully supporting but threatened" because these parameters may be seasonally controlled and further observations are needed to determine the definitive impairment status.

Each watershed in the region is divided into waterbody reaches (a specified segment of river or creek) and lakes or reservoirs that match those designated in the 1994 Water Quality Control Plan (hereafter referred to as Basin Plan). For this report, some individual reaches are combined into longer reaches while other reaches are listed as "not assessed" due to lack of data. Beneficial uses in each reach are assessed and are given a number of miles (or square miles/acreage for lakes and groundwater basins) that are supporting that use (e.g., 3.5 miles of the xx reach fully supports the agriculture use but 2.5 miles only partially support the aquatic life use support). Data collection stations are located within each reach and cover areas no more than 25 miles but usually no more than a few miles. In this 1996 report, particular emphasis is placed on the Ventura River and Calleguas Creek watersheds because they are the 1995-1996 Regional Board targeted watersheds. The main stem of the Los Angeles River is also assessed in detail because it will be a targeted watershed in the 1996-1997 watershed cycle. Ocean water data are not assessed in this report other than from seafood consumption advisories and review of literature.

In the assessment, potential sources of contamination are identified to the level that is known at this time. For most waterbodies, data were not sufficient to link specific sources to specific pollutants so this is not done in the 1996 assessment. In future assessments for this region, linkage may be possible. Sources are listed for a waterbody that do not contribute necessarily to the listed "causes" of impairment. These potential sources are listed in order to assist staff performing future assessments; incomplete data for waterbodies precluded making a complete list of causes of impairments at this time (many waterbodies have not been analyzed for metals and/or priority pollutants).

Some beneficial uses, notably agriculture and in some cases aquatic life and contact recreation, are impaired due to constituents that have naturally high concentrations within a watershed or subwatershed. Examples of these constituents include total dissolved solids, chlorides, boron and sulfate that are leached from rock formations. In some lakes and estuaries, coliform counts may be high due to a large population of waterfowl. Not enough information is available at this point to classify any of the affected uses as "unattainable". Under the sources column (or in the sources filed in the database), "natural source" is listed for these waterbodies.

Ranking of relative contributions of each cause and source to the overall impairment of a waterbody is classified with slight (S), moderate (M) and high (H) magnitude. For example, contaminant sources for a waterbody that include natural sources, urban runoff and municipal effluent would all be classified as "moderate" because they all contribute to some degree. If there is only one source listed then it is considered to be a high magnitude source contributing to the impairment.

Assessments in this report are distinguished as either "evaluated" or "monitored". "Evaluated" assessments are based on information about land uses, location of sources, predictive modeling, best professional judgement, as well as the use of older data. "Monitored" assessments are based on recent ambient water quality, sediment quality, bioaccumulation and toxicity data that are collected relatively frequently. Most of the assessments in the 1996 cycle are considered "monitored".

Criteria used for assessing each Surface Water Beneficial Use

The USEPA *Guidelines for Preparation of the 1996 State Water Quality Assessments (305(b) Reports)* provides formulas for conducting assessment of the six 305(b) beneficial uses. These guidelines are described below along with the criteria or standards against which the data is compared. References for standards are included in each section.

Aquatic Life Use Support

Aquatic life use support can be assessed based on *biological and habitat factors* or on *physical and chemical data*.

Biological/habitat assessments

Biological/habitat assessments in this region are limited to reported or observed sediment and erosion impacts and personal communication with federal Fish and Wildlife, state Fish and Game biologists and other local experts. The Regional Board does not have resources at this time to perform detailed field biological/habitat assessments. USEPA's application of biological/habitat assessments are described in table 2. In addition, the Regional Board used best professional judgement to indicate a few localized habitat-related problems such as areas of high sedimentation, fish kills, barriers to fish migration, and impairment of benthic communities. Information from published documents such as the Santa Monica Bay State of the Watershed Report (1993) was also used.

Table 2. Water Quality Assessment guidelines

Assessment designation	Assessment Guideline
Aquatic life use support: biological and habitat factors	
Fully supporting	Reliable data indicates functioning, sustainable biological communities (e.g., macro-invertebrates, fish, or algae) none of which has been modified significantly beyond the natural range of the reference condition.
Partially supporting	At least one assemblage (e.g., macro-invertebrates, fish, or algae) indicates less than full support with slight to moderate modification of the biological community noted. Other assemblages indicate full support.
Not supporting	At least one assemblage indicates nonsupport. Data clearly indicate severe modification of the biological community.
Aquatic life use support: water column toxic substances- priority pollutants, chlorine, ammonia	
Fully supporting	For any one pollutant, no more than 2 violations of chronic criteria (acute if no chronic criteria available) within a 6 year period based on at least 20 grab or 1-day composite samples. If fewer than 20 samples are available, then best professional judgement is used considering the number of pollutants having violations and the magnitudes of the exceedence(s).
Partially supporting	For any one pollutant, criteria exceeded more than twice within a 6-year period, but in ≤ 10 percent of samples.
Not supporting	For any one pollutant, criteria exceeded in > 10 percent of samples.
Aquatic life use support: water column conventional constituents and stressors- dissolved oxygen, temperature, chloride, pH	
Fully supporting	For any one pollutant, criteria exceeded in ≤ 10 percent of measurements.
Partially supporting	For any one pollutant, criteria exceeded in 11 to 25 percent of measurements.
Not supporting	For any one pollutant, criteria exceeded in > 25 percent of measurements.
Primary contact and non-contact recreation use and Agriculture use: Taste and Odor (includes secondary drinking water MCLs) and aesthetic stressors	
Fully supporting	For any one pollutant or stressor, criteria exceeded in ≤ 10 percent of measurements or observations.
Partially supporting	For any one pollutant, criteria exceeded in 11 to 25 percent of measurements or observations.
Not supporting	For any one pollutant, criteria exceeded in > 25 percent of measurements or observations.
Coliform bacteria data for Primary and Secondary Contact (inland surface waterbodies) recreation use	
Fully supporting	Criterion 1 and/or Criterion 2 met. (see table 7)
Partially supporting	For contact recreation: Criterion 1 met but not more than 10 percent of samples exceed 2,000 per 100 ml. For non-contact recreation, not more than 10 percent of the samples exceed 10,000 per 100 ml.
Not supporting	Neither criterion met.
Contact Recreation: beach coliform data	
Fully supporting	For entire data set, wet and dry weather fecal coliform standards are exceeded 15% or less times on average and wet and dry weather total coliform data are exceeded 20% or less times on average.
Partially supporting	At least one of the following is exceeded: wet and dry weather fecal coliform greater than 15% and wet and dry weather total coliform greater than 20%.
Not supporting	For entire data set, wet and dry weather fecal coliform standards are exceeded more than 15% or wet and dry weather total coliform data are exceeded more than 20%.
Primary Recreation Contact Use: Beach and inland bathing area closure	
Fully supporting	No bathing area closures or restrictions in effect during past 6 years.
Partially supporting	On average, one bathing area closures per year of less than 1 week's duration.

