

Response to Comments on Draft Total Residual Chlorine and Chlorine-Produce Oxidants Policy of California

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| 1 | 1 | General | We appreciate your willingness to work with us and are encouraged that the SWRCB incorporated some of our comments submitted previously, including the addition of a provision to allow the use of mixing zones if authorized by the applicable Basin Plan. | Comment acknowledged. |
| 1 | 2 | General | However, we still have concerns with other aspects of the TRC policy and the supporting documents and are providing the following comments, which are focused on the freshwater aspects of TRC. | Comment acknowledged. |
| 1 | 3 | General | There are several areas of the SED and Economic Considerations that have referenced a SRCSD staff member in 2004. SRCSD requests that these references be removed unless a public document containing the information can be reviewed by SRCSD and confirmed. Many of the statements made under this citing are inaccurate and are addressed in the following comments. In the future, it would be appreciated if the SWRCB could contact their references in advance, to ensure they are relaying accurate information. | State Board staff has removed the information referred to by the commenter from the Economic Considerations document (ECD). |
| 1 | 4 | General | SRCSD has worked closely with Tri-TAC regarding the TRC Policy and is in full support of all comments submitted by their organization. | Comment acknowledged. |
| 1 | 5 | General | Also, SRCSD has serious concerns about our ability to comply with the proposed hourly limit. A significant increase in total chlorine residual exceedances is expected. | State Board staff revised the ECD to address the commenter's concern. |
| 1 | 6 | Monitoring Requirements; Effluent Limits | The SED states that it is important to note that many other states, such as Virginia, Illinois, Delaware, and Connecticut, have already adopted the United States Environmental Protection Agency's (US EPA) recommended criteria. SRCSD agrees that it is important to consider other states that have adopted the criteria. However, SRCSD believes it is even more important to consider how the other states are implementing the criteria. The County Sanitation Districts of Los Angeles County (LACSD) have provided the SWRCB with an evaluation of various states that have adopted the EPA criteria and how the criteria have been implemented. This study was included as an Appendix to the LACSD's written comments dated January 4, 2006. Although the study shows that numerous other states have adopted the 1984 EPA criteria; it also shows that other states have implemented the criteria drastically different than what is proposed in the California TRC Policy. The two main items that differ in the way other states have implemented this criteria are the continuous | EPA allows States discretion in how they implement specific criteria. Although it may be useful to evaluate implementation procedures adopted by other States, such procedures do not represent a precedent that must be followed. Because residual chlorine can be acutely toxic within minutes of exposure to fish and other aquatic life, the State Board believes that traditional weekly and monthly limits would not be protective. In addition, as shown in the substitute environmental document (SED), there have already been significant violations of existing limits that have resulted in recorded fish kills and negative effects on aquatic life, pollution events, and enforcement actions (e.g., mandatory minimum penalty fines, corrective actions). This information demonstrates that specifying limits as average monthly or daily maximum limits does not provide sufficient protection of aquatic life. |

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| | | | monitoring requirements and in the calculation of effluent limits. Of the wastewater treatment plants from the various states that were surveyed, only one facility performs continuous monitoring and permit limits for all facilities are based on daily averages, daily maximums and 30-day averages - not on an hourly basis as is being proposed by the SWRCB. The SWRCB should include a similar evaluation in the SED, as provided by LACSD, and explain why their interpretation on implementation of the EPA criteria is so different and more stringent than all other states implementing the same criteria. | |
| 1 | 7 | Applicability | The SED also states that US EPA's one-hour and four-day averages are explicitly for continuous discharges. This is not accurate. The US EPA criteria are intended for continuous exposure, not discharge. As stated in SRCSD's previous comments and the US EPA 1984 criteria, the criteria are "intended to apply to situations of continuous exposure, whether the concentrations are fluctuating or constant, but not to situations of specially controlled intermittent exposures." Wastewater treatment plants discharge continuously, but only discharge chlorine for very short intermittent periods of time usually associated with some type of system failure (operations and maintenance, mechanical malfunction, electric supply interruption, etc.). Applying criteria developed specifically to identify aquatic toxicity in situations of continuous exposure to intermittent exposures from wastewater treatment facilities seems inappropriate; however, there is no evaluation of this in the SED as requested in our July 7, 2005 comments. | The State Board agrees that the criteria are intended to apply to continuous exposure. However, wastewater treatment plants continuously chlorinate to disinfect water prior to discharge, even though effluent chlorine concentrations may fluctuate due to changes in flow. In addition, there is no way to predict when a wastewater treatment plant may be discharging chlorine at levels potentially harmful to aquatic life (if there were, the treatment plant could presumably prevent such discharges from occurring in the first place). Thus, wastewater treatment plants can be considered continuous dischargers of chlorine, and the proposed criteria would be applicable. |
| 1 | 8 | Mixing Zones | We appreciate the SWRCB including a provision that allows the individual Regional Boards to use their own discretion in granting a discharger a mixing zone in the TRC Policy; however the SED is confusing, in that it recommends this alternative (Alternative 3) along with the alternative to not allow for mixing zones (Alternative 1). SRCSD suggests only recommending Alternative 3 in the SED. | The SED will be revised to recommend only Alternative 3. |

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| 1 | 9 | | In addition, the SED states that Fish and Game has a Policy that "no acutely toxic concentration of pollutant shall be present at the discharge point prior to dilution" and specifically states that "chlorine is highly toxic to aquatic life and discharge of concentrations above 0.019 parts per million (ppm) in receiving waters is a violation of Fish and Game Code 5650." Please reference the specific Fish and Game Policy document(s) that provided this information. | This reference is no longer used in the SED. |
| 1 | 10 | | Further, exposure has two components (concentration and duration). The citation is unclear on the inclusion of the duration component of exposure in the Fish and Game Policy. | Please see response to Comment 1.9. |
| 1 | 11 | Compliance Determination | As worded, the TRC Policy is unclear regarding how online monitoring of a dechlorination agent will be considered by the permitting authority. It is our understanding that the SWRCB intended to allow dischargers various options to demonstrate compliance. Some suggested wording to clarify the language could include (additions and deletions are in bold red underline/strikeout in blue): First Paragraph In This Section Continuous monitoring analyzers for chlorine and/or dechlorination agent residual in the effluent are appropriate methods of process control. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limits. This type of monitoring can also prove that some chlorine residual exceedances are false-positives. Reporting a positive dechlorination agent residual and <u>or</u> a zero chlorine residual are sufficient to show compliance with the chlorine residual effluent limit, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations. | The State Board has made the suggested change to the policy. |
| 1 | 12 | Quantification/Reporting Requirements | The TRC Policy states that on-line devices must have a manufacturer's stated detection limit, scale range, or sensitivity below the permitted effluent limit. The SWRCB should consider replacing the term "detection limit" in this statement with accuracy. Detection limits are not published by the manufacturers, whereas accuracy is stated by the manufacturers. Based on manufacturer literature, there is no way to verify compliance with this section if the term "detection limit" remains in the statement. | The statement on required detection limits has been replaced with the statement: "On-line devices must have a manufacturer-stated sensitivity corresponding to 10 ppb." Also see comment 1.15. |

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| 1 | 13 | Quantification/ Reporting Requirements; Definition of Terms | Further, the term scale range appears to be incorrectly used. A scale range is the range of values for which a quantity can be measured. To have a range below the permitted effluent limit would result in the operating range of the analyzers set at 0 parts per billion (ppb) to 11 ppb. Values exceeding 11 ppb would only be recorded as upper limits because they would exceed the scale range that was set on the instrument. SRCSD would suggest replacing the term "scale range" with "analyzer range" and adding the definitions of these terms. | The statement containing the term scale range has been removed. |
| 1 | 14 | Quantification/ Reporting Requirements | The TRC Policy goes on to state that the minimum calibration shall not be above the lowest effluent limit in the permit. Does the SWRCB intend the concentration of the calibration standard to be below 11 ppb? Typically, the calibration concentration is at a value close to the middle of the operating range. For example, if an analyzer is set at an operating range of 0-20 ppm, the concentration for calibration would be 10 ppm (10,000 ppb). | This language has been removed from the policy. |
| 1 | 15 | Quantification/ Reporting Requirements | In general the SWRCB should understand that many published accuracy claims are stated as "accurate to 1 ppb or 1% of reading, whichever is greater." In almost all cases, the percent of reading is always greater than the 1 ppb claim, except at extremely low operating ranges (e.g. 0-0.1 ppm). However, as stated above, such extremely low operating ranges are in no way practical because the maximum value the analyzer can report is the upper limit of the range for which it is set. In this example, anything above 0.1 ppm will be reported as 0.1 ppm-upper limit. This is obviously a problem when discharge quantities need to be calculated and reported to the Regional Board. It should be noted that manufacturers' reporting limits are sales point claims most likely targeting the drinking water industry, not the wastewater industry. | The language requiring that online devices must be able to record concentrations in parts per billion refers to precision. Accuracy represents equal probability that the true concentration may be slightly above or below the measured concentration. Accuracy is never perfect in chemical analyses for compliance purposes. For example, even with an accuracy of +/- 0.5 ppb, a measurement of 11 ppb may actually be at or above the 11 ppb limit. If the device has an accuracy of +/- 2 ppb then facilities should bear that in mind when controlling for the release of chlorine. Chlorine is a constituent added during wastewater treatment and should be managed so that none of this highly toxic chemical is released into the aquatic environment. It would not be appropriate to manage the release of chlorine at levels close to the permit limit. If the lack of perfect accuracy is of grave concern to a particular facility, State Board staff suggests that the facility use the alternative method of showing an excess of dechlorination product to determine compliance with the permit limit. |
| 1 | 16 | Quantification/ Reporting Requirements | The TRC Policy also states all calibration and off-line sampling should be evaluated by Standard Method 4500-Cl E. The stated detection limit for this method is 10 ppb; but it is unclear if this detection level is achieved in the field by any wastewater agency while calibrating the | The language requiring calibration using low-concentration standards has been removed. Facilities have a compliance schedule of 5 years to optimize the performance of the analytical equipment. In addition, facilities may use the |

