6. Antidegradation

This chapter of the staff report provides the regulatory analyses required to determine if the proposed WQO Update Amendment is consistent with federal and state antidegradation policies.

Both USEPA and the State Water Board have adopted antidegradation policies as part of an approach to develop water quality standards and regulate the discharge of waste.

Clean Water Act (CWA) Section 303(c) requires that states adopt and modify, as appropriate, water quality standards for surface waters that protect public health and welfare, enhance the quality of water, and serve the purposes of the CWA. A water quality standard defines the water quality goals of a waterbody by:

- Designating the use or uses to be made of the water (beneficial uses);
- Setting numeric and/or narrative water quality objectives necessary to protect those uses; and
- Preventing degradation of water quality through antidegradation provisions.[1]

Water quality objectives must be based on sound scientific rationale and protect the beneficial uses of the receiving water.[2] Regional water boards must adopt water quality objectives that reasonably protect beneficial uses and prevent nuisance.[3]

The federal antidegradation policy requires that existing instream designated uses and the level of water quality necessary to protect the existing uses be maintained and protected.[4] As defined in the federal policy,[5] existing uses are those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards. Where, however, the quality of the water exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and out of the water, that quality must be maintained and protected unless the state finds that:

1. Such activity is necessary to accommodate important economic or social development in the area in which the waters are located;
2. Water quality is adequate to protect existing beneficial uses fully; and
3. The highest statutory and regulatory requirements for all new and existing point source discharges and all cost-effective and reasonable best management practices for nonpoint source control are achieved.[6]

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1 U.S. EPA, Guidance re: Antidegradation; regulatory interpretation of 40 C.F.R. § 131.12(a)(2), March 1994.
2 40 C.F.R. § 131.11.
3 Wat. Code § 13241.
4 40 C.F.R. § 131.12.
5 40 C.F.R. § 131.3(e).
6 40 C.F.R. § 131.12.

The federal policy also requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in 1968 with adoption of the *Statement of Policy for Respect to Maintaining High Quality of Waters in California* (state Antidegradation Policy).[7] The state Antidegradation Policy is considered to incorporate the federal Antidegradation Policy where the federal policy applies.[8]

The state Antidegradation Policy expresses the State Water Board's intent that the quality of existing high quality waters be maintained to the maximum extent possible. The state antidegradation Policy, unlike the federal policy, applies to both groundwater and surface waters whose quality meets or exceeds (are better than) water quality objectives.

The state Antidegradation Policy requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The state Antidegradation Policy allows for the lowering of water quality only if the change:

- Is consistent with the maximum benefit to the people of the state;
- Will not unreasonably affect present and anticipated beneficial uses of waters; and
- Will not result in water quality less than that prescribed in applicable policies.

In addition, before any degradation of water quality is permitted, it must be shown that the discharge will be required to meet waste discharge requirements that result in best practicable treatment or control of the discharge necessary to assure that:

- Pollution or nuisance will not occur;
- The highest water quality consistent with maximum benefit to the people of the state is maintained.

Issues of antidegradation are considered by the Regional Water Board when issuing, reissuing, amending, or revising permits and orders if there is the potential for water quality degradation from the discharge. Antidegradation analyses are routinely prepared as part of the Regional Water Board's permit and order adoption process.

The proposed WQO Update Amendment itself does not directly authorize any discharges to either surface waters or groundwaters. The four principal elements of the WQO Update Amendment are: 1) the addition of a groundwater toxicity objective; 2) the revision of the chemical constituents objective to delete outdated chemical specific numeric objectives; 3) the revision of the dissolved oxygen (DO) objective for surface waters; and 4) the addition of clarifying language on the implementation of water quality objectives. The groundwater

[7] State Water Board Resolution No. 68-16.
[8] State Water Board Order WQO 86-17.

toxicity objective is a narrative objective, which is subject to applicable statewide and regional policies when narrative objectives are translated into numeric forms for the purpose of permits, orders, and other regulatory actions.

The amendment of the water quality objectives proposed as part of this recommended action is important within the context of the Antidegradation Policy inasmuch as the water quality objectives are the basis for defining high quality waters (e.g., ambient waters better than water quality objectives). This is specifically true with respect to the proposed revisions to the chemical constituents objective and the DO objectives.

The proposed revisions to the DO objectives include an update to the daily minimum DO objectives to address acute DO stress, as well as the addition of average DO objectives designed to protect against chronic DO stress conditions for aquatic organisms. They also establish as the ambient water quality objective, natural background DO conditions in those waters judged to exceed aquatic life-based objectives due to natural conditions. In both cases, the definition of high quality waters has been explicitly tied to either the protection of the most sensitive aquatic receptors, or natural background, as appropriate. Ambient water quality that is better than that which is needed to protect the most sensitive aquatic receptors is appropriately defined as high quality, as are natural background conditions.

