

## Draft Policy No. X: Secondary Maximum Contaminant Levels

### 1.0 Problem Statement

Secondary Maximum Contaminant Levels (SMCL) established by Title 22 of the California Code of Regulations (22 CCR)<sup>1</sup> are incorporated by reference in the Chemical Constituent sections in the Water Quality Objectives Chapter of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (SRSJR Basin Plan) and the Water Quality Control Plan for the Tulare Lake Basin (TLB Basin Plan) (collectively referred to hereafter as “Central Valley Basin Plans” or “Basin Plans”). The only portions of 22 CCR related to SMCLs and incorporated into the Basin Plans are Tables 64449-A and 64449-B, which includes “Recommended”, “Upper”, and “Short Term” concentrations for Total Dissolved Solids (TDS),<sup>2</sup> or Specific Conductance (or Electrical Conductivity [EC]), chloride and sulfate. Neither the text providing context for the tables nor guidance for utilizing the “Recommended”, “Upper”, or “Short Term” concentrations were included during the incorporation of the 22 CCR tables, because they were not adopted as water quality objectives. This dual use has led to confusion and inconsistencies between intent and application of the values provided.

Unlike primary MCLs that are set at levels to protect public health, SMCLs are drinking water standards set to protect the odor, taste, and appearance of drinking water,<sup>3</sup> based on consumer acceptance levels, or in other words, based on consumer acceptance with respect to taste and odor. When determining attainment with SMCLs in drinking water, as it is served to consumers, attainment is measured in the groundwater source or at distribution system entry points. This essentially means that the drinking water standard applies after the water has been treated, which in many cases means that water has been filtered. Comparatively, when SMCLs are used applied directly in the waterbody or at a point of discharge as water quality objectives, these values have been applied directly to the water body, which practices do not account for the natural treatment through the soil substrate or treatment has not been treated or filtered through a water treatment plant (including filtration). As a practical matter, this means that a water body, such as a river, must meet the SMCL in its raw water state even though the water itself would not be served to consumers without some form of treatment or filtration. Further, and as indicated above, SMCLs are based on consumer acceptance and are not set at levels for the protection of public health.

The purpose of this recommended SNMP Policy is to clarify in the Basin Plans how SMCLs would be interpreted and used as water quality objectives in Central Valley Regional Water Quality Control Board (Central Valley Water Board) actions that implement the objectives, such as when the Board is developing Waste Discharge Requirements (WDRs)<sup>3</sup> or Conditional Waivers<sup>4</sup> (“Waivers”) that authorize discharges to surface water or groundwater. In general, there are two types of SMCLs addressed in this recommended policy: Those associated with salinity (e.g., TDS or EC), and those associated with other types of constituents (e.g., metals). The salinity based SMCLs are expressed in ranges, which has created some confusion as to how the values in the various ranges should be applied to waters of the state when used as water quality objectives. With respect to the SMCLs associated with metals, there has

<sup>1</sup> California Code of Regulations Title 22 – Social Security; Division 4 – Environmental Health; Chapter 15 – Domestic Water Quality and Monitoring Regulations, Article 16 Secondary Drinking Water Standards.

<sup>2</sup> Title 22 section 64481(b)(2).

<sup>3</sup> Water Code, section 13263. This includes National Discharge Pollutant Elimination System (NPDES) permits.

<sup>4</sup> Water Code, section 13269.

**Commented [DW1]:** The table describes these as ranges. Exact ranges included.

**Commented [DW2]:** Not sure what this is referring to. It makes it seem like it was intentional that these were left out. I don't think this was the case, and was only implemented that way until after the SWB Decision. Does not add to description. Recommend deletion.

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been significant discussion with respect to apply the SMCLs to water samples that measure the amount of total metals in the water, or against dissolved water samples that would measure the amount of metals that would essentially exist if the water sample was served to consumers as filtered water.

## 1.1 Existing Regulatory Requirements

### **Chemical Constituents Water Quality Objective**

The Central Valley Basin Plans state the following with regards to chemical constituents and the protection of surface and ground waters designated with a Municipal and Domestic Supply (MUN) beneficial use:<sup>5</sup>

*At a minimum, water designated...MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect...The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances.<sup>6</sup>*

The above referenced SMCL tables, Tables 64449-A and 64449-B from 22 CCR are provided below. These tables list the chemical constituents along with their respective maximum contaminant levels for Table 64449-A or “Recommended”, “Upper”, and “Short Term” level [range](#)s for Table 64449-B.

While the 22 CCR §64449 tables are referenced in the Central Valley Basin Plans, the associated text contained in 22 CCR §64449, [particularly in subsections](#) (d) and (e), ~~which~~ provides context for the listed values, [and](#) is not currently included or referenced in the Basin Plans. Attachment A to this policy provides the full text of §64449. Additionally, for surface waters, text in the Basin Plans as provided above references the applicability of state and federal drinking water regulations to water served for human consumption, but provides no guidance on its implementation.

### **Related Water Quality Objectives**

In addition to the TDS and EC values included in Table 64449-B<sup>7</sup>, the SRSJR Basin Plan also establishes water body-specific objectives for EC and TDS in Table III-3. Per the SRSJR Basin Plan, where any conflict exists between the Table III-3 objectives and chemical constituents water quality objectives, as

<sup>5</sup> (a) Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (SRSJR Basin Plan). Fourth Edition. Central Valley Water Quality Control Board. Revised October 2011. See p. III-3.00 for inland waters and p. III-10.00 for groundwater; (b) Water Quality Control Plan for the Tulare Lake Basin (TLB Basin Plan). Second Edition. Central Valley Water Quality Control Board. Revised October 2011. See p. III-3 for inland waters and p. III-7 for groundwater.

<sup>6</sup> The last sentence regarding consumption of surface waters is found only in the Chemical Constituent water quality objectives section for inland waters.

<sup>7</sup> [Values for the secondary MCL for salinity can be expressed as TDS or EC.](#)

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referenced in 22 CCR Table 64449-B, the more stringent objectives shall apply.<sup>8</sup> Similarly, the TLB Basin Plan establishes water body-specific objectives for EC ~~and TDS~~ in Tables III-2 and III-3.<sup>9</sup> All of these water body-specific objectives are lower than the SMCLs referenced in Table 64449-B.<sup>10</sup> Accordingly, the proposed recommendations in this policy would not affect the applicability of these water body-specific objectives, and the SNMP does not propose to make any recommendations otherwise that would affect the water body-specific objectives for TDS ~~and/or~~ EC as established in the Basin Plans.

**Commented [DW3]:** These are EC values. Note that the Tulare Lake basin plan specifically states that one way to measure salinity is by EC. "Conductivity is one of the recommended methods to determine salinity. The objectives for electrical conductivity in Table III-2 apply to the water bodies specified. Table III-3 specifies objectives for electrical conductivity at selected streamflow stations."

**Table 64449-A  
Secondary Maximum Contaminant Levels  
"Consumer Acceptance Contaminant Levels"**

Constituents	Maximum Contaminant Levels/Units
Aluminum	0.2 mg/L
Color	15 Units
Copper	1.0 mg/L
Foaming Agents (MBAS)	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Methyl- <i>tert</i> -butyl ether (MTBE)	0.005 mg/L
Odor – Threshold	3 Units
Silver	0.1 mg/L
Thiobencarb	0.001 mg/L
Turbidity	5 Units
Zinc	5.0 mg/L

**Table 64449-B  
Secondary Maximum Contaminant Levels  
"Consumer Acceptance Contaminant Level Ranges"**

Constituents, Units	Recommended	Upper	Short Term
Total Dissolved Solids (TDS), mg/L, or Specific Conductance, µS/cm <sup>11</sup>	500	1,000	1,500
	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

**Other Relevant Regulatory Requirements**

*Natural Background Concentrations*

<sup>8</sup> SRSJR Basin Plan. See p. III-6.02 and Table III-3 on p. III-7.00.