Assessment designation	Assessment Guideline
Not supporting	On average, one bathing area closure per year of greater than 1 week's duration, or more than one bathing area closure per year.
Fish and shellfish consumption use: advisories	
Fully supporting	No fish or shellfish restrictions or bans are in effect.
Partially supporting	"Restricted consumption" of fish or shellfish in effect. Restricted consumption is defined as limits on the number of meals or size of meals consumed per unit time for one or more fish or shellfish species.
Not supporting	"No consumption" of fish or shellfish ban in effect for general population, or a subpopulation that could be at potentially greater risk, for one or more fish or shellfish species; or commercial fishing or shellfishing ban in effect.
Primary contact and non-contact recreation: aesthetics stressor-field observations	
Fully supporting	Criteria exceeded in less than or equal to 10 % of observations.
Partially supporting	Criteria exceeded in 11 to 25 % of observations
Not supporting	Criteria exceeded in greater than 25% of observations.
Drinking water use: water quality data	
Fully supporting	No contaminants where the median concentration exceeds the state water quality standard. No restrictions (i.e., no source water closures or advisories, no waters requiring more than conventional treatment to enable drinking water use)
Fully supporting but threatened	No contaminants where the median concentration exceeds the state water quality standards. Increased monitoring imposed on public water supplies supplied by the waterbody (due to previous detections of contaminants that triggered an increased monitoring frequency) or potential for water quality degradation by contaminants that are known to be used or present in the watershed or basin.
Partially supporting	No contaminants where the median concentration exceeds the state water quality standards. One or more drinking water source advisories lasting greater than 30 days per year or public water supplies supplied by the waterbody require more than conventional treatment due to contaminants concentrations in source water that may adversely affect treatment costs or the quality of finished water (e.g., due to taste, odor, turbidity, dissolved solids, etc.).
Not supporting	One or more contaminants where the median concentration exceeds the state water quality standards. One or more contamination-based closures of a drinking water source.
Assessment guideline for cases where there are fewer than 20 data points (all uses)	
Not supporting	For constituents where there are <20 and ≥ 3 samples, more than 40% of the values exceed the standard.

Physical and chemical water column data

Most of the aquatic life use support assessments in the Los Angeles Region are based on physical and chemical water, as well as sediment, toxicity and bioaccumulation data (described below). Physical and chemical data (water column) includes toxic substances (priority pollutants, chlorine and ammonia) and conventional constituents or stressors (dissolved oxygen, pH, and temperature). The assessment guidelines, based on USEPA's guidance document, are shown in table 2.

Criteria for aquatic life use support are drawn from the region's 1994 Basin Plan and the USEPA Water Quality Criteria for Water (1986 and updates). Relevant criteria are listed in tables 3 and 4. Note that the metals data are compared "total recoverable" standards.

Table 3. Freshwater Aquatic life use support standards (water column)

Note: The most stringent criteria are selected. Constituents are only listed if samples used for assessment had values above detection limits.

Reference: US Environmental Protection Agency National Ambient Water Quality Criteria 1986 with updates, except where noted.

Constituent or Stressor	Status	Criteria (ppb unless noted)
Inorganic Constituent or other stressor		
Aluminum (pH: 6.5 - 9.0)	4-day average	87
Ammonia	4-day average	see table d
Antimony (trivalent)	4-day average	30 (Proposed)
Arsenic	4-day average	190
Cadmium* (dissolved)	4-day average	$[e(0.7852[\ln(\text{hardness})]-3.490)] \times [1.101672-([\ln(\text{hardness})] \times [0.041838])]$
Cadmium* (total recov'ble)	4-day average	$[e(0.7852[\ln(\text{hardness})]-3.490)]$
Chloride (as NaCl)	4-day average	230
Residual chlorine, total	4-day average	11
Chromium VI	4-day average	10
Copper* (dissolved)	4-day average	$(e\{0.8545[\ln(\text{hardness})]-1.465\}) \times (0.960)$
Copper* (total recov'ble)	4-day average	$(e\{0.8545[\ln(\text{hardness})]-1.465\})$
Cyanide	4-day average	5.2
Lead* (dissolved)	4-day average	$(e\{1.273[\ln(\text{hardness})]-4.705\}) \times (1.46203-([\ln(\text{hardness})] \times [0.145712]))$
Lead* (total recoverable)	4-day average	$(e\{1.273[\ln(\text{hardness})]-4.705\})$
Mercury (total recoverable)	4-day average	0.012
Nickel* (dissolved)	4-day average	$(e\{0.8460[\ln(\text{hardness})]+1.1645\}) \times (0.997)$
Nickel* (total recoverable)	4-day average	$(e\{0.8460[\ln(\text{hardness})]+1.1645\})$
Oxygen, dissolved (1994 Basin Plan)		<p>At a minimum (see specifics below), the mean annual dissolved oxygen concentration of all waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 mg/L, except when natural conditions cause lesser concentrations.</p> <p>The dissolved oxygen content of all surface waters designated as WARM shall not be depressed below 5 mg/L as a result of waste discharges.</p> <p>The dissolved oxygen content of all surface waters designated as COLD shall not be depressed below 6 mg/L as a result of waste discharges.</p> <p>The dissolved oxygen content of all surface waters designated as both COLD and SPWN shall not be depressed below 7 mg/L as a result of waste discharges.</p> <p>For that area known as the Outer Harbor area of Los Angeles-Long Beach Harbors, the mean annual dissolved oxygen concentrations shall be 6.0 mg/L or greater, provided that no single determination shall be less than 5.0 mg/L.</p>
pH	Instantaneous maximum	6.5 - 9.0 units
Selenium (total recoverable)	4-day average	5.0
Silver* (dissolved)	1-hour average	$(e\{1.72[\ln(\text{hardness})]-6.52\}) \times (0.85)$
Silver* (total recoverable)	1-hour average	$(e\{1.72[\ln(\text{hardness})]-6.52\})$
Temperature (1994 Basin Plan)		The natural receiving water temperature of all regional waters shall not be