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| | | | online analyzers. | alternative method of showing an excess of dechlorination product to determine compliance with the permit limit. |
| 1 | 17 | Quantification/ Reporting Requirements | The calibration process as defined in the TRC Policy is problematic. There is no way to determine if the analyzer is accurate to levels mandated in the policy (i.e. 1 ppb) for reasons stated above. | The language requiring calibration using low-concentration standards has been removed. In addition, the language requiring that online devices must be able to record concentrations in parts per billion refers to precision, or the number of significant digits included in the measurement. |
| 1 | 18 | Quantification/ Reporting Requirements | Further, both the United States Environmental Protection Agency (EPA) and the California Department of Health Services do not recognize Standard Method 4500-Cl E (20th Edition) as an approved method for testing chlorine in wastewater. | The proposed policy requires monitoring with methods that are more sensitive than the measurement capabilities of methods in 40 CFR 136 or those certified by the Department of Health Services. 40 CFR 122.41(j)(4) and 122.44(i)(1)(iv) indicate that when no Part 136 methods exist to satisfy the proposed requirements, the state is not required to use those methods. In addition, because EPA must approve the policy before it takes effect, EPA will have the opportunity to consider whether the methods suggested in the policy should be used to monitor compliance. |
| 1 | 19 | Quantification/ Reporting Requirements | Standard Methods lists this procedure as applicable for "Natural and treated waters," and does NOT list this procedure under the "Wastewater" testing section. | Please see response 1.18. Additionally, proposed analysis will take place after treatment is complete. Therefore, this method is appropriate for the post-treated discharge. |
| 1 | 20 | Quantification/ Reporting Requirements | There is no California Department of Health Services certification available for this method with wastewater. | See response to Comment 1.18. |
| 1 | 21 | Quantification/ Reporting Requirements | The SED states that monitoring must generally be conducted using test procedures approved in 40 CFR Part 136. This method is not included in 40 CFR 136.3(a) Table 1B. | See response to Comment 1.18. |
| 1 | 22 | Quantification/ Reporting Requirements | Currently SRCSD uses Standard Methods 330.2 (which is listed in 40 CFR part 136) and achieves a detection limit of approximately 200 ppb when calibrating analyzers in the field. SRCSD recommends that the SWRCB recognize the limitations of the test method in the TRC Policy and use only approved methods listed for wastewater in the CFR part 136 as suggested in the SED. | See response to Comment 1.16. |

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| 1 | 23 | Quantification/ Reporting Requirements | <p>The TRC Policy states that the quantification/reporting limit (QRL) shall not exceed the facility's effluent limit (0.011 ppm). As stated in the section above, SRCSD calibrates using an approved method listed in 40 CFR 136; but is only able to achieve a detection limit of 0.2 ppm. Further, even if SRCSD were required to use the unapproved method currently proposed in the policy, we will not be able to achieve a detection limit of 0.01 ppm in the field. In order to provide the flexibility for dischargers in this situation to conduct a QRL study to establish an achievable QRL, SRCSD recommends the policy be modified as follows (additions and deletions are in bold red underline/strikeout in blue):</p> <p>The quantification reporting limit (QRL) shall not exceed the facility's effluent limit. However, if the Regional Water Board determines on a case-by-case basis that a discharger cannot meet the QRL set at the effluent limit and that it is infeasible for the discharger to show compliance via the presence of residual dechlorination agent or by another means (see the Compliance Determination section of this Policy), the Regional Water Board may establish a QRL, provided that the discharger completes and submits a QRL study.</p> <p>This approach would not penalize those dischargers that have chosen to monitor the dechlorination agent to assist in determining compliance with the policy.</p> | <p>All language referring to a quantification/reporting limit (QRL) has been removed from the policy.</p> <p>Facilities have a compliance schedule of 5 years to optimize the performance of the analytical method and equipment to the manufacturer-stated sensitivity of 10 ppb (some manufacturers provide a sensitivity of 1 ppb). In addition, facilities may use the alternative method of showing an excess of dechlorination product to determine compliance with the permit limit.</p> <p>A QRL study that allows a facility to determine compliance based on the performance of their analytical equipment is not an appropriate alternative to showing the presence of residual dechlorination agent because it would be less protective.</p> <p>A QRL study is no longer an option in this policy. All language that references QRL studies has been removed from the policy.</p> |
| 1 | 24 | Quantification/ Reporting Requirements | <p>In addition, the SWRCB should provide additional clarity on what is involved in a QRL study in the TRC Policy so there is no room for interpretation and inconsistent implementation among the different Regional Boards.</p> | <p>A QRL study is no longer an option in this policy. All language that references QRL studies has been removed from the policy.</p> |
| 1 | 25 | Effluent Limits | <p>Both the TRC Policy and SED acknowledge the fact that NPDES permit regulations require permit limits for POTWs be expressed, unless impractical, as average weekly and average monthly limits. The SWRCB contends that because chlorine residual can be acutely toxic within minutes of exposure to fish and other aquatic life, weekly and monthly limits are not protective and therefore, impractical. SRCSD agrees that weekly and monthly limits may not be protective; however we strongly believe that the one-hour limit currently proposed is overly protective.</p> | <p>As described in the SED, there have already been significant violations of existing limits that have resulted in recorded fish kills and negative effects on aquatic life. Thus, specifying limits as average monthly or daily maximum limits does not provide sufficient protection of aquatic life. Because these negative effects may result from exposure times on the order of minutes, rather than hours or days, the State Board believes that a one-hour limit is necessary for the protection of aquatic life. (Also see response to Comment 1.6.)</p> |

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| 1 | 26 | Effluent Limits | As stated previously in these comments, the SWRCB should consider how this policy has been implemented in other states (e.g. daily limit). | See response to Comment 1.6. |
| 1 | 27 | Compliance Schedules | We appreciate the SWRCB extending the compliance schedule from two to five years in the TRC Policy; however, the SED recommends implementing either two year compliance schedules with an optional extension at the discretion of the Regional Boards (Alternative 3) or the five year compliance schedule the dischargers have requested (Alternative 4): SRCSD suggests only recommending Alternative 4 in the SED. | The proposed policy indicates that compliance schedules shall be as short as practicable, but in no case exceed five years from the date that the permit is issued, reissued, or modified to include the new or more stringent effluent limits or other Policy requirements. The SED will be revised to remove this alternative. |
| 1 | 28 | Compliance Schedules | Also, as written, it is unclear when the TRC Policy goes into effect (e.g. immediately after SWRCB adoption, 60 days after adoption, or upon adoption of a new permit by the permitting authority.) It would be helpful if this was clarified and explicitly stated in the TRC Policy so dischargers know when the proposed new limits will go into effect so that they may determine the feasibility to comply within a certain time frame or can request a compliance schedule. | The policy will not go into effect until after State Board adoption, Office of Administrative Law (OAL) approval, and U.S. EPA approval. Effluent limits will be revised to reflect the TRC Policy upon permit renewal. |
| 1 | 29 | Economic | The Sacramento Regional Wastewater Treatment Plant (SRWTP) currently has permit limits of 0.018 ppm daily average and 0.011 ppm monthly average for chlorine residual. The Economic Considerations Document (ECD) contains inconsistent comparisons between our currently regulated chlorine residual limits and the proposed policy. Exhibit 5-2 in the ECD should indicate that the SWRCB is considering the SRWTP monthly average limit. Doing so would make the comparison of SRWTP monthly average monitoring data to the proposed hourly average limit for determining our ability to comply meaningless. These comparisons are inaccurate because they do not take into account the averaging period. All tables and comparisons need to include the averaging period and a justification of why the SWRCB is comparing limits with different averaging period in their analysis. Currently, Exhibit 2-1, 4-2 and 5-2 are of little value without consideration of the averaging period. The SWRCB should be comparing equivalent averaging periods to evaluate a facility's ability to comply with the proposed policy. | State Board staff added a footnote to Exhibit 5-2 in the Economic Considerations Document (ECD) to clarify that the existing limit for SRCSD represents a monthly average limit. Staff agree that a direct comparison between maximum monthly effluent concentrations and a 1-hour or 4-day limit may not accurately represent a facility's ability to comply with the proposed policy. However, it is also not possible to predict whether continuous monitoring data (i.e., one data point per minute) would indicate that a facility is more or less likely to incur costs for compliance with revised effluent limits. Thus, due to a lack of continuous monitoring data for the case study facilities, State Board staff estimated compliance based on the data available. Staff revised the ECD to clarify the difference between the averaging periods of the available effluent data and the potential effluent limits. State Board staff compared a facility's maximum effluent concentration to the 4-day average limit where daily chlorine residual data are not available, resulting in a more conservative (i.e., erring on the side of higher costs) |