<sup>9</sup> TLB Basin Plan. pp. III-5 and III-6.

<sup>10</sup> Table III-3 in the SRSJR Basin Plan and Tables III-2 and III-3 in the TLB Basin Plan include explanatory text or table notes that provide additional information regarding application of water body-specific objectives. These notations are critical for making a determination of compliance with a water body-specific objective.

<sup>11</sup> For the purposes of this policy, Specific Conductance is expressed as Electrical Conductivity.

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Consideration of the natural background concentration of a constituent relative to a water quality objective is addressed in each Basin Plan as follows:

- The TLB Basin Plan states that, “*The objectives of this plan do not require improvement over naturally occurring background concentrations.*”<sup>12</sup> This finding applies to both inland surface water and groundwater quality objectives.<sup>13</sup>
- The SRSJR Basin Plan states that, “*These objectives do not require improvement over naturally occurring background concentrations.*”<sup>14</sup> *To date, this statement has only been applied to groundwaters.*<sup>15</sup>
- Both the SRSJR and TLB Basin Plans include the following text within Chapter 4 of the Basin Plans (Policy for Application of Water Quality Objectives): *However, the water quality objectives do not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.*<sup>16</sup>

**Commented [DW4]:** Not sure if this is true. Better not to say it or to mirror what is said above. This finding applies to groundwaters.

Per the above Basin Plan statements, natural background should be considered when establishing WDRs. Consideration of natural background concentrations of TDS or EC is important in many areas of the Central Valley. The TLB Basin Plan also includes specific salinity implementation provisions in Chapter 4 governing consumptive use and controlled degradation. In particular:

- Discharges to Navigable Waters “...shall not exceed the quality of the source water plus 500 micromhos per centimeter or 1,000 micromhos per centimeter, whichever is more stringent...”<sup>17</sup>
- For Discharges to Land “...maximum EC shall not exceed the EC of the source water plus 500 micromhos/cm.”<sup>18</sup>
- Water quality objectives for groundwater salinity are based on a maximum average annual increase measured as electrical conductivity, recognizing that, “no proven means exist at present that will allow ongoing human activity in the Basin and maintain ground water salinity at current levels in the Basin.”<sup>19</sup>

### State Water Quality Control Board Policies

*Statement of Policy with Respect to Maintaining High Quality of Waters in California (State Antidegradation Policy, Resolution 68-16)*

<sup>12</sup> TLB Basin Plan, p. III-2.

<sup>13</sup> This Basin Plan language is superseded by the State Implementation Plan, which specifies how to derive effluent limitations for NPDES dischargers for priority pollutants in surface waters. Also, for surface waters the EPA only allows consideration of natural background for aquatic life constituents and not human health constituents.

<sup>14</sup> SRSJR Basin Plan, p. III-9.00.

<sup>15</sup> See previous footnote.

<sup>16</sup> SRSJR Basin Plan, p. IV-17.00; TLB Basin Plan, p. IV-21.

<sup>17</sup> TLB Basin Plan, p. IV-10.

<sup>18</sup> TLB Basin Plan, p. IV-11.

<sup>19</sup> TLB Basin Plan, p. IV-20.

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The State Water Resources Control Board's (State Water Board) Antidegradation Policy applies to both surface waters and groundwaters.<sup>20</sup> This policy generally prohibits the Central Valley [Regional Water Board](#) from authorizing discharges that will degrade "high quality waters," unless the Central Valley [Regional Water Board](#) first finds that [any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies. The discharge will be required to meet waste discharge requirements which result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance will not occur and \(1\) the degradation is highest water quality](#)-consistent with the maximum benefit to people of the state [will be](#) ~~(2) the discharge will be controlled through the use of "best practicable treatment or control" methodologies; and (3) the discharge will not unreasonably affect present and potential beneficial uses.~~ [High maintained High](#) quality waters are those waters that are generally better than applicable water quality objectives. A determination of high quality is made on a constituent-by-constituent basis.

### *Sources of Drinking Water Policy (Resolution 88-63)*

The Sources of Drinking Water Policy establishes a policy whereby all waters are considered suitable or potentially suitable to support the MUN beneficial use, with certain exceptions.<sup>21</sup> The Central Valley Basin Plans implement this policy by generally assigning an existing or potential MUN beneficial use to all surface waters and groundwaters in the Central Valley unless those waters have already been identified as not supporting the MUN use in the Basin Plans or met the exceptions as of 1989 when the Policy was adopted into the Basin Plans. One of the exception criteria is that TDS exceeds 3,000 mg/L (5,000 µS/cm, EC) in the water body and it is not reasonably expected by a Regional Board that the water body would be used as a public water supply. These TDS or EC exception criteria are much higher than the range of acceptable SMCLs for TDS or EC in Table 64449-B ("Short Term" acceptable contaminant level of 1,500 mg/L TDS or 2,200 µS/cm EC), and would be unacceptable for drinking water [without treatment](#).

## 1.2 Challenges with Application of Existing Basin Plan Language

### ***Total Dissolved Solids or Electrical Conductivity***

In the mid-1990s, the Central Valley Water Board modified its Chemical Constituents objective language in the Basin Plan, which incorporates water quality objectives for salinity, either as TDS or EC (Specific Conductance in Table 64449-B), to protect the MUN beneficial use. This new objective was established by reference to state SMCL drinking water standards identified in 22 CCR Table 64449-B. None of the other associated text from §64449, i.e., §64449(d) or (e), explaining how the SMCLs were supposed to be implemented, was incorporated with the table values. For example, 22 CCR Table 64449-B indicates three "Consumer Acceptance Contaminant Level Ranges". For TDS, the "Recommended" value is 500 mg/L, but per the associated text found in 22 CCR §64449(d)(2), concentrations ranging up to an

<sup>20</sup> State Water Board Resolution 68-16. Statement of Policy with Respect to Maintaining High Quality of Waters in California (Antidegradation Policy). 1968.

<sup>21</sup> State Water Board Resolution No. 88-63. Sources of Drinking Water Policy, May 19, 1988, as revised by Resolution No. 2006-0008.

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“Upper” value of 1,000 mg/L are also “acceptable,” if it is neither reasonable nor feasible to provide more suitable waters.<sup>22</sup>

In September 2007, the Central Valley Water Board issued a WDR and a Master Reclamation Permit to the City of Lodi.<sup>23</sup> Subsequently, in October 2007, the California Sportfishing Protection Alliance (CALSPA) filed a petition with the State Water Board seeking review of the aforementioned permit.

In June 2009, the Central Valley Water Board submitted written comments to the State Water Board opposing CALSPA's claim that only the “Recommended” values at the lower end of the range of SMCLs for drinking water<sup>24</sup> can be used as water quality objectives when developing WDRs or effluent limits. The Central Valley Water Board noted that such an approach would be more stringent than and inconsistent with the manner in which the California Department of Health Services (now the Division of Drinking Water [DDW]) implements these same standards on treated drinking water systems. The Central Valley Water Board also stated that there should be some exception made when the natural background concentration of one or more constituents in the receiving water exceeds the SMCL.