Constituent or Stressor	Status	Criteria (ppb unless noted)
		<p>altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. Alterations that are allowed must meet the requirements below.</p> <p>For waters designated WARM, water temperature shall not be altered by more than 5 °F above the natural temperature. At no time shall these WARM-designated waters be raised above 80 °F as a result of waste discharges.</p> <p>For waters designated COLD, water temperature shall not be altered by more than 5 °F above the natural temperature.</p>
Zinc (dissolved)	4-day average	$e^{0.8473[\ln(\text{hardness})]+0.7614} \times (0.986)$
Zinc (total recoverable)	4-day average	$e^{0.8473[\ln(\text{hardness})]+0.7614}$
Organic Constituents		
Aldrin	Instantaneous maximum	3
Benzene	Acute toxicity	5300
Benzene hexachloride (g-BHC; Lindane)	24-hour average	0.08
Bromodichloromethane **	Acute toxicity	11,000 (sum of halomethanes)
Bromoform**	Acute toxicity	11,000 (sum of halomethanes)
Carbon tetrachloride	Acute toxicity	35,200
Chlordane	24-hour average	0.0043
Chloroform	Chronic toxicity	1240
DDD	Acute toxicity	0.6
DDE	Acute toxicity	1050
DDT	24-hour average	0.001
Dibromochloromethane**	Chronic toxicity	11,000 (sum of halomethanes)
1,1-Dichloroethylene (1,1-DCE)†	Acute toxicity	11,600 (sum of dichloroethylenes)
cis-1,2-Dichloroethylene†	Acute toxicity	11,600 (sum of dichloroethylenes)
trans- 1,2-Dichloroethylene†	Acute toxicity	11,600 (sum of dichloroethylenes)
Di(2-ethylhexyl)phthalate	4-day average	360
Di(n-octyl) phthalate	Chronic toxicity	3
Endrin	24-hour average	0.0023
Ethylbenzene	Acute toxicity	32,000
Heptachlor	24-hour average	0.0038
Heptachlor epoxide	24-hour average	0.0038
Toluene	Acute toxicity	17,000
1,1,1-Trichloroethane (1,1,1-TCA)	Acute toxicity	18,000
Trichloroethylene (TCE)	Acute toxicity	45,000

*Criteria for metals based on hardness use actual hardness at time of sampling or if not available, use average hardness for reach.** Halomethanes † Dichloroethylenes

Table 4. Four-day Average Concentration for Ammonia*

Reference: USEPA: Revised tables for determining average freshwater ammonia concentrations. Office of Water Memorandum, July 30, 1992.

pH	Temperature °C													
	0	5	10	15	20	25	30	0	5	10	15	20	25	30
Un-ionized ammonia (mg/liter NH ₃) for waters designated as COLD							Un-ionized ammonia (mg/liter NH ₃) for waters designated as WARM							
6.50	0.0008	0.0011	0.0016	0.0022	0.0022	0.0022	0.0022	0.0008	0.0011	0.0016	0.0022	0.0031	0.0031	0.00
6.75	0.0014	0.0020	0.0028	0.0039	0.0039	0.0039	0.0039	0.0014	0.0020	0.0028	0.0039	0.0055	0.0055	0.00
7.00	0.0025	0.0035	0.0049	0.0070	0.0070	0.0070	0.0070	0.0025	0.0035	0.0049	0.0070	0.0099	0.0099	0.00
7.25	0.0044	0.0062	0.0088	0.0124	0.0124	0.0124	0.0124	0.0044	0.0062	0.0088	0.0124	0.0175	0.0175	0.01
7.50	0.0078	0.0111	0.0156	0.022	0.022	0.022	0.022	0.0078	0.0111	0.0156	0.022	0.031	0.031	0.03
7.75	0.0129	0.0182	0.026	0.036	0.036	0.036	0.036	0.0129	0.0182	0.026	0.036	0.051	0.051	0.05
8.00	0.0149	0.021	0.030	0.042	0.042	0.042	0.042	0.0149	0.021	0.030	0.042	0.059	0.059	0.05
8.25	0.0149	0.021	0.030	0.042	0.042	0.042	0.042	0.0149	0.021	0.030	0.042	0.059	0.059	0.05
8.50	0.0149	0.021	0.030	0.042	0.042	0.042	0.042	0.0149	0.021	0.030	0.042	0.059	0.059	0.05
8.75	0.0149	0.021	0.030	0.042	0.042	0.042	0.042	0.0149	0.021	0.030	0.042	0.059	0.059	0.05
9.00	0.0149	0.021	0.030	0.042	0.042	0.042	0.042	0.0149	0.021	0.030	0.042	0.059	0.059	0.05
Total ammonia (mg/liter NH ₃) for waters designated as COLD							Total ammonia (mg/liter NH ₃) for waters designated as WARM							
6.50	3.0	2.8	2.7	2.5	1.76	1.23	0.87	3.0	2.8	2.7	2.5	2.5	1.73	1.23
6.75	3.0	2.8	2.7	2.6	1.76	1.23	0.87	3.0	2.8	2.7	2.6	2.5	1.74	1.23
7.00	3.0	2.8	2.7	2.6	1.76	1.23	0.87	3.0	2.8	2.7	2.6	2.5	1.74	1.23
7.25	3.0	2.8	2.7	2.6	1.77	1.24	0.88	3.0	2.8	2.7	2.6	2.5	1.75	1.24
7.50	3.0	2.8	2.7	2.6	1.78	1.25	0.89	3.0	2.8	2.7	2.6	2.5	1.76	1.25
7.75	2.8	2.6	2.5	2.4	1.66	1.17	0.84	2.8	2.6	2.5	2.4	2.3	1.65	1.18
8.00	1.82	1.70	1.62	1.57	1.10	0.78	0.56	1.82	1.70	1.62	1.57	1.55	1.10	0.79
8.25	1.03	0.97	0.93	0.90	0.64	0.46	0.33	1.03	0.97	0.93	0.90	0.90	0.64	0.47
8.50	0.58	0.55	0.53	0.53	0.38	0.28	0.21	0.58	0.55	0.53	0.53	0.53	0.39	0.29
8.75	0.34	0.32	0.31	0.31	0.23	0.173	0.135	0.34	0.32	0.31	0.31	0.32	0.24	0.19
9.00	0.195	0.189	0.189	0.195	0.148	0.116	0.094	0.195	0.189	0.189	0.195	0.21	0.163	0.13

* To convert these values to mg/liter N, multiply by 0.822.

Sediment chemistry and toxicity, water column toxicity, benthic community and bioaccumulation data

Lacking USEPA guidelines, the Regional Board developed assessment guidelines for sediment chemistry and toxicity, benthic community and bioaccumulation data for purposes of this water quality assessment report. These general guidelines are described below.