The proposed revision to the chemical constituents objective includes two parts. One is to expand the narrative objective to protect all beneficial uses from the adverse effects of chemical constituents. The other is to replace the existing chemical-specific numeric objectives (i.e. Table 3-2) with the prospective incorporation of Title 22 primary and secondary MCLs. As described in more detail below, there are 7 constituents for which the MCL is higher than the existing numeric water quality objective, offering the potential for a reduction in the number of those waters which would be defined as high quality, with respect to the noted 7 constituents. As shown in Table 7-1, the constituents in question are: 2,4,5-TP (Silvex), endrin, ethylene dibromide, lead, monochlorobenzene, selenium, and silver. This potential, however, is offset by the expansion of the narrative objective to apply to the protection of all beneficial uses. This is because, when the narrative objective is translated into numeric threshold values in permits, orders, or other regulatory actions, the MCL is treated as the ceiling, whereas much lower numeric values otherwise generally apply.

It can be difficult to compare the existing values in Table 3-2 with the values that will be based on the narrative process, since the application of appropriate numeric values is waterbody-specific. For example a publically owned treatment works (POTW), cleanup site and discharge of waste to land (i.e, winery process water) would each have different discharges, site characteristics, and relevant policies. The variability in the region adds to the complexity. A comparison of Table 3-2 and the current Maximum Contaminant Levels (MCLs) in Title 22 is presented in Table 7-1. This comparison indicates the need to look

more closely at a few constituents to ensure that backsliding would not occur based on the current levels present in Table 3-2. Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Staff analyzed information regarding these constituents to in order to determine if backsliding under the antidegradation policies could be a potential issue.

The MCL values for endrin and monochlorobenzene presented in Table 3-2 are lower than those more recently established under Title 22 to protect drinking water supplies at 2.0 micrograms per liter (µg/L) and 70 µg/L, respectively. In comparison the current Basin Plan values for endrin and monochlorobenzene are 0.2 µg/L and 30 µg/L, respectively. However, based on a review of the Water Quality Goals online database, it is apparent that when determining a numeric limit that would be protective of the most sensitive use, a number would be chosen that would be more protective than the current MCLs to meet antidegradation requirements. For example the USEPA National Recommended Water Quality Criteria for Human Health & Welfare Protection values for endrin and monochlorobenzene are 0.06 µg/L and 20 µg/L, respectively. These values are appropriate to use in regulatory actions as they are intended to protect drinking water for human consumption and would be used in the context of protecting the municipal and domestic water supply (MUN) beneficial uses.

Silver currently has an MCL of 100 µg/L, while an earlier MCL included in Table 3-2 is 50µg/L. However, by implementing the narrative toxicity objective staff can readily find the appropriate drinking water health advisories or suggested no-adverse-response levels for non-cancer health effects. For instance USEPA has developed an Integrated Risk Information System (IRIS) Reference dose (RfD) of 35µg/L for silver. Therefore, through the application of the narrative water quality objectives and Policy there will be no relaxation or backsliding.

Lead has been listed in Table 3-2 since the 1975 version of the Basin Plan. The MCL for lead listed in Table 3-2 is currently 50 µg/L. However, Title 22 does not currently contain an MCL for lead. Although, the USEPA Primary MCL for lead is 15 µg/L and even more applicable for the protection of the MUN beneficial use is the California Office of Environmental Health and Hazard Assessment (OEHHA) Public Health Goal (PHG) of 0.2 µg/L. Therefore, through the application of the narrative water quality objective there will be no relaxation or backsliding.

Fluoride MCLs currently listed in Table 3-2 are dependent on the average annual maximum daily air temperature ranging from 600 µg/L to 2,400 µg/L. Title 22 no longer specifies temperature dependent MCLs for fluoride. Rather, a single MCL value of 2,000 µg/L has been set for fluoride and is contained in the Title 22 section pertaining to inorganic

chemical MCLs. However, the OEHHA PHG is set at 1,000 µg/L, while the USEPA IRIS RfD is set at 420 µg/L. Therefore, through the application of the narrative water quality objectives there will be no relaxation or backsliding.

2,4,5-TP (Silvex) currently has an MCL of 50 µg/L, while an earlier MCL included in Table 3-2 is 10 µg/L. However, the USEPA national recommended water quality criterion for water consumption is 10 µg/L and the OEHHA PHG is 3.0 µg/L. Therefore, through the application of the narrative water quality objective there will be no relaxation or backsliding.