In July 2009, the State Water Board adopted Order WQ 2009-0005,<sup>25</sup> which remanded in part the Lodi permit, and directed the Central Valley Water Board to consider further if releases of wastewater from the unlined storage ponds have caused groundwater to exceed applicable Basin Plan objectives for nitrate<sup>26</sup> and electrical conductivity.<sup>27</sup> In the adopted order, the State Water Board noted that the Chemical Constituents narrative water quality objective in the SRSJR Basin Plan<sup>28</sup> incorporates only the SMCLs specified in tables from 22 CCR §64449 with their numeric values and does not specifically reference the monitoring, reporting, waiver or other provisions that provide context for application of the values in those tables (e.g., see Attachment A to this policy, in particular the provisions contained in §64449(d) and (e)). The State Water Board also found that the “Short Term” value of 2,200 µS/cm EC (1,500 mg/L TDS) is not appropriate (as an applicable water quality objective) because it is “intended to apply only on a temporary basis pending construction of water treatment facilities or the development of new water sources”.<sup>29</sup>

While the focus of the State Water Board decision was on the SRSJR Basin Plan, the TLB Basin Plan also provides limited additional context for application of the relevant 22 CCR §64449 tables. Consequently, neither of the Central Valley Basin Plans provides much guidance or policy on implementation when the Central Valley Water Board is developing WDRs to implement these particular objectives. Without this information, implementation of the water quality objectives for chemical constituents in Table 64449-B as related to SMCLs creates significant challenges for the following reasons:

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<sup>22</sup> 22 CCR §64449(d)(2).

<sup>23</sup> Central Valley Water Board Order No. R5-2007-0113; NPDES No. CA0079243.

<sup>24</sup> See “Recommended” column in Table 64449-B from 22 CCR.

<sup>25</sup> Order WQ 2009-0005 was later amended by Order WQ 2012-0001. The amendments adopted to Order WQ 2009-0005 were unrelated to the salinity provisions discussed herein. However, to ensure proper citations to the relevant order, we have provided citations to Order WQ 2009-0005, as amended by Order WQ 2012-0001.

<sup>26</sup> Note that nitrate has a primary maximum contaminant level (22 CCR §64431, Table 64431-A) and is not affected by this policy.

<sup>27</sup> State Water Board Order WQ 2012-0001, p. 23.

<sup>28</sup> SRSJR Basin Plan, See Pg. III-3.00 for inland surface waters and Pg. III-10.00 for groundwater.

<sup>29</sup> State Water Board Order WQ 2012-0001, p. 15.

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- In the State Water Board’s Rancho Caballero decision, the State Water Board declared that when receiving water quality already exceeds a particular water quality objective, and there is no assimilative capacity available, discharge limits must be set to a concentration at or below the objective contained in the Water Quality Control Plan.<sup>30</sup> Therefore, where TDS (or EC) in the receiving water exceeds 500 mg/L TDS (900 µS/cm EC) or 1,000 mg/L TDS (1,600 µS/cm EC), the Central Valley Water Board may not allow discharges to those receiving waters to exceed 500 mg/L or 1,000 mg/L (or equivalent EC values) even if the TDS concentration in the discharge is actually less than the TDS concentration in the receiving water and would improve receiving water quality.<sup>31</sup>
- The CV-SALTS Initial Conceptual Model project developed an estimate of the median TDS concentration in the upper (shallower) portion of the 22 Central Valley Initial Analysis Zones (IAZs) based on water quality data recorded for the period 2003 to 2012 (see Section X.Y of the SNMP).<sup>32</sup> This study found that in the shallow portion of 17 of the 22 IAZs, the median TDS concentration already exceeds 500 mg/L TDS (900 µS/cm EC).<sup>33</sup> Therefore, if 500 mg/L TDS (900 µS/cm EC) was used as the water quality objective, then only five of the IAZs are likely to have any significant assimilative capacity available for additional TDS loads if the shallow portion is used to determine total available assimilative capacity. Discharges to the other 17 IAZs would likely have to comply with WDRs prohibiting TDS discharges in excess of 500 mg/L TDS (900 µS/cm EC). In contrast, if 1,000 mg/L TDS (1,600 µS/cm EC) was used as the water quality objective (“Upper” level in Table 64449-B), then 17 of the 22 IAZs would likely have at least some assimilative capacity available for additional TDS loads.<sup>34</sup>
- The current regulatory approach that relies primarily on the “Recommended” concentration of 500 mg/L TDS (900 µS/cm EC) (Table 64449-B) for the purpose of establishing WDRs makes it nearly impossible to recharge groundwater basins with recycled water unless there is significant assimilative capacity available in the aquifer (TDS < 500 mg/ or < 900 µS/cm EC). This outcome complicates and inhibits statewide efforts to promote the use of recycled water for landscape irrigation and to recharge groundwater storage – water management strategies that are particularly important during times of regional or statewide drought.
- The current regulatory approach that relies primarily on the “Recommended” TDS concentration of 500 mg/L (900 µS/cm EC) (22 CCR Table 64449-B) for the purpose of establishing WDRs also poses significant challenges for agricultural discharges. Assuming a relatively common leaching fraction of 15%, agricultural operators must start with a TDS concentration no greater than 75 mg/L in the irrigation supply water in order to ensure percolation below the root zone does not exceed 500 mg/L (900 µS/cm EC) at the point of compliance at the groundwater table. Similarly, to avoid

<sup>30</sup> State Water Board Order 73-4, p. 7.

<sup>31</sup> Note that in groundwater the objective applies at the groundwater table; changes to water quality may occur between the surface and first encountered groundwater, e.g., as a result of soil interactions.

<sup>32</sup> *Initial Conceptual Model Final Report: Task 7 and 8 - Salt and Nitrate Analysis for the Central Valley Floor and a Focused Analysis of Modesto and Kings Subregions*. December 2013.

<sup>33</sup> See Table 7-7 in: *Initial Conceptual Model Final Report: Task 7 and 8 - Salt and Nitrate Analysis for the Central Valley Floor and a Focused Analysis of Modesto and Kings Subregions*. December 2013.

<sup>34</sup> See previous footnote reference; Table 7-7 also shows how the estimate of available assimilative capacity would likely change if the water quality objective is set to 700 mg/L or 1,000 mg/L.

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discharging TDS at concentrations greater than 1,000 mg/L (1,600 µS/cm EC) at the groundwater table, TDS in the irrigation supply water must be less than 150 mg/L.<sup>35</sup>

- Similarly, applying the “Recommended” TDS value of 500 mg/L as a maximum “not-to-exceed” value immediately below the root zone at the groundwater table discourages the use of high efficiency drip irrigation systems with very low leaching fractions. This outcome conflicts with statewide efforts to promote greater water conservation through more efficient irrigation practices.

Finally, it is important to consider that the State Water Board has established a policy that all surface and ground waters of the state should be presumed to support an existing or potential MUN use unless the water body meets one of the exception criteria established in the Sources of Drinking Water Policy.<sup>36</sup> The exception criterion relevant to this policy is criterion 1(a), which states that a basis for removing the MUN use from a surface water or groundwater is the TDS exceeds 3,000 mg/L (or 5,000 µS/cm, EC) and the water body is not reasonably expected by a Regional Board to supply a public water system. These TDS and EC values exceed even the “Short Term” “Consumer Acceptance Contaminant Level Ranges” (1,500 mg/L TDS or 2,200 µS/cm EC) established in Table 64449-B, yet it is State policy that waters with TDS or EC concentrations up to these high values may still be considered suitable to supply public water system and be protected as such.