Virtually all of this Region's *sediment toxicity* data has been generated through the Bay Protection & Toxic Cleanup Program (BPTCP). The most commonly used sediment toxicity test is the amphipod (a crustacean) survival test. A review of all the data for the region reveals the number of tests in which less than 60% of the amphipods survive is much less than the number of tests in which at least 60% or more amphipods survive. Consequently, the "significant toxicity" line is drawn at 60% survival. Below that number it's more likely that impairment is occurring (especially since existing benthic data at those sites support this). No statistical analyses or comparison to reference sites were done, however. This is a qualitative analysis utilizing Best Professional Judgement. Also, no conclusions are drawn based solely on one-time toxicity testing.

Table 5. Sediment and Bioaccumulation chemistry probable "background" levels

Constituent	Sediment Chemistry: Probable "background" levels in the Region	Bioaccumulation: Probable "background" levels in the Region
PAHs (polycyclic aromatic hydrocarbons)	1 ppm	ND
chlordan	100 ppb	100 ppb
PCBs	200 ppb	300 ppb
DDT	200 ppb	300 ppb
zinc	200 ppm	250 ppm
lead	50 ppm	15 ppm
copper	100 ppm	50 ppm
chromium	75 ppm	5 ppm
TBT (tributyltin paint)	1 ppm	ND

Note: older TBT numbers in the database are almost certainly obsolete; levels have dropped dramatically since 1988 when TBT use prohibitions started, also, TBT degrades fairly quickly.

Listed in table 5 are the region's probable "background" numbers for the more common *sediment chemistry* pollutants. These numbers are approximate and based on pollutant levels found in areas removed from direct point sources where impacts do not appear to be occurring in the benthic community. Often background concentrations are due to natural sources or are due to persistent organic chemicals that have not yet biodegraded completely. The background levels were determined by evaluating data from areas that are remote from point sources and significant nonpoint sources.

For *bioaccumulation in sediment*, "background" numbers are also utilized (table 5). These may be adjusted up or down depending on the type of waterbody (commercial port vs. coastal lagoon).

For *bioaccumulation in aquatic organisms*, data from the State Mussel Watch and Toxic Substances Monitoring program were used. These two state programs provide information about the occurrence of toxic substances in fresh, estuarine, and marine waters through analysis of fish, mussels and other aquatic life (referred to as "tissue" in this report). Ten metals and approximately 45 pesticides and other organic chemicals are analyzed from the tissue of these organisms. Not every sample is analyzed for all metals or organic chemicals. For this 305(b) assessment, Mussel Watch data were used only to evaluate the aquatic life use. Toxic Substances Monitoring data were used to evaluate both the fish consumption and the aquatic life use.

Bioaccumulation data collected from tissue are compared to criteria such as Maximum Tissue Residue Levels (MTRLs), U. S. Food and Drug Administration (FDA) action levels, Median International Standards (MIS), and the National Academy of Sciences (NAS) recommended guidelines for predator protection (table 6).

Fish tissue Elevated Data Level (EDL) values are an internal state comparative measure that ranks a given concentration of a particular substance with previous data from the state programs. EDLs are calculated by ranking all of the results for a given chemical from the highest concentration measured down to and including those records where the chemical was not detected. The 85th percentile (EDL85) was chosen as an indication that a chemical is elevated from the median and the 95th percentile (EDL95) was chosen to indicate values that are highly elevated. EDLs were used in the assessment as follows: If no other constituents exceed standards, but if one or two constituents were above the EDL85 or EDL95, then those constituents are listed as "fully supporting but threatened." If three or more constituents are above the EDL then those constituents are listed as "partially supporting".

For *water column toxicity*, the Basin Plan (1994) objective of "no less than 70% in a single test and no less than a mean of 90% in any three consecutive tests" is used.

BPTCP *benthic community* data was collected in Los Angeles and Long Beach Harbor (LA/LB Harbor) and Alamitos Bay. Extrapolations were made from the data, mostly regarding the presence of pollutant-tolerant species. Areas

Table 6. Standards used for tissue data (State Mussel Watch Toxic Substances Monitoring Programs).

Constituent	Standards-ppb (see text for explanation of abbreviations)				
	NAS Recommended guideline for freshwater fish	FDA Action level for freshwater and marine fish	MTRs for inland surface waters	MTRs for ocean waters	MIS for freshwater fish and marine shellfish (range)
Mercury	500	1000	1000	-	100-1000
DDT (total)	1000	5000	32.0	9.1	-
PCBs	500	2000	2.2	-	-
Aldrin	100	300	0.05	0.1	-
Dieldrin	100	300	0.65	0.2	-
Endrin	100	300	3000	-	-
Heptachlor	100	300	1.8	8.1	-
Heptachlor epoxide	100	300	0.8	-	-
Chlordane	100	300	1.1	0.32	-
Lindane	100	-	2.5	-	-
Hexachlorocyclohexane	100	-	alpha: 0.5 beta: 1.8	-	-
Endosulfan	100	-	250	-	-
Toxaphene	100	5000	8.8	2.75	-
Arsenic	-	-	200	-	100-5000
Hexochlorobenzene (HCB)	-	-	6.0	0.6	-
PCBs	-	-	2.2	0.6	-
PAHs	-	-	0.08	-	-
Pentachlorophenol (PCP)	-	-	3.1	-	-
Cadmium	-	-	640	-	50-2000
Nickel	-	-	28000	-	-
Chromium	-	-	-	-	1000
Copper	-	-	-	-	10000-100000
Lead	-	-	-	-	500-10000
Zinc	-	-	-	-	40000-100000

distinctly different in benthic community composition from the "norm" for that kind of waterbody and containing large numbers of pollutant-tolerant species are designated as "not supporting".

BPTCP *benthic community* data was collected in Los Angeles and Long Beach Harbor (LA/LB Harbor) and Alamitos Bay. Extrapolations were made from the data, mostly regarding the presence of pollutant-tolerant species. Areas distinctly different in benthic community composition from the "norm" for that kind of waterbody and containing large numbers of pollutant-tolerant species are designated as "not supporting".

Combining these different data types (sediment chemistry and toxicity, water column toxicity, benthic community and bioaccumulation) into an overall assessment for each waterbody requires balancing quantity of evidence and type of evidence. Using Los Angeles/Long Beach Harbor BPTCP data as an example, most areas of the harbor where background levels of contaminants occur exhibited moderate to low sediment toxicity and, at most, a marginally impacted benthic community. Many areas are contaminated with metals and, as BPTCP work has revealed (and expert advice from the program's Scientific Review & Planning Committee supports), generally metals are not bio-available (they tend to bind with the usually generous amounts of sulfides in the sediments) and don't contribute to sediment toxicity. Sediments contaminated with even high levels of metals, but not with organic chemicals, will usually not result in adverse effects. The chief concern is organic chemicals but even here impacts appear minimal at background pollutant levels.