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| | | | | estimate of costs. Where daily observations are available, State Board staff compared calculated 4-day average concentrations to the 4-day average limit and the maximum daily value to the 1-hour average limit. Due to these revisions, the analysis includes process optimization costs for the SRWTP because the maximum monthly value reported in EPA's PCS database (0.014 mg/L) is greater than the 4-day limit of 0.011 mg/L. |
| 1 | 30 | Economic | Chlorine excursions at SRWTP are isolated discharges typically short in duration (much less than 60 minutes). A more accurate assessment of compliance could be determined by converting daily average monitoring data into an hourly average. This would be done by multiplying our daily average value by a factor of 24 hours per day. Since the daily average values typically represent a single chlorine excursion lasting only minutes, applying this method of analysis would be accurate. If the SWRCB performed its compliance evaluation in this manner, the conclusions derived would be much different and demonstrate the difficulty that SRWTP will have in complying with the new policy. | If the daily average concentration represents the average of 24 hourly samples, multiplying it by 24 hours per day would result in the sum of those 24 hourly values, not the individual values. Because the raw data from which the daily average value is calculated are not available to State Board staff, there is no way to confirm that the daily average is actually based on 24 individual samples or the average represents one high chlorine value with the rest nondetect, rather than 24 values greater than zero but all less than the proposed criteria. Thus, multiplying daily average values by 24 could greatly overestimate compliance costs. |
| 1 | 31 | Economic | The ECD currently contains information about SRWTP that is not accurate. Exhibit 4-2 currently indicates flows at SRWTP are 160 million gallons per day (mgd). This is closer to the current annual average flow while the SRWTP is currently permitted to discharge up to 181 mgd based on an average dry weather flow. Exhibit 4-2 should have a footnote to explain which flow is being shown. | State Board staff removed SRWTP from Section 4.2.2 as an example of a facility in California currently meeting the proposed TRC criteria because information provided in the comments indicate that the facility may not be consistently achieving the proposed criteria. |
| 1 | 32 | Economic | Exhibit 5-2 indicates that SRWTP has an average flow of 184 mgd. The footnote in this exhibit should include more detail (annual average?). | State Board staff updated Exhibit 5-2 to clarify the basis for the average flow. |
| 1 | 33 | Economic | Also the description of SRWTP in the appendix should be modified to note that the permitted capacity for the facility is for the 30-day average dry weather flow and that discharge to the Sacramento River is permitted as long as the river to discharge ratio is 14:1 and the river flow is greater than 1300 cfs. | State Board staff updated the description of SRWTP in Appendix A. |

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| 1 | 34 | Economic | Exhibit A-24 does include a footnote indicating that the current limit in the SRWTP permit is 0.011 ppm monthly average and 0.018 ppm daily average; however there is a disconnect in comparing historical compliance to our current monthly average limit and arriving at the conclusion that SRWTP "would most likely be in compliance with the potential permit limits based on the proposed TRC policy." This statement is inaccurate. SRWTP will have difficulty complying with the proposed limits and expects to see a significant increase in chlorine residual exceedances as a result of this policy. As stated in the previous section, the SWRCB cannot translate compliance with a monthly average value to mean compliance with an hourly average. Translating our monthly average operating data to an hourly average for comparison with the proposed policy would increase the values by a factor of 720 (24 hours per day x 30 days per month). | See response to Comment 1.29 and 1.30. |
| 1 | 35 | Economic | SRCSO currently doses sulfur dioxide at a ratio of approximately 1:1, not 4:1 as stated in the ECD. | See response to Comment 1.31. |
| 1 | 36 | Economic | Also, the ECD indicates that "Maintenance activities for the system include calibrating chlorine analyzers once per shift, backing up with a paper copy, manually checking all computer readouts, and using redundant residual analyzers to minimize equipment failure and occurrence of violations." SRCSO does not have backup paper copies unless the SWRCB is referring to the paper strip charts used as backup to the Plant Control Center System or calibration sheets. | See response to Comment 1.31. |
| 1 | 37 | Objectives | It should be noted that we believe the TRC Policy will result in increased violations for all dischargers, without a substantial increase in benefit in water quality. | The timeframe of the Objectives was set by USEPA. The use of these same timeframes in permit limits is the best way to meet the Objectives. Some dischargers may need to upgrade existing treatment or install new treatment technologies for compliance with the proposed policy. However, the State Board believes that due to chlorine's toxicity to aquatic life and the impracticability of traditional average daily or maximum monthly limits (see response to Comment 1.6), the policy is needed to protect aquatic life. Further, staff will include a table to the SED which can provide examples of specific species with concentration levels, duration of exposure and overall effect to aquatic life. |
| 1 | 38 | Applicability | In developing the TRC Policy, the SWRCB has used a 1984 EPA criteria document intended to apply to continuous chlorine exposures | See response to Comment 1.7. |

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| | | | (e.g. elevated chlorine residuals over long periods of time) and instead applied them to short, discreet and intermittent discharges of chlorine from industrial and wastewater discharges. The result is a policy that is overly protective, without a measurable benefit to the receiving water. | |
| 1 | 39 | Economic | Table 1 outlines the amount of time a discharger can have a chlorine release at various chlorine residuals before violating the proposed effluent limitation. For example, a discharger can only release chlorine with a residual of 4 mg/L for 17.1 seconds before violating the effluent limit of 0.019 mg/L one-hour average. Due to the response time of online monitoring systems (30 seconds to 2 minutes) these occurrences will result in a violation before the discharger is aware there is a problem and even has the chance to rectify the situation; therefore, assuming the proposed limits can be met with process optimization in the ECD is not accurate and should be changed. | Based on examples from facilities meeting the proposed criteria (e.g., Anderson Water Pollution Control Plant), State Board staff believe that installing feed-forward process controls should enable facilities to comply with the proposed policy. Feed-forward controls measure chlorine residual levels after disinfection and prior to the addition of sulfur dioxide. A mass flow signal is sent to the sulfonator from the analyzer and the sulfur dioxide delivery rate is automatically calculated and adjusted to the ratio required. Facilities can also install an alarm for the upstream chlorine residual concentration to alert operators of potential spikes or malfunctions. |
| 1 | 40 | Economic | If operating under this policy, SRCSD would have experienced 7 violations in one year (2003), versus zero violations based on a daily and monthly average effluent limits. SRCSD would have experienced 23 violations of the 0.019 hourly average limit over the past four years if operating under this policy; therefore, it is inaccurate for the ECD to state that SRCSD will not have difficulties complying with the policy and "therefore, the facility would most likely not incur costs associated with the proposed policy." SRCSD feels very strongly that we will incur significant costs, if the proposed policy is implemented. | State Board staff updated the ECD to include process optimization costs for the SRWTP. |
| 1 | 41 | Economic | It appears that many costs have been underestimated or not considered in the Economic Analysis. The ECD notes costs of \$2,000 to \$8,000 for continuous monitoring equipment throughout the text. It appears the SWRCB is using manufacturers stated cost with little or no cost for installation, testing, and implementation. Consideration of these factors would substantially increase costs. | Estimated costs of \$2,000 per chlorine residual analyzer represent an average across 4 different analyzers ranging from \$1,350 to \$3,450. Manufacturers estimate that installation and testing would likely take less than an hour. Based on SRCSD's hourly cost for a wastewater treatment plant operator, these costs would be approximately \$65, which is about 3% of the \$2,000 average cost. Therefore, State Board staff did not revise these costs in the ECD. |
| 1 | 42 | Economic | Further, the \$10 million to \$13 million in increased costs for capital and annual operations and maintenance is a very low estimate and should be adjusted upwards to reflect a more realistic estimate. | The \$10 million increase in capital costs and \$13 million increase in O&M costs are based on available data from EPA's PCS database and evaluation of the case study facilities. Actual costs may be over- or underestimated. |

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| 1 | 43 | Economic | The SWRCB should adjust the costs to reflect realistic labor rates. Currently it costs SRCSD from \$73 to \$86 per hour for an engineer and \$55 to \$75 for a wastewater treatment plant operator (note: this actual costs reflecting hourly wage, cost of benefits and administrative overhead). This varies from the \$45 per hour for an engineer and \$38 per hour for a wastewater treatment plant operator that is used in the ECD. | The hourly wage rates for an environmental engineer and wastewater treatment plant operator are based on data from the Bureau of Labor Statistics for California, and represent the average labor rate plus employer benefits. Administrative overhead costs are not included in this rate because it is not clear whether these costs of operating an office would increase if a facility hired part- or full-time personnel as a result of the proposed policy (since the total labor requirements represent a relatively small increase in labor, e.g., 0.25 FTE for a facility with two continuous analyzers). Nonetheless, State Board staff revised the ECD to incorporate the labor rates provided by the commenter. |
| 1 | 44 | Economic | The ECD assumes weekly calibrations of online analyzers. At a minimum, daily calibrations should be assumed. SRCSD currently calibrates the chlorine analyzers 3 times per day at the SRWTP. | Calibration frequencies are based on survey data from Instrument Testing Association (1999) that indicates that most facilities calibrate their analyzers less than once per week. This frequency is intended to represent an average rate. Thus, some facilities may actually calibrate online analyzers more or less often. |
| 1 | 45 | Economic | The ECD also assumes that maintenance costs for backup analyzers will be negligible. This is not accurate. Facilities will likely use both analyzers equally to ensure compliance with the continuous monitoring requirement. | The policy requires facilities to operate one chlorine residual analyzer continuously and to have a backup system to be used while the continuous analyzer is calibrated or offline for maintenance. The cost of a backup system is included in the analysis, however, the cost of operating a backup analyzer continuously is not attributable to the proposed policy. |
| 1 | 46 | Economic | Finally, ECD indicates that an excess of 1 ppm of sulfur dioxide would be used at facilities to ensure compliance with the proposed policy. This is not accurate. One ppm of excess sulfur dioxide will not ensure compliance at SRWTP. SRCSD normally injects an excess of 3 to 5 ppm excess sulfur dioxide. Even with this amount of excess sulfur dioxide injected, SRCSD does not anticipate being able to consistently meet the limits in the proposed policy. | State Board staff believe that installation of feed-forward process controls will reduce the amount of excess dechlorination agent necessary to ensure compliance with the proposed criteria because they allow for control of dechlorination agent dose to be adjusted based on chlorine residual levels immediately after disinfection. |
| 2 | 1 | General | We have also contracted with EMA, a firm that specializes in control system technologies, to give us expert analysis regarding the potential of monitoring devices to meet the criteria set forth in the April 2005 Draft Policy. A copy of the report provided by EMA is attached to this letter. | Comment acknowledged and attachments received. |