### Other Regulatory Challenges

In addition to the need to provide context for application of the Table 64449-B values, this recommended policy is also intended to provide clarity to the application of the chemical constituent water quality objectives in the following areas:

- *Measuring Compliance with SMCLs* - Neither 22 CCR nor the Basin Plans provide guidelines with regards to the appropriate sampling method for evaluating compliance through WDRs with the SMCLs in Tables 64449-A and 64449-B. Historically, wastewater dischargers’ compliance with the SMCLs has been determined using the total recoverable metals fraction. This approach is inconsistent with federal law that requires most community water systems to filter surface water prior to delivery.<sup>37</sup> Moreover, per 22 CCR and federal regulations,<sup>38</sup> SMCLs are intended to apply to finished water delivered to a community water system. Many of the SMCLs are primarily intended to address aesthetic qualities, such as taste and odor, [or minimize risk of corrosion of pipes and appearance](#); they are not intended to address human health concerns.<sup>39</sup> Continuing to rely on total recoverable metals to assess compliance with SMCLs in the receiving water may overestimate the potential aesthetic impact on the actual quality of downstream drinking water delivered to consumers after treatment. In addition for groundwater, filtration through natural soils or man-

**Commented [DW5]:** Until recently. I think that part of the reason is that NPDES regs require measuring as total, although most criteria is dissolved.

<sup>35</sup> These are provided as examples only as the actual concentration of TDS or EC at the point of compliance at the groundwater table is influenced many factors, e.g., the type of irrigation system used and precipitation.

<sup>36</sup> State Water Board Resolution No. 88-63. Sources of Drinking Water Policy, May 19, 1988, as revised by Resolution No. 2006-0008.

<sup>37</sup> USEPA. *National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule*. 71 Federal Register: 654-786. January 5, 2006.

<sup>38</sup> Federal Register 44, July 19, 1979, page 42199.

<sup>39</sup> See Final Draft CV-SALTS White Paper: *Salinity Effects on MUN-Related Uses of Water*; <http://www.cvsalinity.org/index.php/docs/agendas-notes-and-materials/meeting-materials/1012-cv-salts-mun-tech-memo070612/file.html>.

made systems significantly reduces the concentration of total suspended solids, including aesthetically objectionable minerals such as iron, manganese, and aluminum.

- *Consideration of Natural Background* - It is known that some areas in the Central Valley have natural background TDS or EC concentrations that exceed the “Recommended” or higher values in Table 64449-B. While both the SRSJB and TLB Basin Plans contain provisions for considering natural background concentrations when applying water quality objectives in general, the means for implementing these provisions in WDRs with regards to SMCLs has not always been clear notwithstanding the water code’s requirement to have implementation plans for all water quality objectives.
- *“Specific Treatment Requirements” - Language for Inland Surface Waters* - As noted above, the existing Chemical Constituents water quality objective for inland surface waters includes the following statement: *“The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances.”*<sup>40</sup> While the Basin Plans acknowledge that specific treatment requirements are imposed by state and federal drinking water regulations, the Basin Plans provide no implementation provisions for this text.
- *Compliance Assessment Time Period* – Per 22 CCR §64449, compliance with SMCLs is based on a long-term average rather than the results of an individual grab sample. Specifically, 22 CCR §64449 (c)(1) states that compliance with Table 64449-A constituents shall be determined based on a running annual average of four quarterly samples. 22 CCR §64449 does not provide a compliance assessment time period for Table 64449-B constituents. The Basins Plans currently do not provide guidelines for an appropriate compliance assessment time period for the SMCLs incorporated by reference from 22 CCR.

## 2.0 New Regulatory Approach to Implement SMCLs as Chemical Constituents

### 2.1 Total Dissolved Solids or Electrical Conductivity

When the SMCLs were incorporated by reference as water quality objectives, only Tables 64449-A and 64449-B were explicitly referenced in the Basin Plan. Other relevant text for Table 64449-B from 22 CCR §64449 (d) and (e) was not specifically referenced or included as text in the Basin Plan. The omission of contextual information interferes with the Central Valley Water Board's ability to develop appropriate WDRs based on the values enumerated in Tables 64449-A and 64449-B. For example, the “Recommended” levels specified in Table 64449-B have been construed as “not-to-exceed” values in WDRs and NPDES permit limits. Such an approach is not consistent with the full text of §64449(d), which states:

*“(d) For the constituents shown on Table 64449-B, no fixed consumer acceptance contaminant level has been established.*

*(1) Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance.*

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<sup>40</sup> SRSJR Basin Plan, page III-3.00, and TLB Basin Plan, page III-3.

*(2) Constituent concentrations ranging to the Upper contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable waters.*

*(3) Constituent concentrations ranging to the Short Term contaminant level are acceptable only for existing community water systems on a temporary basis pending construction of treatment facilities or development of acceptable new water sources.”*

Given the importance of the contextual information contained in 22 CCR §64449(d), the Central Valley Water Board should consider the full range of “Consumer Acceptance Contaminant Levels” described in Table 64449-B when establishing reasonable and appropriate WDRs to protect water supplies that may be affected by the discharge.<sup>41</sup> This would include use of the “Short Term” level on a temporary basis in those situations where construction of new facilities or connection to new water sources is pending as specified in 22 CCR §64449(d)(3). Accordingly, the Central Valley Region Basin Plans should be amended to incorporate implementation provisions recognizing the contextual information in 22 CCR §64449 and 64449.2 et seq., as appropriate to support this policy. Additional findings that support these potential Basin Plan amendments include:

- 22 CCR §64449(a) specifies that: *“The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems”*. Compliance is evaluated by requiring such systems to monitor their *“groundwater sources or distribution system entry points representative of the effluent of source treatment every three years and its approved surface water sources or distribution system entry points representative of the effluent of source treatment annually....”*<sup>42</sup> Revising the Basin Plans to incorporate the provisions associated with the implementation of 22 CCR §64449 and §64449.2 will allow the Central Valley Water Board, when developing appropriate WDRs for the SMCLs, to take into consideration any dilution or other attenuation that may occur between the point of discharge and any intake to a downstream (surface water) or down-gradient (groundwater) water supply system. The Board is not necessarily obligated to authorize the full waste assimilation capacities of the receiving waters.<sup>43</sup> However, the recommended Basin Plan amendments will preserve the Board’s discretion to regulate SMCL constituents based on what is necessary, reasonable, and feasible to protect public water supplies.
- Federal and state regulations do not require adoption of the SMCLs as formal water quality objectives. Several other California Regional Water Quality Control Boards have not adopted SMCLs as water quality objectives in their respective Basin Plans.<sup>44</sup> Instead, these other Boards rely on narrative water quality objectives to regulate mineral concentrations where necessary to protect water supply systems that may be adversely affected by a given discharge. The values shown in 22 CCR Tables 64449-A and 64449-B, along with the associated text in §64449, are used to inform the process of translating narrative objectives into appropriate WDRs.

**Commented [DW6]:** Short term is appropriate also during drought or other emergency procedures, when the primary water supply is not available.

**Commented [DW7]:** This should include 64449.2 also, as these are implementing provisions for exceptions.

**Commented [DW8]:** Support the full inclusion. Other sections are also helpful – reduced monitoring if you are not exceeding, exceptions, etc.

<sup>41</sup> It should be noted that reference to “full range” includes potential use of “Short Term” levels, but per §64449(d)(3), these levels are acceptable only on a temporary basis pending other actions to establish an acceptable new water source.

<sup>42</sup> 22 CCR §64449(b).

<sup>43</sup> See §13263(b) of the California Water Code.

<sup>44</sup> See Basin Plans for the Regional Water Quality Control Boards in Region 3 (Central Coast Water Board); Region 6 (Lahontan Water Board); Region 7 (Colorado River Water Board); Region 8 (Santa Ana Water Board); and Region 9 (San Diego Water Board).