A weight-of-evidence approach, heavily influenced by best professional judgement, is used to judge aquatic life beneficial use support for coastal areas. Ideally, this approach would utilize field-replicated triad data (benthic, sediment toxicity, and sediment chemistry) collected at the same time at least twice over some fairly short time period and use a reference site for comparison purposes. Instead, what is mostly available are data collected under different programs, measuring different media, at different sites, over a number of years, without good reference sites for statistical purposes.

At least two data points are desired for any particular type of data. Thus, one toxicity test result (lab-replicated) is revealing but not necessarily useful without some other kind of information. For example, high sediment toxicity in one test conducted under the BPTCP combined with low sediment contamination and bioaccumulation found through the SMWP would not necessarily lead to assigning the waterbody a "not supporting" status. There are natural causes of toxicity that may be transient. If sampling occurred during rainy weather, other unknown (and often non-anthropogenic) factors may be involved. Test results (especially effects information) obtained during aberrant conditions really shouldn't be used to define the status of a waterbody.

As another example, past SMWP data may show low to moderate PCBs and PAHs in sediment and tissue and more recent sediment toxicity testing may result in less than 60% survival on two sampling dates. The SMWP data may not be obviously high but the toxicity data point out a problem. Benthic data would be helpful, but based on toxicity, bioaccumulation, and sediment chemistry, the waterbody would be designated not fully supporting aquatic life beneficial uses. "Good" effects data are weighed more heavily than simple measurements such as sediment pollutant levels or tissue bioaccumulation (within the limitations described earlier). The latter measurement isn't an effect, it's just an indicator of the presence of pollutants. Unless National Academy of Sciences tissue guidelines are exceeded, effects are not expected.

For SWMP data, "background level guidelines" apply only to transplanted California mussels. Other organisms used by the program include transplanted freshwater clams, resident California mussels, transplanted bay mussels, and resident bay mussels. These bioaccumulate at different rates (especially freshwater clams) and are hard to compare to each or to a guideline.

Primary Contact Recreation Use

One of the goals of the Clean Water Act is that all waterbodies of the nation be "swimmable." Many of the waterbodies of the Los Angeles region are designated as "swimmable" or usable for water-contact recreation. Some of these designated waterbodies, however, are inaccessible due to gates and fences installed for flood control or drinking water reservoir protection purposes. In spite of this, residents, homeless individuals and occasionally children often gain access and use these areas. Therefore, all

waterbodies with a water-contact recreation use have been included in this report. On the 303(d) list table, access restrictions are indicated with a footnote.

Assessment of primary contact recreational uses is based on closure data for bathing areas, coliform bacteria data, hazardous substances and aesthetics. Bathing closure data was acquired from the Los Angeles and Ventura County Departments of Health Services. Guidelines for assessments and coliform bacteria standards and assessment guidelines are shown in Table 7. Inland surface waterbody coliform data is not collected on a frequent basis; only fecal coliform standards are used. Dry weather beach data are collected frequently, weekly or daily, in the surfzone by major ocean dischargers and by the Los Angeles County Department of Health Services. Wet weather coliform data is collected during storms. These data are compared to Ocean Plan standards and include both total and fecal coliform.

Hazardous substances in water and bottom sediment are evaluated on a case by case basis. Secondary Drinking water MCLs (table 8) related to contact recreation are also assessed. Additional factors such as persistent scum, oily films, excessive algae growth, significant trash, and persistent observations of non-natural foam and/or odor were also considered (tables 2 and 9).

Table 7. Indicator Bacteria Criteria for Primary and Secondary contact recreation use and Shellfish Consumption

Assessment designation	Assessment Guideline
Criterion	Primary Contact Recreation (inland)
Criterion 1	Fecal coliform concentration shall not exceed a log mean of 200/100 ml (based on a minimum of not less than four samples for any 30-day period) <i>[Note for this Region, we do not have weekly data for most of the waterbodies so this criterion is not used]</i>
Criterion 2	No more than 10 percent of total samples during any 30-day period exceed 400/100 ml. <i>[Note: used entire data set for each reach rather than 30-day period]</i>
Criterion	Secondary Contact Recreation (inland)
Criterion 1	Fecal coliform concentration shall not exceed a log mean of 2000/100 ml (based on a minimum of not less than four samples for any 30-day period) <i>[Note for this Region, we do not have weekly data for most of the waterbodies so this criterion is not used]</i>
Criterion 2	No more than 10 percent of total samples during any 30-day period exceed 4000/100 ml. <i>[Note: used entire data set for each reach rather than 30-day period]</i>
	Primary Contact Recreation (beaches)
Total coliform	Samples of water from each sampling station shall have a density of total coliform organisms less than 1000 per 100 ml; provided that not more than 20 percent of the samples at any sampling station, in any 30-day period, may exceed 1000 per 100 ml, and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml.
Fecal coliform	The fecal coliform density based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean 200 per 100 ml nor shall more than 10 percent of the total samples during any 60-day period exceed 400 per 100 ml.
Criterion	Shellfish consumption
Criterion 1	In all waters where shellfish can be harvested for human consumption, the median total coliform concentration throughout the water column for any 30-day period shall not exceed 70/100 ml, <i>[Note for this Region, we do not have weekly data so this criterion is not used]</i>
Criterion 2	No more than ten percent of the samples collected during any 30-day period exceed 230/100 ml for a five-tube decimal dilution test or 330/100 ml when a three-tube decimal dilution test is used.

Secondary Contact Recreation Use

Most of the waterbodies of the region are designated for non-contact recreational use. This use includes activities where water is not normally ingested. The assessment for this use includes many of the same factors as for primary contact recreation but to a somewhat less stringent standard for coliform bacteria. Chemical and physical data are assessed using guidelines in Table 2 and standards in Table 8. In addition, field observations at stations along many of the reaches were tabulated for aesthetic factors such as significant excessive algae growth, significant trash, persistent non-natural foam and odor (table 9). These observations were assessed using guidelines in Table 2.

Fish and Shellfish Consumption Use

Fish and shellfish consumption use is assessed based on status of fishing advisories and bioaccumulation data. Guidelines for use of advisory data are listed in Table 2. Bioaccumulation standards are described above under aquatic life use. Table 7 includes shellfish bacteria limits which were not used in this assessment due to lack of resources.

Table 8. Aesthetics/taste and odor standards

Note: most stringent criteria is selected. Constituents are only listed if samples used for assessment had values above detection limits.