Ethylene Dibromide currently has an MCL of 0.05 µg/L, while an earlier MCL included in Table 3-2 is 0.02 µg/L. However, the USEPA IRIS RfD of 0.02µg/L and the OEHHA PHG is 0.01 µg/L. Therefore, through the application of the narrative water quality objective there will be no relaxation or backsliding.

While there is complexity in the existing regulation it can be reduced to two simple concepts: 1) the application of narrative and numeric water quality objective to protect beneficial uses; and 2) the maintenance of high quality waters. The proposed WQO Update Amendment not only adds explicit language to the revised water quality objectives it adds additional language to clarify the application of water quality objectives and the Antidegrdation Policies. The existing regulatory process, as described in this Staff Report, will result in staff recommending a value that is protective of the most sensitive beneficial use of water (e.g., municipal and domestic supply, aquatic-resource related beneficial uses), in a manner identical to the historical process it has undertaken in the absence of such explicit basin plan language. This approach will ensure that there is a process in place to appropriately determine waterbody-specific water quality limits to protect against degradation that would unreasonably affect the most sensitive beneficial use.

Table 6-1
Existing Basin Plan Objectives for Chemical Constituents Vs.
Current Title 22 Maximum Contaminant Levels

Constituent	Basin Plan Table 3-2 (or Radioactivity Objective)	Current Title 22 MCL	Units	Most Stringent
1,1,1-Trichloroethane	0.200	0.200	mg/L	Same
1,1,2,2-Tetrachloroethane	0.001	0.001	mg/L	Same
1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2	1.2	mg/L	Same
1,1,2-Trichloroethane	0.032	0.005	mg/L	Title 22
1,1-Dichloroethane	0.005	0.005	mg/L	Same
1,1-Dichloroethylene	0.006	0.006	mg/L	Same
1,2,4-Trichlorobenzene	N/A	0.005	mg/L	Title 22
1,2-Dichlorobenzene	N/A	0.6	mg/L	Title 22
1,2-Dichloroethane	0.0005	0.0005	mg/L	Same
1,2-Dichloropropane	0.005	0.005	mg/L	Same
1,3-Dichloropropene	0.0005	0.0005	mg/L	Same
1,4-Dichlorobenzene	0.005	0.005	mg/L	Same
2,3,7,8-TCDD (Dioxin)	N/A	3E-08	mg/L	Title 22
2,4,5-TP (Silvex)	0.01	0.05	mg/L	Table 3-2
2,4-D	0.1	0.07	mg/L	Title 22
Alachlor	N/A	0.002	mg/L	Title 22
Aluminum	Only as MCL	0.2	mg/L	Title 22
Aluminum	1.0	1.0	mg/L	Same
Antimony	N/A	0.006	mg/L	Title 22
Arsenic	0.05	0.010	mg/L	Title 22
Asbestos	N/A	7000	MFL	Title 22
Atrazine	0.003	0.001	mg/L	Title 22
Barium	1.0	1.0	mg/L	Same
Bentazon	0.018	0.018	mg/L	Same
Benzene	0.001	0.001	mg/L	Same
Benzo(a)Pyrene	N/A	0.0002	mg/L	Title 22
Beryllium	N/A	0.004	mg/L	Title 22
Cadmium	0.01	0.005	mg/L	Title 22
Carbofuran	0.018	0.018	mg/L	Same
Carbon Tetrachloride	0.0005	0.0005	mg/L	Same
Chlordane	0.0001	0.0001	mg/L	Same
Chloride	N/A	250	mg/L	Title 22
Chromium	0.05	0.05	mg/L	Same
cis-1,2-Dichloroethylene	0.006	0.006	mg/L	Same
Color	N/A	15	Units	Title 22

Table 6-1
Existing Basin Plan Objectives for Chemical Constituents Vs.
Current Title 22 Maximum Contaminant Levels