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- The SMCLs are primarily intended to address aesthetic qualities, such as taste and odor, or ~~minimize risk of corrosion of pipes appearance~~; they are not intended to address human health concerns.<sup>45</sup> Consumer acceptance is highly subjective and complicated by factors such as the form and combination of specific constituents (e.g., sodium-sulfate vs. calcium-sulfate) and the presence or absence of other major anions and cations.<sup>46</sup> The current numeric water quality objectives for SMCLs do not adequately account for the influence of these other variables.<sup>47</sup> Revising the Basin Plans will afford the Central Valley Regional Water Board more flexibility to consider all relevant factors that may affect consumer acceptance of these constituents in drinking water, which is separate from effluent.
- The SRSJR and TLB Basin Plans establish site-specific water quality objectives for selected water bodies (see Section 1.1 of this policy). Incorporation of the full range of “Consumer Acceptance Contaminant Levels”, as described in 22 CCR Table 64449-B, into the Basin Plans does not supersede or replace these site-specific water quality objectives.
- Water recycling and groundwater recharge may increase the concentration of mineral salts. Using the lowest value from the range of consumer acceptance levels to establish numeric water quality objectives for TDS or EC (see 22 CCR Table 64449-B) discourages dischargers from increasing the use of recycled water or implementing groundwater recharge projects. Moreover, such disincentives can occur even where the discharges may actually improve overall quality in the receiving water. The Central Valley Regional Water Board should have the legal flexibility to develop WDRs that balance the public benefits of water recycling and groundwater recharge against any potential impact on receiving water quality.
- The Central Valley Regional Water Board’s on-going obligation to issue WDRs consistent with State Water Board Resolution No. 68-16<sup>48</sup> and §13370 of the California Water Code provides adequate protection against water quality degradation for the constituents identified in 22 CCR Tables 64449-A and 64449-B. Lowering water quality for high quality waters is only permissible where the Board has issued, through the proscribed public process, waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained. Amending the Basin Plans does not create a license to discharge the SMCL constituents at will or authorize public nuisance. These amendments will, however, clarify the Board’s full range of authority to regulate these constituents in a manner consistent with the original purpose and intent of 22 CCR §64449.

## 2.2 Other Regulatory Issues

<sup>45</sup> See Final Draft CV-SALTS White Paper: *Salinity Effects on MUN-Related Uses of Water*; <http://www.cvsalinity.org/index.php/docs/agendas-notes-and-materials/meeting-materials/1012-cv-salts-mun-tech-memo070612/file.html>.

<sup>46</sup> See Final Draft CV-SALTS White Paper: *Salinity Effects on MUN-Related Uses of Water*; <http://www.cvsalinity.org/index.php/docs/agendas-notes-and-materials/meeting-materials/1012-cv-salts-mun-tech-memo070612/file.html>.

<sup>47</sup> See Federal Register 44:42195, July 19, 1979 for establishment of SMCLs; page 42201 for discussion of sulfate.

<sup>48</sup> State Water Board Resolution 68-16. *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Antidegradation Policy).

Section 1.2 above identified four areas where clarification is recommended with regards to implementation of the chemical constituents water quality objectives for surface waters and groundwater:

- *Measuring Compliance with SMCLs* – The Basin Plan [implementation sections](#) should be amended to include language that describes how compliance SMCLs in Table 64449-A and 64449-B will be determined. Specifically, compliance would be determined from a filtered sample (water passed through a 0.45 micron filter) for all constituents in Table 64449-B and all the following selected constituents in Table 64449-A: Aluminum, Color, Copper, Iron, Manganese, Silver Turbidity and Zinc. All of these constituents can be natural elements in the environment or are a characteristic of water influenced by the presence of these elements (i.e., color or turbidity). Compliance with the remaining SMCLs in Table 64449-A would be determined from a non-filtered sample: foaming agents (MBAs; surfactants), Methyl-tert-butyl ether (MTBE) (gasoline additive), Odor Threshold and Thiobencarb (pesticide). None of these constituents is an element or quality found in the natural environment.
- *Consideration of Natural Background* - The Basin Plans should be amended to make the language in both Basin Plans consistent and clarify that the language applies to both surface and ground waters. In addition, the Basin Plans should be amended to include language for the Chemical Constituents water quality objective section for cases where the natural background concentration of a particular chemical constituent exceeds the highest level specified in 22 CCR Table 64449-A or “Upper” level specified in Table 64449-B. In such cases, the water body shall not exceed that natural background concentration due to controllable anthropogenic sources [or site specific objectives may be developed](#). The Basin Plan should include language that states that constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of 22 CCR §64449(d)(3), [which may include drought conditions when normal water supplies are not available](#). It may be appropriate to develop guidelines regarding how this determination would be made.
- *“Specific Treatment Requirements” Language for Inland Surface Waters* - Guidelines should be developed to support the Basin Plans’ [implementation section](#) to describe how the following existing Basin Plan language would be considered when developing WDRs for discharges to inland surface waters: *“The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances.”*
- *Compliance Assessment Time Period* – Language should be added to the implementation section of the Basin Plans to state that an evaluation of compliance with SMCLs in Tables 64449-A and 64449-B shall be determined, [at minimum](#), from an annual average of collected samples.<sup>49</sup> [This approach is similar to 22 CCR §64449\(c\)\(1\) as it applies to Table 64449-A. 22 CCR §64449 does not provide a compliance determination approach for Table 64449-B constituents; regardless, the same approach be used for both Table 64449-A and 64449-B constituents.](#)

**Commented [DW9]:** The current basin plan has some of these implementation measures built into the objective in the Basin Plan. It may make sense here and probably should be discussed, therefore, I recommend leaving out this specific determination for now. For example, in the SRSJR Basin Plan, Table III-1 footnote a states: “Metal objectives in this table are dissolved concentrations.” Footnote c reads: “The effects of these concentrations were measured by exposing test organisms to dissolved aqueous solutions of 40 mg/l hardness that had been filtered through a 0.45 micron membrane filter. ...” History has shown us that some of these provisions work best in the objectives

**Commented [DW10]:** Note that in other sections of the SNMP we are saying that in groundwater longer term averages should apply, and with salinity, it may be over many years. Additionally, direct use of water from a discharge for drinking water purposes would be prohibited unless there specifically permitted for that use. That also would require an extremely high level of treatment. This is not what we are proposing.

### 3.0 Implementation of SMCLs in Discharge Permits

<sup>49</sup> [Unless otherwise specified.](#)

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As noted in the previous section, to implement this SMCL policy, it is recommended that the supporting regulatory language at 22 CCR §64449, especially subsections (d) and (e) and §64449.2 should be incorporated into the SRSJR and TLB Basin Plans. This outcome will allow the Central Valley Water Board to consider the full range of “Consumer Acceptance Contaminant Levels” described in Table 64449-B when establishing reasonable and appropriate WDRs to protect water supplies that may be affected by a proposed discharge. In addition, when developing discharge permit language:

- The Central Valley Water Board shall consider a number of site-specific factors when developing appropriate WDRs consistent with the intent of 22 CCR §64449 and §64449.2, including, but not limited to:
  - The availability of assimilative capacity in the receiving water based on compliance with the antidegradation policies;
  - Naturally occurring background concentrations;
  - Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past discharges;
  - The net effect of discharges that improve receiving water quality;
  - The chemical form/species of TDS or EC;
  - The presence or absence of other minerals (e.g., anion-cation balance) that may mitigate or aggravate aesthetic acceptability;
  - The application of appropriate long-term averaging periods to evaluate compliance with WDR monitoring requirements;
  - The potential impact on downstream beneficial uses (surface water and groundwater), including potential to impact water quality at the nearest downstream intakes for a drinking water facility or drinking water wells;
  - Economic factors including the practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge or first encountered groundwater (including consideration of cost for achieving compliance, ability to pay, the availability of alternative water supplies for drinking water and cost of non-compliance);
  - Potential effect on drinking water treatment costs for downstream water suppliers;
  - Potential for salt loads to the Bay-Delta to increase, which may affect the ability to meet existing cause or contribute to the exceedance Bay-Delta water quality objectives<sup>50</sup> and thus may require some form of mitigation;
  - Demonstration that direct users of a water supply within the area of influence of the WDR are adequately protected. This may include showing that the local water supply is not impacted (e.g., high TDS may occur in the groundwater, but the local water supply comes from a surface water surface) or ensuring a safe temporary water supply is provided while long-term improvements to drinking water facilities are completed; and
  - Other environmental considerations.
- The Central Valley Water Board shall consider the State Water Board’s Recycled Water Policy and the Central Valley SNMP’s goals to increase the use of recycled water, increase stormwater use, and

<sup>50</sup> Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, State Water Board, December 13, 2006.