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| 2 | 2 | General | We support the overall goal of the policy to limit the discharge of residual chlorine and chlorine-produced oxidants to receiving waters. We do not object to the use of EPA criteria for establishing water quality objectives for chlorine residual. Nevertheless we have significant concerns as described below. | Comment acknowledged. |
| 2 | 3 | General | We have reviewed the April 2006 Draft Policy and find there are a number of areas remaining where, consistent with our earlier comments, we believe compliance is simply not feasible. While some in the POTW community continue to question the need for this policy given the many regulatory and water quality challenges ahead of us, there does not appear to be any agency that can support the adoption of a policy that contains these overly prescriptive provisions that are not possible to comply with given currently available technology. We are concerned that if the April 2006 Draft Policy is adopted in its current form, wastewater treatment agencies throughout California will be in continuous jeopardy for non-compliance and associated mandatory fines and exposure to third party litigation. | The State Board acknowledges that some facilities may need to upgrade existing treatment or install new treatment for compliance with the proposed policy. However, there are treatment technologies currently available that would allow dischargers to comply with the policy (see Economic Considerations for description of technologies). In addition, the proposed policy allows for compliance schedules up to five years for those facilities that may not be able to comply with the proposed policy immediately. This would allow dischargers sufficient time to come into compliance with the policy and avoid fines and exposure to third party litigation. |
| 2 | 4 | Monitoring Requirements | With respect to the specific monitoring requirements, it is our position they are not achievable. This position is based on actual experience with continuous monitoring systems as well as on information provided to us by EMA. EMA conducted an evaluation of the April 2006 Draft Policy with respect to the continuous monitoring requirement. A copy of the EMA report is attached to this letter. Based on information provided in the report as well as direct experience as reported by member agencies, specific aspects of the specifications for which we believe compliance is not possible have been identified. There aspects are: a. The required limit of detection is not achievable. The level of detection specified in the April 2006 Draft Policy is 1 µg/L. According to the EMA report, for a wastewater matrix, "practical limits of the lowest concentrations that can be accurately measured are approximately 50 to 200 µg/L" – and that is in a laboratory versus actual field environment. These detection limits are on the order of 50 to 200 times that specified in the April 2006 Draft Policy. | The statement on required detection limits has been replaced with the statement: "On-line devices must have a manufacturer-stated sensitivity corresponding to 10 ppb." In addition, the language requiring that online devices must be able to record concentrations in parts per billion refers to precision, or the number of significant digits included in the measurement. Facilities have a compliance schedule of 5 years to optimize the performance of the analytical method and equipment to the stated sensitivity of 10 ppb. In addition, facilities may use the alternative method of showing an excess of dechlorination product to determine compliance with the permit limit. |
| 2 | 5 | Monitoring Requirements | In addition, while we understand several wastewater treatment agencies in California currently use continuous monitoring devices to measure total residual chlorine, the detection limits realized in the field are far above those mandated in the draft policy. | See response to Comment 2.4. |

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| 2 | 6 | Monitoring Requirements | <p>The required accuracy is not achievable. The level of accuracy for continuous monitoring analyzers required to meet the criteria set forth in the April 2006 Draft Policy is 1 µg/L. With respect to the objectives provided in the April 2006 Draft Policy (e.g., 11 µg/L, 13 µg/L, and 19 µg/L), this level of accuracy is necessary in order to distinguish readings of 10 µg/L from 11 µg/L, 12 µg/L from 13 µg/L, 18 µg/L from 19 µg/L, and so forth. As indicated in the EMA report, "most chlorine analyzers have standard ranges of 0-2 or 0-5 mg/L, the accuracy is +/- 40 µg/L to 250 µg/L."</p> <p>At this level of accuracy, a reading of 11 µg/L (the freshwater objective for a 4-day average) could reflect an actual concentration as low as zero and as high as 250 µg/L. It is simply not possible to obtain reliable readings using a continuous monitoring total residual chlorine analyzer within the range specified on the April 2006 Draft Policy.</p> | <p>Please see response to comment 1.15. Additionally, the policy requires that devices must have a manufacturer-stated sensitivity corresponding to 10 ppb.</p> <p>In addition, facilities can use the alternative method of showing an excess of dechlorination product to determine compliance with the permit limit.</p> |
| 2 | 7 | Monitoring Requirements | <p>The required recording frequency is not achievable. The recording frequency specified in the April 2006 Draft Policy is "no less than one per minute." While data recorders have the ability to record at this frequency, continuous monitoring total residual chlorine analyzers do not have the ability to respond at this frequency. According to the EMA report, "Response times of commercially available chlorine analyzers vary from 1.5 to over 10 minutes depending on the sample and reagent flow rates, internal volumes in the instrument, and whether the measurement is continuous or batch." The frequency specified in the April 2006 Draft Policy is on the order of 1.5 to 10 times below that which is practically achievable.</p> | <p>Most continuous monitoring analyzers provide a response time of 1.5 to 2.5 minutes. However response time refers to the time required to fully quantify a significant change in the sample stream concentration. A typical measurement of response time is the time required for a device to register 90% of a new concentration. If a significant increase appears in the sample stream then the device will detect that increase, but with a small lag-time. The small lag-time will also be present as the concentration decreases. Considering that chlorine measurements are continuously recorded on the order of seconds, a small lag-time that is present for both increases and decreases in chlorine concentrations will not distort the hourly or 4-day averages used for compliance purposes.</p> |
| 2 | 8 | Quantification/Reporting Requirements | <p>The QRL language is vague and ambiguous. It does not include any information on the accepted methodology for the determination of the QRL, how the feasibility of the QRL is assessed, or what method should be used by the Regional Water Boards to establish alternative QRLs. We would like to see a clearer process to establish QRLs and would welcome the opportunity to work with State Water Board staff in developing that process, including defining the elements of QRL studies that may be submitted by dischargers.</p> | <p>Please see response to Comments 1.23 and 1.24</p> |

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| 2 | 9 | Quantification/ Reporting Requirements | Standard Method 4500-Cl E is not approved for wastewater testing. The Draft Policy specifies that the “discharger shall limit the calibration solution to no more than 0.500 ppm and verify the solution concentration by Method 4500-Cl E (Standard Methods).” Standard Method 4500-Cl E is not listed as an approved test method for the determination of total residual chlorine by USEPA in 40 CFR 136. We request clarification as to whether Method 4500-Cl E was correctly referenced in the Draft Policy and, if so, if any approved methods (as per 40 CFR 136) are also acceptable to the State Water Board for use under this Draft Policy. | Please see response to Comment 1.18 Also any other USEPA approved method for bench top analysis can be used as long it has a sensitivity corresponding to 10 ppb. |
| 2 | 10 | Monitoring Requirements | In addition, we request information regarding the process that was used by the State Water Board to validate the use of this method under the conditions specified. | EPA has published validation studies for Method 4500: 1) Water Chlorine (Residual) No. 1. 1969, Analytical Reference Service, Rep. No. 35, U.S. EPA, Cincinnati, OH; 2) Water Chlorine (Residual) No. 1. 1971, Analytical Reference Service, Rep. No. 40, US Environmental Protection Agency, Cincinnati, OH. All Standard Methods have been rigorously peer-reviewed. Also please see responses to comments 1.18 and 1.19. |
| 2 | 11 | Monitoring Requirements | Information provided by State Water Board staff indicates widespread non-compliance has not been reported in states where the EPA 1984 chlorine criterion has been adopted. To the best of our knowledge, no states have adopted a policy that combines the EPA criterion with the prescriptive continuous monitoring requirement set forth in the April 2006 Draft Policy. The Los Angeles County Sanitation Districts (LACSD) commissioned an informal survey to determine which states have adopted the USEPA 1984 chlorine criterion and, of those that had, what method of compliance was required (Ref: 12/13/05 Larry Walker Associates Memorandum to LACSD entitled “Los Angeles County Sanitation Districts Total Residual Chlorine Survey Results”). The results of that study indicate none of the other states surveyed that have adopted the EPA 1984 criterion have the prescriptive monitoring requirements set forth in the April 2006 Draft Policy. | See response to Comment 1.6 and 2.3. |
| 2 | 12 | Effluent Limits | In those instances where permit limits have been adopted that are below what can be measured, some states have made an allowance for technological limitations and consider all non-detected results to be below the MDL or zero. | Due to technical limitations, the policy will allow all measurements under 10 ppb to be considered non-detect results and be set to zero in the calculation of 1-hour and 4-day average values. |

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| 2 | 13 | Objectives | To assume that there will not be widespread non-compliance with the April 2006 Draft Policy simply because widespread non-compliance has not been reported in other states is an unfounded and unreasonable position for the State Water Board to take. Since other states have not incorporated the prescriptive monitoring requirements specified in the April 2006 Draft Policy, it is not possible to conclude they will have no effect on the ability of the regulated community to comply. | See response to Comment 2.3. |
| 2 | 14 | Economic | In addition, the April 2006 "Economic Considerations For Proposed Total Residual Chlorine and Chlorine-Produced Oxidants Policy for California" indicates that data from prior discharge monitoring reports was used to assess what controls would be necessary to comply with the April 2006 Draft Policy. All non-detected values for chlorine which were reported as zero in prior discharge monitoring reports were also assumed to be non-detected under the April 2006 Draft Policy. Due to the differences in detection limits (the April 2006 Draft Policy requires significant lower sensitivity), this assumption is fundamentally flawed and results in a grossly incorrect financial estimate of impacts to agencies. | State Board staff acknowledge that there are limitations associated with the effluent data used in the case study analyses. However, for those facilities in which all effluent data are reported as zero or nondetect, State Board staff assumed that controls such as process optimization would be necessary unless the current detection limit is below the proposed criteria. For example, all chlorine residual observations for the Calistoga WWTP are reported as 0.0 mg/L which corresponds to nondetect values. However, because the facility's existing limit is defined as being below the detection limit of standard methods defined in the latest EPA approved edition of Standard Methods for the Examination of Water and Wastewater, and the lowest detection limit of those methods is 0.01 mg/L (which is lower than the 4-day average limit), State Board staff assumed that the facility would not incur costs associated with meeting the revised effluent limits. Also see response to comment 1.29. |
| 2 | 15 | Economic | In its current form, this policy would require a triple redundant analytical and control system at a cost of tens of thousands of dollars to meet a good faith effort. More importantly, it would require significant operating costs to staff a qualified instrument technician at every POTW throughout the state to keep this complex system calibrated and operational. All this cost would be incurred and it would still not be technically feasible to comply with the requirements of the proposed policy. | Based on experiences from other treatment plants in California (e.g., Anderson Water Pollution Control Plant), the State Board considers compliance with the proposed policy to be technically feasible. However, some facilities may have to implement process controls or additional treatment for compliance with the proposed policy. State Board staff estimated, based on case study facilities, that these costs could range from approximately \$10,000 to \$140,000 for capital, and \$0 per year to \$370,000 per year for O&M. |
| 2 | 16 | Economic | The assertion in the April 2006 "Economic Considerations For Proposed Total Residual Chlorine and Chlorine-Produced Oxidants Policy for California" that there would not be an impact in costs for | Of the 18 case study facilities, State Board staff estimated that half would need to install dechlorination or optimize their current chlorination systems for compliance with the proposed |