Constituent	Reference	Status	Criteria (ppm unless noted)	Comments
Aluminum	CA Department of Health Services	Secondary MCL	0.02	
Ammonia	McKee and Wolf, 1978		0.037	
Chloride	CA Department of Health Services	Secondary MCL	250	
Color	CA Department of Health Services	Secondary MCL	15 units	
Copper	CA Department of Health Services	Secondary MCL	1000 ppb	
Fluoride	US Environmental Protection Agency	Secondary MCL	2	
Foaming agents (MBAS)	CA Department of Health Services	Secondary MCL	0.5	
Iron	CA Department of Health Services	Secondary MCL	0.3	
Manganese	CA Department of Health Services	Secondary MCL	0.05	
Odor	CA Department of Health Services	Secondary MCL	3 threshold units	
pH	US Environmental Protection Agency	Secondary MCL	6.5 to 8.5 units	
Silver	CA Department of Health Services	Secondary MCL	100 ppb	
Specific conductance	CA Department of Health Services	Secondary MCL	900 µmhos/cm	
Sulfate	CA Department of Health Services	Secondary MCL	250	
Total dissolved solids	CA Department of Health Services	Secondary MCL	500	
Turbidity	CA Department of Health Services	Secondary MCL	5 units	
Organic Constituents				
Ethylbenzene	US Environmental Protection Agency	Secondary MCL	30	
Phenol	CA Department of Health Services	Taste and odor Action level	5.0	
Toluene	US Environmental Protection Agency	Secondary MCL	40	
Xylene(s)	US Environmental Protection Agency	Secondary MCL	20	

Table 9. Observation categories used for assessing field observations of aesthetic stressors

Stressor	Observation categories
Trash	None, trash observed, Significant amount of trash observed
Unnatural scum/flotsam/foam	None, observed
Algae	None, significant amount observed
Odors	None, presence
Color	Clear, light yellow to green, dark green to brown
Turbidity	None, slight to turbid, very turbid
Oil and grease	None, Oil sheen, heavy oil

Drinking water use

Assessment of the use of waterbodies in the region for drinking water is based on concentrations of constituents that are regulated for drinking water. In this 305(b) report, ambient or raw (untreated) surface and ground waters are assessed (Note that such water would be treated and disinfected, in accordance with requirements from the State Department of Health Services, prior to distribution for potable use). Contaminants that are generally not source-water related (e.g., corrosion byproducts, lead or copper from distribution system, or TTHMs) are not considered. Assessment of waterbodies for drinking water use differs from other uses in that median rather than mean of data area considered. Table 2 lists the guidelines for assessment and Table 10 lists the standards and references.

Assessed under the "federal" drinking water use are two "state" beneficial uses, namely MUN (municipal supply) and GWR (ground water recharge). Currently, all waterbodies in the region are designated as MUN per the 1988 Sources of Drinking Water Policy. A large number of waterbodies, however, were footnoted in the 1994 Basin Plan as being eligible for review and possible exemption status during the Triennial Review (1994-1997). The Regional Board staff is currently reviewing these footnoted MUN waterbodies and later this year (1996), intend to bring forward a revised MUN policy more appropriate for this region as well as criteria specific to this region for possible exemptions from the MUN designation. Waterbodies that were designated MUN (Municipal Drinking Water Supply) with a footnote in the region's Basin Plan (1994) and did not have a groundwater recharge (GWR) use are not assessed in this 1996 305(b) assessment. As discussed above, these waterbodies will be considered for exception from MUN in a separate Board action later this year. After consultation with State Board and USEPA staff, Regional Board staff decided to not assess the drinking water use for those waterbodies that were footnoted MUN in the 1994 Basin Plan and do not have a GWR use. These waterbodies may be removed from our Basin Plan within this year and, if any of them are determined to have drinking water uses and are impaired, staff will revise the 303(d) accordingly.

Table 10. Drinking Water standards

Note: most stringent criteria is selected. Constituents are only listed if samples used for assessment had values above detection limits.

Constituent	Reference	Status	Criteria	Comments
Inorganic constituents (ppm unless noted)				
Aluminum	CA Department of Health Services	Primary MCL	1000 ppb	
Gross alpha particle activity	CA Department of Health Services	Primary MCL	15 pCi/L	
Antimony	CA Department of Health Services	Primary MCL	6 ppb	
Arsenic	CA Department of Health Services	Primary MCL	50 ppb	
Bacteria, coliform	1994 Basin Plan	groundwater	1.1/100 ml (any seven day period)	
Barium	CA Department of Health Services	Primary MCL	1000 ppb	
Gross beta particle activity	CA Department of Health Services	Primary MCL	50 pci/L	
Beryllium	CA Department of Health Services		4 ppb	
Boron	CA Department of Health Services	Toxicity Action Level	1	
Cadmium	CA Department of Health Services	Primary MCL	5 ppb	
Chlorine (Cl ₂)	US Environmental Protection Agency	Primary MCL	4	Proposed
Chromium total	CA Department of Health Services	Primary MCL	50 ppb	
Copper	US Environmental Protection Agency	Primary MCL	1300 ppb	
Cyanide	CA Department of Health Services	Primary MCL	0.200	
Fluoride	CA Department of Health Services	Primary MCL	*	

Lead	US Environmental Protection Agency	Primary MCL	15 ppb	
Mercury	CA Department of Health Services	Primary MCL	2 ppb	
Nickel	CA Department of Health Services	Primary MCL	100 ppb	
Nitrate	CA Department of Health Services	Primary MCL	45	
Nitrite-N	CA Department of Health Services	Primary MCL	1	
Nitrate-N + Nitrite-N	CA Department of Health Services	Primary MCL	10	
Selenium	CA Department of Health Services	Primary MCL	50 ppb	
Sulfate	US Environmental Protection Agency	Primary MCL	400	Proposed
Thallium	CA Department of Health Services	Primary MCL	2 ppb	
Organic Constituents (ppb unless noted)				
Aldrin	CA Department of Health Services	Toxicity Action Level	0.05	
Benzene	CA Department of Health Services	Primary MCL	1	
Benzene hexachloride (a-BHC)	CA Department of Health Services	Toxicity Action Level	0.7	
Benzene hexachloride (b-BHC)	CA Department of Health Services	Toxicity Action Level	0.3	
Benzene hexachloride (g-BHC; Lindane)	CA Department of Health Services	Primary MCL	0.2	
Bromodichloromethane†	CA Department of Health Services	Primary MCL	100	Sum of trihalomethanes
Bromoform†	CA Department of Health Services	Primary MCL	100	Sum of trihalomethanes
n-Butylbenzene	CA Department of Health Services	Toxicity Action Level	45	
n-Butyl benzyl phthalate	US Environmental Protection Agency	Primary MCL	100	Proposed
Carbon tetrachloride	CA Department of Health Services	Primary MCL	0.5	
Chlordane	CA Department of Health Services	Primary MCL	0.1	
Chloroform†	CA Department of Health Services	Primary MCL	100	Sum of trihalomethanes
2,4-D	CA Department of Health Services	Primary MCL	70	
Dibromochloromethane†	CA Department of Health Services	Primary MCL	100	Sum of trihalomethanes
3,3'-Dichlorobenzidine (DCB)	none			
1,1-Dichloroethylene (1,1-DCE)	CA Department of Health Services	Primary MCL	6	
cis-1,2-Dichloroethylene	CA Department of Health Services	Primary MCL	6	
trans-1,2-Dichloroethylene	CA Department of Health Services	Primary MCL	10	
1,3-Dichloropropene (cis and trans)	CA Department of Health Services	Primary MCL	0.5	