**Commented [DW11]:** There is a balance here, and we shouldn’t predetermine the balance. Some of the water projects were required because diversions were causing such high salinity in the valley. These projects have the responsibility in the matter too. The reasonable use of water and the salinity impacts of such will need to be weighed in a normal antideg evaluation.

Some quotes from the water plan:  
Poorer quality (higher salinity) water is imported from the Delta for irrigation along the west side of the river to replace water lost through diversion of the upper San Joaquin River flows. The salt and boron water quality impairment in the lower San Joaquin River has occurred, in large part, as a result of large-scale water development coupled with extensive agricultural land use and associated agricultural discharges in the watershed. Lower San Joaquin River flows have been severely diminished by the construction and operation of dams and diversions and the resulting consumptive use of water. Most of the natural flows from the upper San Joaquin River and its headwaters are diverted at the Friant Dam via the Friant-Kern Canal to irrigate crops outside the San Joaquin River Basin. Diverted natural-river flows have been replaced with poorer quality (higher salinity) imported water from the Delta, which is primarily used to irrigate crops on the west side of the lower San Joaquin River basin. (CWP Update 2013 SJR-63 & 64).

Some quotes from revised Decision 1681:

Notwithstanding the unavailability of water to satisfy existing water rights in the southern Delta during certain periods, the SWRCB has determined that protection of agriculture in the southern Delta is in the public interest. Water quality objectives have been set for this purpose, and the USBR is responsible for meeting the Vernalis salinity objective. The months in which the southern Delta water users’ needs exceed their rights to water under riparian claims are the same months in which water quality violations tend to occur. Consequently, the southern Delta agricultural uses should not be deprived of water of useable quality as a result of this decision.

In D-1485, the SWRCB assigned sole responsibility for meeting the salinity objectives to the DWR and the USBR (D-1485, Condition 7).

Taken together, these diversions have significantly reduced the flows in the San Joaquin River. (SCWA 18; SDWA 34a; SDWA 48; SWRCB 56; SWRCB 75 a-q.) Because of CVP diversions, alone, the flow of the San Joaquin River at Vernalis has decreased by 550 taf per year on average with 345 taf of this decrease occurring from April through September. (SDWA 14.) The water diverted from the upstream tributaries to the lower San Joaquin River is of high quality. Thus, these diversions result in a substantial reduction in the assimilative capacity of the San Joaquin River.

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increase water conservation as mechanisms to increase drought protection when determining how to implement the range of TDS or EC values provided in 22 CCR Table 64449-B.

- CCR Title-22 §64449(d)(2) states that TDS concentrations up to 1,000 mg/L TDS (or1600 µS/cm EC) are “acceptable if it is neither reasonable nor feasible to provide more suitable waters”. Accordingly, the Central Valley Regional Water Board should be able to implement the range of TDS or EC values provided in 22 CCR Table 64449-B in the same manner as currently implemented for water supply agencies by referencing the full text and tables of 22 CCR §64449 and §64449.2. However, granting the authority to allow TDS concentrations up to 1,000 mg/L in a discharge (or 1600 µS/cm EC) or higher<sup>51</sup> is not an automatic authorization for such discharges to occur.<sup>52</sup> All of the normal antidegradation requirements (Resolution No. 68-16), as they apply to high quality waters, would continue to apply when developing WDRs and effluent limitations for TDS or EC. If a discharge is likely to lower downstream water quality, it will still be necessary to demonstrate that any such change in high quality water quality:<sup>53</sup>
  - Will be consistent with maximum benefit to the people of the State;
  - Will not unreasonably affect present and anticipated beneficial uses of such water; and
  - Will not result in water quality less than that prescribed by state policies, e.g., water quality objectives established in the Basin Plans.
- Where waste discharges have the potential to adversely affect source water quality in water supply intakes/wells located downstream/downgradient, the Central Valley Water Board may require a discharger, or dischargers collectively if in an approved management zone or as part of general order,<sup>54</sup> to develop a more detailed fate and transport analysis prior to authorizing a permit.<sup>55</sup> The purpose of this analysis is to determine how the permitted discharge affects the concentration of constituents identified in 22 CCR Tables 64449-A and 64449-B at water supply intakes or water supply wells to ensure a safe drinking water supply for users.
- If being allocated assimilative capacity, dischargers individually, or collectively within a management zone, will still be required to meet WDRs resulting in the best practicable treatment or control of the discharge necessary to assure that (a) a condition of pollution or nuisance will not occur; and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained. To the extent practicable, given the facts known at the time that the WDR is developed, the Central Valley Regional Water Board also should consider the long-term cumulative impact of all discharges to the same receiving water (and any other significant influences and/or trends) before authorizing a discharge that may further lower water quality. In addition, even if TDS or EC in the upper SMCL range is acceptable, it remains desirable to manage water resources toward attaining the recommended SMCL range where feasible, practicable, and reasonable to do so.

**Commented [DW12]:** Again, this also needs to be in context of the requirements of surface water users (i.e. the projects) to assume the responsibilities per decisions.

**Commented [DW13]:** Again, this may necessitate responsibility on behalf of water diverters.

<sup>51</sup> 22 CCR §64449(e) allows for application of “short term” “Consumer Acceptance Contaminant Levels” where specific criteria have been met (see Attachment A to this policy).

<sup>52</sup> Note that any authorized upper limit would be based on an averaging period as appropriate and determined by the Central Valley Water Board staff considering site-specific factors.

<sup>53</sup> Questions and Answers, State Water Resources Control Board Resolution No. 68-16; February 16, 1995.

<sup>54</sup> See Management Zone Policy and or Section X in the Central Valley SNMP for more information regarding Management Zones.

<sup>55</sup> A request for additional information prior to authorizing a permit shall be consistent with CWC §13627.

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- Since the TDS and EC values shown in 22 CCR Table 64449-B are drinking water standards, for groundwater, it is appropriate to track the net effect of permitted discharges at downgradient well locations upgradient of where groundwater is extracted for domestic and municipal drinking water use. The potential to impact groundwater that is extracted for domestic and municipal drinking water use may trigger additional management activities.

### 4.0 Proposed Modifications to the Basin Plans to Support SNMP Implementation

To implement this SMCL Policy, the Central Valley Water Board should adopt changes to the SRSJR and TLB Basin Plans as summarized in the subsections below.

#### 4.1 Chapter II - Existing and Potential Beneficial Uses

No changes to this section of the SRSJR and TLB Basin Plans are anticipated.

#### 4.2 Chapter III - Water Quality Objectives

Following is a summary of proposed changes to the Water Quality Objective Chapter of each Central Valley Water Board Basin Plan.

##### **Water Quality Control Plan for the Sacramento River and San Joaquin River Basins**

To implement this SMCL Policy, the following changes to *Chapter III. Water Quality Objectives* will be made to the SRSJR Basin Plan:

- Page III-3.00, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

##### **Chemical Constituents**

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses...