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| | | | <p>agencies in complying with this policy as compared to their current system is completely inaccurate and furthers the flawed assumptions and conclusions in this critical document.</p> | <p>criteria. The estimated costs for the case study facilities are based on available effluent data. Unless these data indicate that effluent chlorine residual levels would be greater than the proposed criteria, State Board staff did not estimate control costs. For those facilities for which costs are zero, either daily effluent chlorine residual values are below the proposed criteria or existing effluent limits are at or below the proposed criteria.</p> |
| 2 | 17 | Objectives | <p>The April 2006 Draft Policy requires 100% compliance with the stated objectives. Many of the treatment systems across the state are biological and require constant monitoring and operation to ensure that the system is working as intended. Supporting this process are many mechanical and technological devices, some of which have limitations. There is no acknowledgment of the technological limitations of operating an uninterrupted wastewater disinfection process. Short term duration spikes will and do occur. These spikes are not preventable and are not indicative of system failure. Rather, these spikes represent the balancing act between on-going system changes in chlorine demand and the accordant dechlorination agent demand. Wastewater treatment systems are designed to detect and respond to these changes. The best response times of these systems exceeds that allowed in the April 2006 Draft Policy such that routine spikes will occur that are of short-term duration. Operators (people) monitor and ensure that any spikes are quickly resolved. For this reason, the Santa Ana Regional Board uses a criterion that is based on 99% compliance.</p> | <p>In its 1984 criteria document, EPA specifies the criteria as average values not to be exceeded more than once every three years. This exceedance frequency is on EPA's best judgment of the time it would take an unstressed system to recover from a pollution event in which exposure to chlorine exceeds the criterion.</p> <p>The suggestion that exceedances be excused based on the technological limitations inherent in the disinfection process is not consistent with EPA regulations or policy. EPA regulations provide an "upset defense" for situations in which permit limits based on technology are exceeded, due to no fault of the operator, because the technology failed. See 40 C.F.R. §122.41(n). See also <i>Marathon Oil Co. v. EPA</i> (9th Cir. 1977) 564 F.2d 1253. EPA regulations do not provide a similar defense for exceedances of water quality-based limits. EPA's position has been that the Clean Water Act distinguishes between technology-based and water quality-based permit limits "by requiring water quality standards to be observed at all times in all situations," and this position has been upheld in court. See <i>Natural Resources Defense Council v. U.S. Environmental Protection Agency</i> (D.C. Cir. 1988) 859 F.2d 156, 206.</p> <p>Although dischargers are required to comply with applicable effluent limits for TRC or CPO 100% of the time, there may be no enforcement consequences if the limits are, in fact, exceeded. In particular, mandatory minimum penalties for violations of water quality-based limits for TRC or CPO must only be assessed for exceedances that are greater than 20% of the effluent limits or for any four exceedances less than 20% of</p> |

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| | | | | <p>the effluent limits that occur within a six month period. Consequently, the limits could be exceeded, but not require imposition of mandatory minimum penalties. In addition, the Regional Water Boards exercise enforcement discretion and can and do choose to forego penalties (other than mandatory minimum penalties) or other enforcement action, where appropriate, for violations caused by extenuating circumstances.</p> <p>The SED provides the State Board's reasoning for not adopting the Santa Ana Regional Board's approach statewide.</p> |
| 2 | 18 | Compliance Determination | <p>Because the proposed policy requires 100% compliance, the proposed policy would, in effect, establish an absolute technology-based standard without providing any margin for error. Because technology is inherently fallible, a policy such as this must include provisions to protect against violations based on limitations inherent in the underlying technology. (See, e.g., FMC Corp. v. Train, 539 F.2d 973 (1976)) and the 9th Circuit (Marathon Oil v. EPA, 564 F.2d 1253 (1977)). In its current form, the April 2006 Draft Policy does not include any such provisions.</p> | <p>See response to Comment 2.17.</p> <p>The proposed policy establishes water quality objectives for TRC and CPO and requires that permits include effluent limits that are derived from these objectives. The resulting effluent limits are water quality-based, rather than technology-based. Although technology is used to meet the limits, this fact does not change the character of the limits, which remain water quality-based.</p> |
| 2 | 19 | General | <p>The Water Code requires the State Water Board regulate to "attain the highest water quality which is reasonable" (Water Code section 13000). While it may be protective of water quality, we believe the April 2006 Draft Policy is not reasonable in that it does not protect against violations due to technological limitations.</p> | <p>See response to Comment 2.17 and Comment 2.18.</p> |

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| 2 | 20 | Compliance Determination | <p>The April 2006 Draft Policy specifies the means by which compliance with the total residual chlorine objectives must be met. While we support the establishment of a numeric objective for total residual chlorine, we believe the means by which compliance is achieved should be determined by the permittee. This is supported by Section 13360(a) of the Water Code which states:</p> <p><i>"No waste discharge requirement or other order of a regional board or the state board or decree of a court issued under this division shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be permitted to comply with the order in any lawful manner."</i></p> | <p>The proposed policy does not specify the means by which compliance with the objectives must be met. Rather, the policy specifies the means by which compliance with the objectives must be determined. The Economic Considerations document identifies reasonable means of compliance. However, dischargers are allowed to comply with the objectives by any means they deem appropriate, provided that all other permit conditions are met.</p> |
| 2 | 21 | Compliance Determination | <p>In order to provide a means of compliance that is implementable and achievable, we request that other means of compliance, such as measuring dechlorinating agent residual with a continuous monitoring analyzer or by otherwise demonstrating the presence of dechlorinating agent in the plant effluent (stoichiometric). We offer the following suggested clarification language:</p> <p><i>"Compliance can be demonstrated using any of the following three methods:</i></p> <ul style="list-style-type: none"> <i>a. Show an absence of residual chlorine in the plant effluent through continuous measurement of chlorine residual using a continuous monitoring analyzer;</i> <i>b. Show an absence of residual chlorine by showing a presence of dechlorinating agent in the plant effluent through continuous measurement of dechlorinating agent residual using a continuous monitoring analyzer;</i> <i>c. Show an absence of residual chlorine by showing a presence of dechlorinating agent in the plant effluent through continuous measurement of chlorinated effluent chlorine residual, dechlorinating agent feed rate, and plant flow (or other combination of plant parameters that demonstrate compliance stoichiometrically). When using sulfur dioxide (SO₂) as the dechlorinating agent the stoichiometric relationship requires on the order of 1.0 part sulfur dioxide to remove 1.0 part of chlorine residual. Compliance determinations shall be based on the demonstration that every pound of chlorine measured immediately prior to dechlorination is treated with</i> | <p>Dischargers are required to measure chlorine residual or dechlorination agent residual continuously to determine compliance with effluent limits. Only when continuous monitoring systems are off line, such as for calibration, maintenance, or troubleshooting, may a discharger determine compliance using a back-up method such as grab samples or the stoichiometric method.</p> |

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| | | | <i>greater than 0.9 pound of sulfur dioxide. When using sodium bisulfite (NaHSO3) as the dechlorinating agent the stoichiometric relationship requires on the order of 1.61 parts sodium bisulfite to remove 1.0 part of chlorine residual. Compliance determinations shall be based on the demonstration that every pound of chlorine measured immediately prior to dechlorination is treated with greater than 1.61 pounds of sodium bisulfite."</i> | |
| 2 | 22 | Compliance Determination | In addition, to provide a vehicle for the development and implementation of new monitoring methods, we request the policy be revised to allow the discharger to submit data on proposed alternative continuous monitoring methods to their local regional board and to grant regional boards the authority to review and approve such methods for use in lieu of the methods identified above. | Unless an exemption is granted, dischargers may use any continuous monitoring methods that measure chlorine residual and/or dechlorination agent residual concentrations. Regional Boards may exempt facilities on a case-by-case basis from the continuous monitoring requirement where the discharger demonstrates, and the Regional Water Board determines that continuous monitoring does not appropriately characterize the discharge. |
| 2 | 23 | General | After reviewing the April 2006 Draft Policy, we are concerned that a number of the significant items previously raised by Tri-TAC in comment letters and during public workshops have not been addressed in any manner. These items remain of significant concern and directly relate to our ability to comply with the April 2006 Draft Policy. We sincerely hope our concerns will be addressed so that we can work with the State Water Board and our Regional Water Board to attain reasonable compliance with this important policy. | Comment acknowledged. |
| 2 | 24 | General | We appreciate the opportunity to provide comments to State Water Board staff during this comment period. We would be pleased to meet with you to discuss further revisions to the draft policy prior to formal release. | Comment acknowledged. |
| 3 | 1 | Economic | As discussed in greater detail in the Enclosure, LADWP has conducted an extensive effort to demonstrate that our power plant discharges are not toxic, and yet compliance with the Policy would require the installation of dechlorination systems with expenditures of \$1.8 million capital and \$111,000 for operations and maintenance. The proposed Policy clearly places an inordinate share of the economic burden to comply with exceedances of Total Residual Chlorine (TRC) and Chlorine-Produced Oxidants (CPO) criteria on the power industry via installation of dechlorination, and also places an unnecessary burden on municipal drinking water system maintenance. | The State Board acknowledges that any discharger currently using chlorine without dechlorination may have to install dechlorination for compliance with the proposed policy. However, such treatment is necessary to prevent exceedance of the proposed objectives and for the protection of aquatic life. |