Di(2-ethylhexyl)phthalate	CA Department of Health Services	Primary MCL	4	
Di(n-octyl) phthalate	none			
Endrin	CA Department of Health Services	Primary MCL	2	
Ethylbenzene	CA Department of Health Services	Primary MCL	700	
Heptachlor	CA Department of Health Services	Primary MCL	0.01	
Heptachlor epoxide	CA Department of Health Services	Primary MCL	0.01	
Methyl ethyl ketone (MEK)	none			
Methylene chloride (Dichloromethane)	CA Department of Health Services	Primary MCL	5	
Tetrachloroethylene (PCE)	CA Department of Health Services	Primary MCL	5	
Toluene	CA Department of Health Services	Primary MCL	150	
1,1,1-Trichloroethane (1,1,1-TCA)	CA Department of Health Services	Primary MCL	200	
Trichloroethylene (TCE)	CA Department of Health Services	Primary MCL	5	
Vinyl chloride	CA Department of Health Services	Primary MCL	0.5	
Xylene(s)	CA Department of Health Services	Primary MCL	1750	

* Fluoride criteria is based on annual average of maximum daily air temperature: MCL at 58.4 to 63.8 °F: 2.0 mg/L; 63.9 to 70.6 °F: 1.8 mg/L; and 70.7 to 79.2 °F: 1.6 mg/L.

† 100 ppb is total trihalomethanes (sum of bromoform, bromodichloromethane, chloroform, and dibromochloromethane)

Agriculture use

Water quality standards can vary by area and by crop. Due to a lack of state or federal standards, assessment of water quality for agricultural use is based upon local guidelines (table 11).

Table 11. Agriculture standards

Note: most stringent criteria is selected. Constituents are only listed if samples used for assessment had values above detection limits.

Constituent	Reference	Criteria	Comments
Aluminum	Ayers and Westcot, 1985	5 ppm	
Arsenic	Ayers and Westcot, 1985	100 ppb	
Boron	USEPA Quality Criteria for Water, 1986	0.75 ppm	
Cadmium	Ayers and Westcot, 1985	10 ppb	
Chloride	Ayers and Westcot, 1985	106 ppm	
Chromium VI	Ayers and Westcot, 1985	100 ppb	
Cobalt	Ayers and Westcot, 1985	50 ppb	
Copper	Ayers and Westcot, 1985	200 ppb	
Total dissolved solids	Bucy, 1995	750 ppm	Ayers and Westcot recommend 450 but locally that is not used
Fluoride	Ayers and Westcot, 1985	1 ppm	
Iron	Ayers and Westcot, 1985	5 ppm	
Lead	Ayers and Westcot, 1985	5000 ppb	
Manganese	Ayers and Westcot, 1985	0.2 ppm	

Nickel	Ayers and Westcot, 1985	200 ppb	
Selenium	Ayers and Westcot, 1985	20 ppb	
Specific conductance	Bucy, S. 1995. Fruit Growers Laboratory, Santa Paula, CA. Personal communication, November 14, 1995.	750 umhos/cm	Ayers and Westcot recommend 700 but locally that is not used
Vanadium	Ayers and Westcot, 1985	100 ppb	
Zinc	Ayers and Westcot, 1985	2000 ppb	

Criteria used for assessing lakes

Although the general guidelines for surface waters apply to lakes of the region, special consideration is given to urban lakes. The Regional Board contracted with University of California, Riverside to assess urban lakes. Twenty three urban and non-urban lakes of the region were studied over a year period and this information and data are used in this Water Quality 305(b) Assessment.

For lakes, trophic status is assessed. Assessment is additionally based on, where available, the following factors: total phosphorus, chlorophyll a, secchi transparency, frequency of algal blooms, surface scum and mat, turbidity, reduction of water depth due to sediment, extent of nuisance macrophyte growth, and aesthetics.

Criteria used for assessing Nearshore, Open Bays, Estuaries, and Ocean

Due to lack of staff resources at this time, the assessment of nearshore areas, open bays, estuaries, and ocean areas is mostly limited to the review of published reports. Fish consumption advisories and some bioaccumulation data are also used.

Criteria used for assessing Ground Water

Neither the US EPA nor State Board has established a set methodology for assessing the quality of ground waters. Staff at the USEPA recognize that such assessments are monumental tasks. Accordingly, the USEPA Guidance document suggests that agencies do what is practicable during the 1996 reporting period, focussing on demand for and vulnerability of ground waters.

Regional Board staff did not compile a database on the quality of ground water, due to limited staff resources. Nor did Regional Board staff assess the quality of ground water based upon numbers of known contaminated sites. These data would not accurately reflect water quality, since the data (from monitoring wells) are inherently skewed toward water quality problems. Regional Board staff also rejected the idea of assessing the quality of ground water based upon data from production wells, as such data might inherently overstate water quality.

Assessments of the quality of ground waters in the Los Angeles Region, therefore, are based upon the extent to which beneficial uses have been, or are threatened to be, impaired. Beneficial use categories that were assessed include drinking water and industrial uses, which were lumped together (since industrial users in the Region typically require ground water that meets Title 22 standards (Table 10). The quality of ground waters to support agricultural uses was not assessed in most areas; exceptions were made in certain areas of Ventura County, where agriculture is an important industry.

Table 12. Assessment guidelines for groundwater basins

Assessment classification	Guideline
Fully supporting	No known contamination
Fully supporting but threatened	Evidence of contamination, but beneficial use has not been affected.
Partially supporting	Contamination has significantly affected production of ground water. For example, over 10% of production capacity in a basin has been shut down, or over 10% of production in a basin requires wellhead treatment/dilution prior to beneficial use. For those basins where production capacity is not easily available (perhaps due to widespread contamination), staff evaluated trends to determine the degree to which water quality had been degraded from background.
Not supporting	Contamination has impaired production of ground water. For example, over 25% of production capacity in a basin has been shut down, or over 25% of production in a basin requires wellhead treatment/dilution prior to beneficial use. Again, for those basins where production capacity is not readily available (perhaps due to widespread contamination), staff evaluated trends to determine the degree to which water quality had been degraded from background.