At a minimum, surface water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444, ~~and Tables 64449 A (Secondary Maximum Contaminant Levels - Consumer Acceptance Limits) and 64449 B (Secondary Maximum Contaminant Levels - Ranges) and of Section 64449. This incorporation by reference is prospective, including future changes to the incorporated provisions as the changes take effect...~~

In addition, for surface waters designated MUN the concentration of chemical constituents shall not exceed the "maximum contaminant level" specified in 22 CCR Table 64449-A or the "Upper" level specified in 22 CCR Table 64449-B, unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the "Upper" level in Table 64449-B are acceptable if it is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the "Short Term" level in Table 64449-B may be authorized on a temporary basis

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consistent with the provisions of §64449(d)(3). In cases where the surface water natural background concentration of a particular chemical constituent exceeds the highest level specified in 22 CCR Table 64449-A or "Upper" level specified in Table 64449-B, the surface water shall not exceed that natural background concentration due to controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy".

- Page III-10.00, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

**Chemical Constituents**

Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.

At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. ~~This incorporation by reference is prospective, including future changes to the incorporated provisions as the changes take effect...~~

In addition, for ground waters designated MUN, concentration of chemical constituents shall not exceed the "maximum contaminant level" specified in 22 CCR Table 64449-A or the "Upper" level specified in 22 CCR Table 64449-B unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the "Upper" level in Table 64449-B are acceptable if it is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the "Short Term" level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of §64449(d)(3). In cases where the natural background concentration of a particular chemical constituent exceeds the highest level specified in 22 CCR Table 64449-A or "Upper" level specified in Table 64449-B, the ground water shall not exceed that natural background concentration due to controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy.

**Water Quality Control Plan for the Tulare Lake Basin**

To implement this SMCL Policy, the following changes to *Chapter III. Water Quality Objectives* will be made to the TLB Basin Plan:

- Page III-3, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

**Chemical Constituents**

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses...

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At a minimum, surface water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. ~~This incorporation by reference is prospective, including future changes to the incorporated provisions as the changes take effect...~~

In addition, for surface waters designated MUN, concentration of chemical constituents shall not exceed the “maximum contaminant level” specified in 22 CCR Table 64449-A or the “Upper” level specified in 22 CCR Table 64449-B unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the “Upper” level in Table 64449-B are acceptable if it is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of §64449(d)(3). In cases where the surface water natural background concentration of a particular chemical constituent exceeds the highest level specified in 22 CCR Table 64449-A or “Upper” level specified in Table 64449-B, the surface water shall not exceed that natural background concentration due to controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy.

- Page III-7, Chemical Constituents section will be modified as follows (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

### **Chemical Constituents**

Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses...

At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, and Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. ~~This incorporation by reference is prospective, including future changes to the incorporated provisions as the changes take effect...~~

In addition, for ground waters designated MUN, concentration of chemical constituents shall not exceed the “maximum contaminant level” specified in 22 CCR Table 64449-A or the “Upper” level specified in 22 CCR Table 64449-B unless otherwise authorized by the Regional Water Board in accordance with the provisions of 22 CCR Section 64449 et seq. Constituent concentrations ranging to the “Upper” level in Table 64449-B are acceptable if it

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is neither reasonable nor feasible to provide more suitable waters; in addition, constituents ranging to the “Short Term” level in Table 64449-B may be authorized on a temporary basis consistent with the provisions of §64449(d)(3). In cases where the natural background concentration of a particular chemical constituent exceeds the highest level specified in 22 CCR Table 64449-A or “Upper” level specified in Table 64449-B, the ground water shall not exceed that natural background concentration due to controllable anthropogenic sources, unless the Regional Board authorizes it consistent with State Antidegradation Policy.

### 4.3 Chapter IV - Implementation

Following is a summary of planned changes to the Implementation Chapter of each Central Valley Water Board Basin Plan.

*[Note: The proposed implementation language makes reference to “...additional guidelines designed to achieve “Recommended” values...” It is assumed that these guidelines would be developed in parallel with the Basin Plan amendment process, after SNMP submittal. The purpose of these guidelines is to guide permit writers in development of WDRs, e.g., evaluation of natural background, presence or absence of other minerals that may mitigate/aggravate aesthetic acceptability; development of an appropriate averaging periods, etc.]*

#### **Water Quality Control Plan for the Sacramento River and San Joaquin River Basins**

To implement this SMCL Policy, the following changes to Chapter IV. Implementation of the SRSJR Basin Plan are proposed:

- To support implementation of SMCLs, the following paragraphs are proposed for addition to the SRSJR Basin Plan's Chapter IV. Implementation at a location in the Chapter to be determined. (Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~):

For the chemical constituents identified in 22 CCR §64449 (Table B) the water quality objectives shall be set as described in Chapter III-3.0 of this water quality control plan. Because lower concentrations of these chemical constituents are desirable for promoting greater consumer confidence and acceptance of public water supplies, the Regional Water Board has established additional guidelines designed to achieve the “Recommended” values in 22 CCR §64449 (Table B) where it is reasonable and feasible to do so. These “Recommended” concentrations are not water quality objectives per se but should be considered water resource management goals similar to other public policy goals established by the Regional Water Board and State Water Board to encourage greater water conservation, increased use of recycled water, more stormwater harvesting, additional groundwater recharge and storage, and better drought protection.

To implement the SMCLs in the Chemical Constituents section of the surface water and groundwater quality objectives, the Regional Water Board shall consider, as appropriate, a number of site-specific factors when developing WDRs, including, but not limited to:

- The availability of assimilative capacity in the receiving water based on compliance with the antidegradation policies.
- Naturally occurring background concentrations.

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- Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past discharges.
- The net effect of discharges that improve receiving water quality.
- The chemical form/species of TDS or EC.
- The presence or absence of other minerals (e.g., anion-cation balance) that may mitigate or aggravate aesthetic acceptability.
- The application of appropriate long-term averaging periods to evaluate compliance with WDR monitoring requirements.
- The potential impact on downstream beneficial uses, including potential to impact water quality at the nearest downstream intakes for a drinking water facility or drinking water well.
- Economic factors including the practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge (including consideration of cost for achieving compliance, ability to pay, and cost of non-compliance).
- Potential effect on drinking water treatment costs for downstream water suppliers;
- Potential for salt loads to the Bay-Delta to increase, which may affect the ability to meet existing Bay-Delta water quality objectives<sup>56</sup> and thus may require some form of mitigation;
- Demonstration that direct users of a water supply within the area of influence of the WDR are adequately protected. This may in some cases include ensuring a safe temporary water supply is provided while long-term improvements to drinking water facilities are completed;
- Potential for the permitted discharge to affect the concentration of constituents identified in 22 CCR Tables 64449-A and 64449-B at downgradient water supply intakes or water supply wells to ensure a safe drinking water supply for users.
- Need for additional monitoring to track the net effect of permitted discharges at locations upgradient of downgradient well locations where groundwater is extracted for water supply and to determine the need for additional management requirements to protect the supply.
- The State Water Board's Recycled Water Policy and the Central Valley SNMP's goals to increase the use of recycled water, increase stormwater use, and increase water conservation as mechanisms to increase drought protection.
- The long-term cumulative impact of all discharges to the same receiving water.
- Other environmental considerations.

Compliance with any chemical constituent in Tables 64449-A of 64449-B shall be determined from the annual average of sample results based on the techniques in (a) and (b) below.

- Compliance with the chemical constituent water quality objective shall be determined from a filtered water sample (0.45 micron filter) for the following constituents identified in 22 CCR §64449 (Table A): Aluminum, Color, Copper, Iron, Manganese, Silver Turbidity and Zinc.
- Compliance with the chemical constituent water quality objective shall be determined from an unfiltered water sample for the following constituents identified in 22 CCR

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<sup>56</sup> Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, State Water Board, December 13, 2006.

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§64449 (Table A): Foaming Agents (MBAs), Methyl-tert-Butyl Ether (MTBE), Odor-Threshold and Thiobencarb.