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| 3 | 2 | General | LADWP believes there are numerous other chlorinated discharges that exist, and a statewide policy with a single limit that can be applied across the board for all these discharge types is scientifically flawed and unnecessarily stringent. | The proposed policy allows a Regional Water Board to develop a site-specific objective for TRC and CPO, or both, whenever it determines, based on its best professional judgment, that the objectives are inappropriate for a particular water body. |
| 3 | 3 | General | The State may believe this Policy is practical from an implementation standpoint, but it is not an equitable solution, nor is it necessary for the protection of aquatic life. | As described in the SED, there have already been significant violations of existing standards that have resulted in recorded fish kills and negative effects on aquatic life. Thus, the State Board considers that the existing standards do not provide sufficient protection of aquatic life and that the proposed policy is necessary for that protection. |
| 3 | 4 | Applicability | An alternative policy for intermittent chlorine discharges that considers the transient, short-term effects of chlorine is needed. | All Intermittent language in the proposed policy has been deleted. If different objectives are needed, the policy allows for site-specific objectives. |
| 3 | 5 | Monitoring Requirements | Alternative approaches to sampling and monitoring intermittent discharges are also necessary. | All intermittent language in the proposed policy has been deleted. Also see response to comment 2.9. |
| 3 | 6 | Applicability | Lastly, the continued use of Best Management Practices (BMPs) for drinking water discharges associated with system operations and maintenance should be adopted. | <p>Although the objectives (Part I) will apply to all applicable dischargers within the state, clarifying language has been added to both the proposed draft policy and the SED to convey that Part II of the policy does not apply to NPDES permits for which the State Water Board or Regional Water Boards have determined that numeric effluent limits for chlorine are infeasible, such as permits to regulate potable water discharges that occur in the field due to the activities of drinking water utilities or agencies. These activities include, but are not limited to, dewatering pipelines and reservoirs, flushing distribution system piping, and flushing fire hydrants. Numeric effluent limits are infeasible because these discharges occur at disperse locations in the field, there are no stationary treatment facilities at these locations, and field monitoring equipment does not currently achieve the necessary level of precision. The Regional Water Boards must regulate the discharge of TRC and CPO in these discharges through requirements for appropriate best management practices.</p> <p>In addition, the policy will state that Part II does not apply to NPDES permits that contain only requirements for best management practices, in lieu of numeric water quality-based</p> |

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| | | | | effluent limitations, as authorized under 40 Code of Federal Regulations (CFR) section 122.44(k), revised as of July 1, 2004. |
| 3 | 7 | General | The Los Angeles Department of Water and Power (LADWP) has serious concerns about the proposed Chlorine Policy (Policy). We believe the Policy attempts to supersede long established existing site-specific decisions made by the regulatory agencies (items 1 and 2 below) and creates significant monitoring issues for intermittent and temporary discharges (item 3) with intermittent discharge times that should not be additive (item 4). | The policy does not attempt to directly or indirectly supersede any specific regulatory decisions. Rather, the policy proposes to adopt protective objectives for chlorine residual and to impose consistent implementation provisions for the objectives. |
| 3 | 8 | General | The Policy is not justified by the California state laws cited in the staff's "Substitute Environmental Document" (SED, April 2006), and will not achieve its asserted purpose of producing "consistency" in the regulation of chlorine by the different Regional Water Quality Control Boards (items 5 and 6). | As discussed in the SED, the State Water Board disagrees with this comment. |
| 3 | 9 | Applicability | The Policy attempts to supersede existing site-specific decisions made by the Los Angeles Regional Water Quality Control Board (RWQCB), the State Water Quality Control Board (SWRCB), and USEPA. LADWP's power plants have satisfied the requirement for modifications of "best available technology" (BAT) effluent limitations under §301(g) of the federal Clean Water Act, 33 U.S.C. §1311 (g), and in so doing, have demonstrated that the modified effluent limits (essentially site-specific water quality based effluent limits) are both protective of beneficial uses and serve the public interest. Modifications under §301(g) require a showing that, among other things, the modified requirements will comply with water quality-based permit limits more stringent than best practicable control technology. The demonstration must also show that the modified requirements will not interfere with the attainment or maintenance of water quality that will assure protection of public water supplies, the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities, in and on the water. Finally, the showing must satisfy the regulatory authorities that the modification will not result in a discharge of pollutants in quantities that may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation, persistency in the environment, acute toxicity, chronic toxicity or synergistic propensities (see 33 U.S.C. 1311 | See response to Comment 3.7. In addition, it should be noted that, to obtain a variance from BAT limits under 301(g), a discharger must demonstrate that modified permit limits will meet the applicable water quality standards. Given that about 17 years have passed since LADWP obtained the variances and the fact that the water quality standards for chlorine may change, it is appropriate to revisit the variances. |

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| | | | <p>(g)(2)(C)). Thus, in order to satisfy the 301(g) requirements, LADWP had to prove that our discharges will be consistent with a balanced population of shellfish, fish, and wildlife and not pose an unacceptable risk to the environment (see Attachment 1, Site Specific and Effluent-Specific Analysis of Chlorine Impacts at LADWP Facilities).</p> <p>During the 1980s, LADWP satisfied these requirements for its three generating stations. Using indigenous species of several fish, invertebrates and a plant approved by EPA, the SWRCB, and the RWQCB, we performed both acute and chronic toxicity tests on sensitive stages of the species for a full year. These tests showed that chlorine at the concentration called for by our existing permit limits was not toxic to these species.</p> <p>In addition to these acute and chronic toxicity tests, EPA asked for a six-month study to look for possible synergistic effects with chlorine, chlorine byproducts, and brominated compounds. Again, these studies showed an absence of adverse effects.</p> <p>Finally, EPA asked us to sample total residual chlorine at the "boil," where the discharge bubbles up into the receiving waters, and outward to the edge of the zone of initial dilution. We found that, under our existing chlorination practices, we could barely detect chlorine at the center of the bubble, and from there the concentration rapidly dropped to non-detectable. This was a site-specific demonstration proving that chlorine is rapidly reduced to non-detectable concentrations due to chlorine demand and volatilization. Because of the rapid decay and non-persistent nature of TRC and CPO, our studies and monitoring data show there is minimal exposure to aquatic life.</p> | |
| 3 | 10 | Effluent Limits | Further, since our intermittent discharges are planned to be evenly spaced throughout a 24-hour period, it is not appropriate to sum the intermittent discharge times to obtain unnecessarily stringent instantaneous limits. | Please see response to comment 3.5 |
| 3 | 11 | Applicability | Based on these studies, USEPA, SWRCB, and the RWQCB approved exemptions for our three facilities. In order to provide continuing assurance of aquatic life protection, we have been doing chronic toxicity testing since 1985. During those twenty years, only one or two | See response to Comment 3.7. |

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| | | | <p>of the chronic tests showed chronic toxicity, and in every case a retest showed that there was no problem. In short, both our original studies and our continuing testing for chronic toxicity demonstrate that chlorine in our discharges presents no threat to aquatic species. The granting of these variances represents a finding by the state (the State Board and the Regional Water Board) that our discharges will not compromise protection of the receiving waters for beneficial uses and that the public interest will be served.</p> <p>None of the factual conclusions from our studies in our monitoring program are changed, of course, by the proposed Policy. New objectives for chlorine can in no way change the fact that the modified effluent limit requirements- have been found to protect a balanced, indigenous population of shellfish, fish, and wildlife or that the existing discharges do not pose an unacceptable risk to the environment. Accordingly, the Policy should not disturb site-specific efforts undertaken to establish effluent limits protective of water quality and beneficial uses, should not require new studies or a re-petitioning to the RWQCB or SWRCB, and should not require any change to existing 301(g) modifications.</p> | |
| 3 | 12 | Applicability | <p>Recommendation: Add the following statements prior to the Objectives: "This Policy does not change findings made by the Regional Boards or State Board, with approval by USEPA that a discharge will not compromise protection of the receiving waters for beneficial uses and that the public interest will be served, i.e., 301(g) variances and associated scientific studies. In these instances, the Policy recognizes that the discharge has met the State Water Quality Criteria on a site-specific basis. Existing dischargers with a current 301(g) variance from these objectives include: A. Haynes generating plant B. Harbor generating plant"</p> <p>Note: The specific listing of facilities within a California policy document is not without precedent. LADWP cites the 1972 revision of the California Thermal Plan, page 2, where facilities were specifically named as existing facilities for the purpose of regulation under the Plan.</p> | <p>See response to Comment 3.7. The named power plant dischargers were granted exceptions from meeting effluent limits based on the Ocean Plan TRC objectives. These exceptions were considered because the cost for these power plants to de-chlorinate was extreme. New information suggests that this is not the case; for example, other very large power plants like the Diablo Canyon Nuclear Power Plant have a de-chlorination system in place (a retrofitted system) for a 2 billion gallon per day discharge. The LADWP plants are smaller than the Diablo Canyon Plant; therefore, de-chlorination may be feasible at the LADWP plants.</p> <p>Considering that; 1) these power plants are no longer classified as ocean dischargers, 2) the old exceptions were granted prior to the effective date of the proposed policy's new statewide objectives, 3) the site specific studies were done many years ago, and 4) new economic information suggests</p> |