Constituent	Basin Plan Table 3-2 (or Radioactivity Objective)	Current Title 22 MCL	Units	Most Stringent
Combined Radium-226 and Radium-228	5	5	pCi/L	Same
Copper	N/A	1	mg/L	Title 22
Cyanide	N/A	0.15	mg/L	Title 22
Dalapon	N/A	0.2	mg/L	Title 22
Di(2-ethylhexyl)adipate	N/A	0.4	mg/L	Title 22
Di(2-ethylhexyl)phthalate	0.004	0.004	mg/L	Same
Dibromochloropropane (a.k.a. 1,2-Dibromo-3-chloropropane)	0.0002	0.0002	mg/L	Same
Dichloromethane	N/A	0.005	mg/L	Title 22
Dinoseb	N/A	0.007	mg/L	Title 22
Diquat	N/A	0.02	mg/L	Title 22
Endothall	N/A	0.1	mg/L	Title 22
Endrin	0.0002	0.002	mg/L	Table 3-2
Ethylbenzene	0.680	0.3	mg/L	Title 22
Ethylene Dibromide	0.00002	0.00005	mg/L	Table 3-2
Fluoride	0.6 to 2.4	2.0	mg/L	
Foaming Agents (MBAS)	N/A	0.5	mg/L	Title 22
Glyphosate	0.7	0.7	mg/L	Same
Gross Alpha particle activity (including Radium-226 but excluding Radon and Uranium)	15	15	pCi/L	Same
Gross Beta particle activity	50	50	pCi/L	Same
Heptachlor	0.00001	0.00001	mg/L	Same
Heptachlor Epoxide	0.00001	0.00001	mg/L	Same
Hexachlorobenzene	N/A	0.001	mg/L	Title 22
Hexachlorocyclopentadiene	N/A	0.05	mg/L	Title 22
Iron	N/A	0.3	mg/L	Title 22
Lead	0.05	N/A	mg/L	Table 3-2
Lindane	0.004	0.0002	mg/L	Title 22
Manganese	N/A	0.05	mg/L	Title 22
Mercury	0.002	0.002	mg/L	Same
Methoxychlor	0.1	0.03	mg/L	Title 22
Methyl-tert-butyl ether (MTBE)	N/A	0.013	mg/L	Title 22
Methyl-tert-butyl ether (MTBE)	N/A	0.005	mg/L	Title 22
Molinate	0.02	0.02	mg/L	Same

Table 6-1
Existing Basin Plan Objectives for Chemical Constituents Vs.
Current Title 22 Maximum Contaminant Levels

Constituent	Basin Plan Table 3-2 (or Radioactivity Objective)	Current Title 22 MCL	Units	Most Stringent
Monochlorobenzene	0.030	0.07	mg/L	Table 3-2
Nickel	N/A	0.1	mg/L	Title 22
Nitrate+Nitrite (sum as nitrogen)	N/A	10.0	mg/L	Title 22
Nitrate-N (as NO_3)	45.0	45.0	mg/L	Same
Nitrite (as nitrogen)	N/A	1.0	mg/L	Title 22
Odor-Threshold	N/A	3	Units	Title 22
Oxamyl	N/A	0.05	mg/L	Title 22
Pentachlorophenol	N/A	0.001	mg/L	Title 22
Perchlorate	N/A	0.006	mg/L	Title 22
Picloram	N/A	0.5	mg/L	Title 22
Polychlorinated Biphenyls	N/A	0.0005	mg/L	Title 22
Selenium	0.01	0.05	mg/L	Table 3-2
Silver	0.05	0.1	mg/L	Table 3-2
Simazine	0.010	0.004	mg/L	Title 22
Specific Conductance	N/A	900	µS/cm	Title 22
Strontium-90	8	8	pCi/L	Same
Styrene	N/A	0.1	mg/L	Title 22
Sulfate	N/A	250	mg/L	Title 22
Tetrachloroethylene	0.005	0.005	mg/L	Same
Thallium	N/A	0.002	mg/L	Title 22
Thiobencarb	Only as MCL	0.001	mg/L	Title 22
Thiobencarb	0.07	0.07	mg/L	Same
Toluene	N/A	0.15	mg/L	Title 22
Total Dissolved Solids	N/A	500	mg/L	Title 22
Toxaphene	0.005	0.003	mg/L	Title 22
trans-1,2-Dichloroethylene	0.01	0.01	mg/L	Same
Trichloroethylene	0.005	0.005	mg/L	Same
Trichlorofluoromethane	0.15	0.15	mg/L	Same
Tritium	20000	20000	pCi/L	Same
Turbidity	N/A	5	Units	Title 22
Uranium	20	20	pCi/L	Same
Vinyl Chloride	0.0005	0.0005	mg/L	Same
Xylenes	1.750	1.750	mg/L	Same
Zinc	N/A	5	mg/L	Title 22

mg/L – milligrams per liter / N/A – not applicable / µS/cm – microSiemens per centimeter / pCi/L – picocures per liter
Shading indicates where numeric values were lower within Table 3-2 of the existing Basin Plan as compared to the values current MCLs