**Water Quality Control Plan for the Tulare Lake Basin**

To implement this SMCL Policy, the following change to *Chapter IV. Implementation Plan* will be made to the TLB Basin Plan:

- To support implementation of SMCLs, the following text will be added to the TLB Basin Plan's *Chapter IV. Implementation Plan* at a location to be determined, but potentially in association with "Policy for Application of Water Quality Objectives (Pg. IV-21 ff.) (*Note: Additions to the existing text are indicated by underline and deletions of existing text are indicated by ~~strikeout~~*):

For the chemical constituents identified in 22 CCR §64449 (Table B) the water quality objectives shall be set as described in Chapter III-10.0 of this water quality control plan. Because lower concentrations of these chemical constituents are desirable for promoting greater consumer confidence and acceptance of public water supplies, the Regional Water Board has established additional guidelines designed to achieve the "Recommended" values in 22 CCR §64449 (Table B) where it is reasonable and feasible to do so. These "Recommended" concentrations are not water quality objectives per se but, rather, should be considered water resource management goals similar to other public policy goals established by the Regional Water Board and State Water Board to encourage greater water conservation, increased use of recycled water, more stormwater harvesting, additional groundwater recharge and storage, and better drought protection, etc.

To implement the SMCLs in the Chemical Constituents section of the surface water and groundwater quality objectives, the Regional Water Board shall consider, as appropriate, a number of site-specific factors when developing WDRs, including, but not limited to:

- The availability of assimilative capacity in the receiving water based on compliance with the antidegradation policies.
- Naturally occurring background concentrations.
- Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past discharges.
- The net effect of discharges that improve receiving water quality.
- The chemical form/species of TDS or EC.
- The presence or absence of other minerals (e.g., anion-cation balance) that may mitigate or aggravate aesthetic acceptability.
- The application of appropriate long-term averaging periods to evaluate compliance with WDR monitoring requirements.
- The potential impact on downstream beneficial uses, including potential to impact water quality at the nearest downstream intakes for a drinking water facility or drinking water well.
- Economic factors including the practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge (including consideration of cost for achieving compliance, ability to pay, and cost of non-compliance).
- Potential effect on drinking water treatment costs for downstream water suppliers;

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- Potential for salt loads to the Bay-Delta to increase, which may affect the ability to meet existing Bay-Delta water quality objectives<sup>57</sup> and thus may require some form of mitigation;
- Demonstration that direct users of a water supply within the area of influence of the WDR are adequately protected. This may in some cases include ensuring a safe temporary water supply is provided while long-term improvements to drinking water facilities are completed;
- Potential for the permitted discharge to affect the concentration of constituents identified in 22 CCR Tables 64449-A and 64449-B at downgradient water supply intakes or water supply wells to ensure a safe drinking water supply for users.
- Need for additional monitoring to track the net effect of permitted discharges at locations upgradient of downgradient well locations where groundwater is extracted for water supply and to determine the need for additional management requirements to protect the supply.
- The State Water Board's Recycled Water Policy and the Central Valley SNMP's goals to increase the use of recycled water, increase stormwater use, and increase water conservation as mechanisms to increase drought protection.
- The long-term cumulative impact of all discharges to the same receiving water.
- Other environmental considerations.

Compliance with any chemical constituent in Tables 64449-A of 64449-B shall be determined from the annual average of sample results based on the techniques in (a) and (b) below.

- (a) Compliance with the chemical constituent water quality objective shall be determined from a filtered water sample (0.45 micron filter) for the following constituents identified in 22 CCR §64449 (Table A): Aluminum, Color, Copper, Iron, Manganese, Silver Turbidity and Zinc.
- (b) Compliance with the chemical constituent water quality objective shall be determined from an unfiltered water sample for the following constituents identified in 22 CCR §64449 (Table A): Foaming Agents (MBAs), Methyl-tert-Butyl Ether (MTBE), Odor-Threshold and Thiobencarb.

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<sup>57</sup> Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, State Water Board, December 13, 2006.

**Policy No. X: Secondary Maximum Contaminant Levels  
Attachment A**

**Title 22. Social Security  
Division 4. Environmental Health  
Chapter 15. Domestic Water Quality and Monitoring Regulations**

**Article 16. Secondary Drinking Water Standards**

**§64449. Secondary Maximum Contaminant Levels and Compliance.**

(a) The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems.

**Table 64449-A  
Secondary Maximum Contaminant Levels  
“Consumer Acceptance Contaminant Levels”**

Constituents	Maximum Contaminant Levels/Units
Aluminum	0.2 mg/L
Color	15 Units
Copper	1.0 mg/L
Foaming Agents (MBAS)	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Methyl- <i>tert</i> -butyl ether (MTBE)	0.005 mg/L
Odor – Threshold	3 Units
Silver	0.1 mg/L
Thiobencarb	0.001 mg/L
Turbidity	5 Units
Zinc	5.0 mg/L

**Table 64449-B  
Secondary Maximum Contaminant Level Ranges  
“Consumer Acceptance Contaminant Level Ranges”**

Constituents, Units	Recommended	Upper	Short Term
Total Dissolved Solids, mg/L or Specific Conductance, µS/cm	500	1,000	1,500
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

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(b) Each community water system shall monitor its groundwater sources or distribution system entry points representative of the effluent of source treatment every three years and its approved surface water sources or distribution system entry points representative of the effluent of source treatment annually for the following:

- (1) Secondary MCLs listed in Tables 64449-A and 64449-B; and
- (2) Bicarbonate, carbonate, and hydroxide alkalinity, calcium, magnesium, sodium, pH, and total hardness.

(c) If the level of any constituent in Table 64449-A exceeds an MCL, the community water system shall proceed as follows:

- (1) If monitoring quarterly, determine compliance by a running annual average of four quarterly samples;
- (2) If monitoring less than quarterly, initiate quarterly monitoring and determine compliance on the basis of an average of the initial sample and the next three consecutive quarterly samples collected;
- (3) If a violation has occurred (average of four consecutive quarterly samples exceeds an MCL), inform the Department when reporting pursuant to Section 64469;
- (4) After one year of quarterly monitoring during which all the results are below the MCL and the results do not indicate any trend toward exceeding the MCL, the system may request the Department to allow a reduced monitoring frequency.

(d) For the constituents shown on Table 64449-B, no fixed consumer acceptance contaminant level has been established.

- (1) Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance.
- (2) Constituent concentrations ranging to the Upper contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable waters.
- (3) Constituent concentrations ranging to the Short Term contaminant level are acceptable only for existing community water systems on a temporary basis pending construction of treatment facilities or development of acceptable new water sources.

(e) New services from community water systems serving water which carries constituent concentrations between the Upper and Short Term contaminant levels shall be approved only:

- (1) If adequate progress is being demonstrated toward providing water of improved mineral quality.
- (2) For other compelling reasons approved by the Department.

(f) A community water system may apply to the Department for a waiver from the monitoring frequencies specified in subsection (b), if the system has conducted at least three rounds of monitoring (three periods for groundwater sources or three years for approved surface water sources) and these analytical results are less than the MCLs. The water system shall specify the basis for its request. A

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system with a waiver shall collect a minimum of one sample per source while the waiver is in effect and the term of the waiver shall not exceed one compliance cycle (i.e., nine years).

(g) Nontransient-noncommunity and transient-noncommunity water systems shall monitor their sources or distribution system entry points representative of the effluent of source treatment for bicarbonate, carbonate, and hydroxide alkalinity, calcium, iron, magnesium, manganese, pH, specific conductance, sodium, and total hardness at least once. In addition, nontransient-noncommunity water systems shall monitor for the constituents in Tables 64449-A and B at least once.