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| | | | | that these facilities can comply; the old exceptions will need to be re-evaluated. |
| 3 | 13 | General | <p>What the proposed Policy would do is both set instream water quality criteria, or objectives, and at the same time set water quality-based end-of-pipe effluent limits at the same level, without any determination of "reasonable potential."</p> <p>Under the federal regulations, a water quality-based permit limit is necessary only if there is a "reasonable potential" for causing or contributing to an exceedance of an instream criterion. The statewide Policy skips this step altogether and simply imposes a universal effluent limit regardless of the effect of the effluent on water quality.</p> | The State Board believes that, due to the highly toxic nature of chlorine, any facility have uses chlorine in its processes has the potential to cause or contribute to an exceedance of an instream criterion. |
| 3 | 14 | Mixing Zones | By comparison, for priority toxic pollutants, the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) (SIP/CTR) allows mixing zones and dilution credits (see §1.4.2). A Regional Water Quality Control Board may deny a mixing zone and dilution credit, but only "as necessary to protect beneficial uses" or to comply with the SIP/CTR or other regulatory requirements. For the draft Policy, the State Board's staff has made no finding that prohibiting mixing zones for chlorine is "necessary" to protect uses anywhere in the state, let alone everywhere, nor any explanation why the draft Policy for chlorine is different from the SIP/CTR. | The policy allows a Regional Water Board to grant a mixing zone provided that the objectives for TRC and CPO are met throughout the receiving water except within the mixing zone, and there is no potential for acute toxicity within the mixing zone. |

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| 3 | 15 | Effluent Limits | Thus, the draft Policy would abandon the entire conceptual structure for calculating water quality-based permit limits. | See response to Comment 1.6. |
| 3 | 16 | Objectives | First, the draft Policy applies federal instream criteria everywhere, with no inquiry as to whether those nationwide criteria are appropriate for all California waters and all California species. The entire rationale for adopting the federal criteria seems to be that they have a "solid scientific foundation" and have been peer reviewed (SED p. 38) and therefore must be appropriate everywhere. | As described in the SED, the State Water Board believes that consistent statewide criteria are necessary for the protection of aquatic life. However, the policy does allow for the development and implementation of site-specific criteria where warranted. |
| 3 | 17 | Objectives | The draft Policy also disregards the fact that the federal chlorine criteria are expressly not intended for intermittent discharges. | Please see response to comment 3.5 |
| 3 | 18 | Effluent Limits | Then the draft Policy uses the instream criteria as end-of-pipe limits, ignoring the concepts of "reasonable potential," mixing zones, and dilution credits. The rationale for abandoning the established method of calculating water quality-based permit limits is that in "many" regions of California there is no assimilative capacity for dilution due to lack of flow in the receiving water, that chlorine is acutely toxic to aquatic life, that the Department of Fish and Game has a policy that no acutely toxic concentration of pollutant shall be present at the discharge point prior to dilution, and that "any amount of chlorine" may increase the "potential" of downstream fish kills and harm to aquatic biota (SED p.44). This reasoning, which relies on generalizations rather than data, is inadequate as a basis for abandoning both the federal approach to water quality-based permit limits, found in EPA's 1991 Technical Support Document, and the approach of the SIP/CTR. | See response to Comment 3.2 and Comment 3.14. |
| 3 | 19 | Mixing Zones | Recommendation: Allow mixing zones to be applied, at each RWQCB's discretion, based on valid monitoring and study data. | See response to Comment 3.14. |

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| 3 | 20 | Applicability | <p>The Policy requires continuous monitoring; however, the RWQCB may exempt facilities on a case-by-case basis where the discharger demonstrates, and the Regional Board determines, that continuous monitoring is inappropriate. However, the staff recommendations state that only small facilities where the Regional Board deems continuous monitoring is inappropriate should be exempted, citing as an example, small facilities with very small, intermittent discharges lasting minutes (SED 52).</p> <p>This exemption is inadequate and should be expanded. For example, our power generating facilities use millions of gallons of seawater for once through cooling to which chlorine is added for control of bio-fouling of the condensers. Additionally, some intermittent flows as described below are not necessarily "very small." It should not be the smallness of the flow that determines the monitoring requirements particularly if at times there is simply no chlorine to be measured.</p> | Please see response to comment 3.5 |
| 3 | 21 | Applicability | <p>Recommendation: The Policy should say that flows of any size, that discharge intermittently can appropriately be exempted from the continuous monitoring requirement.</p> | Please see response to comment 3.5 |
| 3 | 22 | Monitoring Requirements | <p>Continuous monitoring is also a problem for other "intermittent" discharges like hydrostatic testing or groundwater dewatering that can span more than 2 hours, but is still short-term, intermittent, and not at a fixed permanent discharge location. These types of discharges are generally associated with projects that have a definitive beginning and end, but may discharge periodically (e.g., every 6 to 9 months) over the course of the project. For these projects, the discharge could be 4, 6, or 8 hours in one day or 4 to 8 hours for as much as 5 days and then no discharge for months. Lastly, these projects are mobile and can take place within the public domain (e.g., on residential or commercial streets). Establishing the means for, and conducting continuous monitoring of these discharge types is simply not feasible.</p> | Please see response to comment 3.5 |
| 3 | 23 | Monitoring Requirements | <p>Consistent monitoring requirements throughout the State are not essential to protecting against chlorine acute toxicity, as stated in the Policy, but rather effective, site-specific monitoring. The power generating facilities have calculated at what time the peak TRC and Free Available Chlorine (FAC) residuals reach the sampling point and gather grab samples accordingly. Furthermore, TRC is not discharged</p> | Please see response to comment 3.5 |

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| | | | from any single generating unit for more than 2 hours per day, which is typically broken down to 20 minute increments- once per condenser half per shift. | |
| 3 | 24 | Monitoring Requirements | Lastly, in addition to the requirement for continuous monitoring, the Policy requires a back-up system either online or one which allows one grab sample every 15-minutes. Again, this requirement is unnecessary, especially for intermittent discharges. Presumably the Regional Water Boards may exempt facilities from the back-up monitoring requirement, but the Policy does not make this clear. | Please see response to comment 3.5 |
| 3 | 25 | Monitoring Requirements | The proposed Policy states that it is essential to have consistent monitoring frequencies in order to protect against acute toxicity (SED 52). LADWP believes monitoring frequency should appropriately reflect permit needs (intermittent vs. continuous) and how well the monitoring represents of the discharge. | Please see response to comment 3.5 |
| 3 | 26 | Applicability | Recommendation: The Policy must redefine what is meant by an "intermittent" discharge. The two hour criterion is simply unworkable and appears to have been chosen arbitrarily. | Please see response to comment 3.5 |
| 3 | 27 | Applicability | Furthermore, at a minimum, the Policy should, make clear that "continuous" monitoring is not needed for intermittent discharges of chlorine. Discharges from temporary locations, which might have a duration greater than 2 hours should be exempt due to the difficulty of setting up a monitoring program. Existing BMPs with dechlorination chemicals should be sufficient to protect receiving waters due to the non-conservative nature of TRC and CPOs. | Please see response to comment 3.5 |
| 3 | 28 | Monitoring Requirements | LADWP is concerned that currently available on-line instrumentation for continuous monitoring (e.g., once per minute) may not have the capability of delivering results with the required frequency or detection limit. The best cycle time available for the continuous analysis of seawater was found to be 2.5 minutes. This allows time for the analytical reagent to react with the TRC or CPO in the sample in order to get a readable result. | See response to Comment 2.7. |

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| 3 | 29 | Quantification/Reporting Requirements | LADWP is also concerned about the detection limits of commercially available on-line and field monitoring systems. In order to do monitoring at temporary discharge locations (e.g., a hydrostatic test site, fire hydrant breakage, or water main flushing location), the Policy requires both continuous monitoring and 15-minute grab samples unless we obtain an exemption for continuous monitoring for each discharge occurrence. For these temporary discharge sites, a field test kit could be more appropriate instead of a permanent on-line system. The field test kit could be used to obtain 15 minute grab samples. However, a field test kit with spectrophotometer and a demonstrated method detection limit of 6 ppb had a Relative Percent Difference (RPD) of 28.6 for a freshwater sample (Attachment 2) for concentrations near the continuous limits in the Policy. This indicates that the Quantification/Reporting Limit (QRL) for the test is higher than the Policy limits. If such a test kit is not capable of good RPD of 15 or less, then we cannot expect an online instrument, which runs on the same principle of analysis, to do better. | Please see response to comment 3.6 |
| 3 | 30 | Monitoring Requirements | Moreover, for a saltwater matrix, interferences due to the components of seawater may cause enough increase of the RPD to cause the QRL to be higher. | It is not clear on whether the commenter is referring to a field monitoring device or to a continuous monitoring device. Regarding field monitors, please see Comment 3.6. Continuous chlorine analyzers that have been designed specifically for seawater are currently available. |
| 3 | 31 | Monitoring Requirements | Another alternative would be to use amperometric titration, but this is not feasible in the field due to the delicate nature of the equipment (accuracy and precision may be lost while performing this test in the field). It will not be feasible to have many portable laboratories to be deployed with trained personnel at every water main rupture, broken fire hydrant, or field maintenance site. | Please see response to comment 3.6 |
| 3 | 32 | Monitoring Requirements | For online systems, our staff found an instrument with a detection limit of 0.035 mg/l with an accuracy and precision of +/- 5% or 0.005 mg/l, whichever is greater. The detection limit is above the Policy's proposed limit and the analysis frequency is greater than once per minute. Thus, compliance with the Policy's monitoring provisions is not achievable. | Several other online devices are available with a higher level of performance. Also see responses to Comments 1.15 and 2.7. Facilities may demonstrate compliance through continuous monitoring of chlorine residual or dechlorinating agents. |
| 3 | 33 | Quantification/Reporting Requirements | Recommendation: Address situations where the QRL is greater than the exposure limit. | See response to Comment 3.32. |