In order to determine impairments to ground waters, Regional Board staff gathered information on the extent to which production had been curtailed or cut back due to water quality problems. Ground waters that were pumped in spite of contamination, and then treated at wellhead or blended to meet water quality standards, also were considered impaired. Assessment classifications are summarized in Table 12. Production data for the assessments were obtained from many sources, including published reports and communications with water purveyors, wholesalers, and watermasters.

The attached Data Summary Tables present the results of the Regional Board's assessments. Ground waters in the "partially supporting" or "not supporting categories" are considered impaired with regard to respective beneficial uses; however, these ground waters are not entered on the 303(d) list, as the scope of the 303(d) list is limited to surface waters.

Ground waters in this assessment are generally considered to be single units with the exception of two basins, the Central Basin and the West Coast Basin that were divided into upper and lower, or production, aquifers. The total area given in square miles is the same for both the upper and lower aquifers, therefore, care needs to be taken to not double count these areas when looking at total square miles of impaired groundwater basins for the Los Angeles Region.

303(d) list

Impaired surface waterbodies included in the 305(b) assessment are also listed on the region's updated 303(d) list. Under Section 303 of the Clean Water Act, each state must submit a list of those waters that do not, or are not expected to, attain water quality standards after application of required technology-based controls. This list, known as the 303(d) list, serves to focus water quality efforts and resources toward the most significant water quality problems.

Waterbodies are placed on the 303(d) list if any uses were either "not" supported or "partially" supported for any beneficial use with the following exceptions:

1. Waterbodies where the sources of elevated constituents are most likely natural (i.e., chlorides, sulfates, and boron in areas where natural levels of these constituents are high).
2. Waterbodies for which color and/or turbidity (aesthetic constituents) for contact and non-contact recreation uses are the only elevated constituents. We did not separate wet weather sampling from dry weather sampling and these two constituents should be sampled on a more frequent and consistent basis in order to be sure that they are problems. They are noted, however, in the general 305(b) assessment.

3. Waterbodies that had only trash and/or algae impairing contact or non-contact recreation. Staff felt that these problems alone, did not make a waterbody eligible for listing given the more serious nature of other water quality problems in the Los Angeles area. Only a few waterbodies were exempted from the 303(d) list for this reason. The East Fork San Gabriel River, however, was included on the 303(d) list because removing the trash (and graffiti) problem from this waterbody would significantly enhance this otherwise pristine area.

The Regional Board will use a variety of approaches to address water quality problems affecting waters on the 303(d) list. In addition to water quality controls in Waste Discharge Requirements, these approaches may include: new watershed-based management efforts, enhanced stormwater programs for releases from municipal, industrial, and construction sources, and estimates of total maximum daily loads (TMDLs) of pollutants. TMDLs are a way to quantify pollutants loads from point and nonpoint sources, and can be used to allocate allowable loads in order to meet water quality standards.

TMDL priorities (high, medium, or low) on the draft 303(d) list, sent to the public in December, 1995, were based on a combination of many factors, including the severity of the problems, the value of the resources, the watershed schedule, staff resources and practicality/availability of solutions. As a result of discussions with staff from dischargers and members of the public, all TMDL priorities were downgraded to low with the exception of the targeted high priority efforts (Los Angeles River-nitrate and Malibu Creek-nutrients) already underway on two watersheds. The priority of all future TMDLs will be discussed and evaluated by stakeholder groups under the Watershed Approach. Staff and stakeholder resources will be key factors in determining the number of TMDLs we can undertake in the future.

As mentioned above, TMDL efforts are already underway for the Los Angeles River and Malibu Creek watersheds. Other efforts to estimate and reduce pollutant loadings will be initiated as the Watershed Initiative in the Los Angeles Region proceeds and as Regional Board resources allow.

305(b) Water Quality Assessment & 303(d) List of Impaired Waters

Item #6
May 31, 2001
Los Angeles Regional
Water Quality Control Board

Update Schedule and Process

- Fall 2000 - targeted solicitation for data
- March 5, 2001 - sweeping solicitation for data from all interested parties
- May 15, 2001 - data submittal deadline

Data Submission

- Data received from approximately 25 agencies and individuals
 - Dischargers
 - Watershed groups
 - Environmental groups
 - Municipalities
 - Lake associations
 - Water suppliers
 - State and federal agencies

Current Status

- Checking data and transferring to in-house database
 - Data in different formats
 - Significant effort to combine databases
- Reviewing assessment guidelines

Next Steps

- Summer 2001
 - Analyze data by watershed
 - Determine support status for 305(b)
 - Identify waters not achieving water quality standards
- Fall 2001
 - Recommend to State Board changes to 303(d) list of impaired waters

Assessment Guidelines

- Starting point: Guidelines used in 1996
- Review & revise based on more recent U.S. EPA guidance
- U.S. EPA beneficial use categories:
 - Fish consumption, shellfish harvesting
 - Aquatic life
 - Swimming, non-contact recreation
 - Drinking water supply
 - Agriculture

Assessment Guidelines

- Conventional pollutants & stressors (e.g., dissolved oxygen, pH, temperature)
 - “Fully supporting” if <10% of samples exceed water quality standard
 - “Partially supporting” if 10-25% exceed
 - “Not supporting” if >25% exceed

Assessment Guidelines

- Toxic Substances (e.g., priority pollutants, ammonia)
 - Fully supporting if no more than 1 violation of chronic criteria within a 3-year period
 - Partially supporting if criteria exceeded more than once but ≤10% of samples
 - Not supporting if criteria exceeded in >10%

Assessment Guidelines

- Drinking Water Standards
 - Fully supporting: No contaminants where median concentration exceeds standard
 - Not supporting: One or more contaminants where the median concentration exceeds standard

Assessment Guidelines

- Bacteria objectives for recreation
 - Fully supporting: Geometric mean standard & threshold standard met
 - Partially supporting: Geometric mean met, but threshold standard exceeded
 - Not supporting: Neither standard met
- Beach closures

Assessment Guidelines

- Fish and shellfish consumption
 - Fully supporting: No restrictions or bans
 - Partially supporting: Restricted consumption
 - Not supporting: “No consumption” ban

Assessment Guidelines

- Other guidelines will be evaluated where EPA guidance does not exist:
 - sediment chemistry
 - benthic community effects
 - fish tissue contamination
- Where possible, use 20 data points over 6-year period
- If not possible, a minimum of 3 and revise criteria to >40% of samples for “Not Supporting”

Public Input

- Accept comments on Assessment Guidelines until June 30, 2001
- Will hold workshop to present final guidelines based on our review and comments received