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| 3 | 34 | Quantification/ Reporting Requirements | Allow tests with higher QRLs and detection limits, especially when the assimilative capacity of the waterbody allows the chlorine to be reduced rapidly. | Facilities have a compliance schedule of 5 years to optimize the performance of the analytical method and equipment to the stated sensitivity of 10 ppb. In addition, facilities may use the alternative method of showing an excess of dechlorination product to determine compliance with the permit limit. See response to Comments 3.16 and 3.32. |
| 3 | 35 | Quantification/ Reporting Requirements | To avoid exceedances caused by analytical noise, allow exceedances to be determined based on the site-specific QRL, not a vendor's detection limit. | Please see response to comment 3.34. |
| 3 | 36 | Monitoring Requirements | Allow the use of currently available online instrumentation with a longer analysis cycle. | See responses to Comments 2.7 and 3.32. |
| 3 | 37 | Applicability | LADWP handles numerous drinking water system maintenance and repair tasks per month, which discharge tap water to the street or nearby catch basins. These tasks include, for example, hydrostatic testing of pipes, water line flushing and regulator blow offs (releases of potable water to regulate system pipeline pressure). Emergency activities include water main ruptures and fire hydrant knock-offs, where the priority is to shut down the discharge to protect people and property rather than mobilize a monitoring plan. Since chlorine is volatile and easily reduced prior to discharge to a waterbody, these temporary discharges should be exempt from the policy. Moreover, given the temporary and unpredictable nature of these activities, it would be difficult to mobilize a temporary monitoring-program for any of the aforementioned projects. | Please see response to comment 3.6 |
| 3 | 38 | Applicability | Another activity often covered by general NPDES permits, dewatering, does not involve drinking water or the use of chlorine. Nevertheless, these general permits often contain a Basin Plan TRC limit and should not be covered under the Policy. | Please see response to comment 3.6 |
| 3 | 39 | Applicability | Recommendation: Allow discharges associated with drinking water system maintenance and repair for public water supply to be exempt from the Policy and monitoring requirements. | Please see response to comment 3.6 |
| 3 | 40 | Monitoring Requirements | Monitoring intermittent discharges by collecting grab samples every 15 minutes for some situations, such as hydrostatic testing, dewatering, and well development is unnecessary, since the TRC value in a discrete volume of hydrotest discharge is expected to be stable throughout the course of the discharge and the TRC concentrations in | Please see response to comment 3.6 |

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| | | | groundwater are expected to be zero. | |
| 3 | 41 | Monitoring Requirements | Recommendation: Under situations where discharge water quality is not expected to change throughout the event (the water remains the same), 15 minute monitoring should not be required. | Please see response to comment 3.5 |
| 3 | 42 | Monitoring Requirements | The draft Policy states that receiving water monitoring is required if a grab sample is above the exposure limit. Again, this would be problematic for intermittent dischargers, whether less than 2 hours per day or periodically over several days. Temporary dischargers would be required to search for a safe and representative monitoring point at a receiving water potentially miles away from the discharge point. At this point, monitoring the receiving water in many cases would not be helpful, as chlorine dissipates rapidly after discharge. Thus, the time and effort associated with the logistics and mobilization of receiving water monitoring will not be helpful in adjusting intermittent dosages of chlorine or dechlorination chemical. | Please see response to comment 3.5 |
| 3 | 43 | | For illustrative purposes of the above comment, LADWP also discharges intermittent flows to fresh water ecosystems via the storm drain system. Periodic releases of potable water from the John Ferraro Office Building's reflecting pool are directed to the storm drain. The total residual chlorine limit was established at 0.5 mg/L; however LADWP requested that the limit be increased to 1.0 mg/L to achieve adequate algae control. LADWP, at the request of the Regional Board, conducted a study in 1982, the results of which indicated that even for chlorine levels of 0.84 mg/L at a worst case dilution of 5:1 with the flow in the Los Angeles River (approximately one-half mile distant), the total residual chlorine was undetectable (<0.02 mg/L) prior to its discharge entering the Los Angeles River. | Please see response to comment 3.5 |
| 3 | 44 | | As mentioned previously, existing BMPs with dechlorination chemicals should be sufficient to protect receiving waters due to the non-conservative nature of TRC, especially when the discharge travels along a street, then enters a catch basin and the storm drain system. As the water travels towards a receiving waterbody, any remaining | Please see response to comment 3.6 |

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| | | | TRC would have low concentration and either volatilizes or is reduced by existing organic matter. | |
| 3 | 45 | Monitoring Requirements | Recommendation: For the reasons stated above, state in the Policy that receiving water monitoring for temporary intermittent discharges are not required by this policy. | Please see response to comment 3.5 |
| 3 | 46 | Compliance Determination | <p>On page 7 of the draft Policy, non-compliance for each grab above the limit is considered a separate violation. Given that dischargers will be continuously trying to adjust the dechlorination chemicals, and that harm is minimal due to dispersion of the chlorine, having multiple violations for a single event is not appropriate. Furthermore, Water Code Section 13385(f)(1) indicates that it is not the intent of the state to seek multiple violations, minimum mandatory penalties or other such non-compliance claims for multiple violations, due to a single upset (e.g., malfunctions associated with a chlorination or dechlorination system or its monitoring).</p> <p>Recommendation: State in the Policy that multiple exceedances due to a single chlorination or dechlorination process malfunction shall be treated as a single violation.</p> | Please see response to comment 3.5 |
| 3 | 47 | Objectives | Intermittent discharge times during a 24-hour period should not be summed to determine the intermittent exposure limit, nor for determining if a discharge is intermittent or continuous. This is because the time between intermittent discharges offers aquatic organisms a recovery time, which increases the amount of tolerable TRC. | Please see response to comment 3.5 |
| 3 | 48 | Objectives | The Mattice and Zittel study cited by the SED shows the relationship between exposure time and chlorine dosage. As expected, as the exposure time is reduced, the toxicity threshold value increases. However, the study does not address a -situation where there are recovery times between intermittent exposures. The toxicity of discharges of chlorine that are intermittent, rather than continuous, is much lower than continuous exposure would be. Therefore, it is not appropriate to use a sum of the discharge times in a 24-hour period in | Please see response to comment 3.5 |

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| | | | <p>order to calculate more stringent instantaneous exposure limits or revert to the more stringent continuous limits provided by the Policy.</p> | |
| 3 | 49 | | <p>In a study done for the Utility Water Act Group in 1989, researchers at the University of Wisconsin exposed a species of fish, a snail, and daphnia that were known to be highly sensitive to chlorine. The tests were designed to expose the animals to chlorine under environmental conditions they would commonly encounter in the field. Table 5.1 from that study (Attachment 3) shows the reduction in toxicity due to intermittent exposures.</p> <p>The researchers found that monochloramine exposures of two hours' duration, administered four times in a 96-hour period, were five to seven times less toxic to fish (rainbow trout and common shiners) than continuous exposures administered over the same time period. [Note: the two hour increment for this study was selected because of the power plant effluent guideline limit duration and was not an arbitrary time period selection.] Chronic, sixty-day tests with early lifestages of the rainbow trout showed that intermittent exposures were approximately nine times less toxic. Tests with the water flea (daphnia) indicated that intermittent exposures were three to five times less toxic than continuous exposures. Tests performed with the snail, which can withdraw into its shell when chlorine is present, indicated that the animal can withstand intermittent exposures one hundred times higher than those administered continuously. The researchers concluded that a strong case could be made for the development of specific water quality criteria for intermittently chlorinated effluents. This is because the reduced toxicity is caused by the recovery time provided between exposures. Further, the data indicated that these criteria should be significantly less stringent than those presently in existence. A. Brooks, D. Szmania, and M. Goodrich, Special Report No. 39: A Comparison of</p> | Please see response to comment 3.5 |

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| | | | <p>Continuous and intermittent Exposures of Four Species of Aquatic Organisms to Chlorine (Center for Great Lakes Studies and Department of Biological Sciences, University of Wisconsin-Milwaukee) (March 1989) (report for the Utility Water Act Group, submitted to EPA in 1989).</p> <p>In 1990 EPA's Assistant Administrator for the Office of Water, LaJuana Wilcher, issued a memorandum to states and EPA Regions discussing the possibility of site-specific criteria to protect water quality from intermittent point source discharges of chlorine, such as the "pulse" discharges typical of the steam electric industry. (The same principles would govern any intermittent discharge of chlorine, such as from drinking water supply systems.) Ms. Wilcher acknowledged that a chlorine standard could be derived that would accommodate relatively higher peak levels, such as those caused by periodic power plant condenser tube cleaning, while maintaining long-term levels low enough to protect against environmental impact. She validated the Brooks data, calling it "very useful data." The memorandum pointed out that not only criteria concentrations but also exceedance parameters may be adjusted on a site-specific basis, if sound data so indicate, and that such modifications are "acceptable in principle." Ms. Wilcher also noted that some evidence exists that some environments can tolerate short-term exceedances of EPA's existing chlorine criteria, provided they are followed by suitable recovery periods, and that situations involving periodic cleaning with chlorine may be "good candidates for such site-specific modifications of the chlorine criteria." Memorandum, LaJuana S. Wilcher, Assistant Administrator, EPA Office of Water, to Water Management Division Directors (Regions 1 - X) and State Water Pollution Control Administrators, Chlorine Criteria: Consideration of Intermittent Discharges (December 11, 1990). See Attachment 4.</p> <p>Recommendation: Allow each intermittent discharge time to be counted separately, not summed over a 24-hour period for the determination of the intermittent exposure limit.</p> | |
| 3 | 50 | Objectives | The goal of the draft Policy is to achieve "consistency" in the treatment of chlorine discharges statewide, and it seeks to do so by setting a | See response to Comment 3.2 and Comment 3.14. |

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| | | | single set of instream objectives that would apply everywhere and then by requiring the same objectives as an end-of-pipe limit everywhere. We fear, however, that this "consistency" will prove illusory. In the first place, as a matter of chemistry and biology, the behavior of chlorine in surface waters is different from place to place, depending on waterbody type, local water chemistry, and what species are present. No regulatory policy can impose consistency where Nature herself is not uniform. By failing to recognize this natural diversity, the Board will only transfer the scientific issues to the process of setting site-specific objectives (SSOs), which are the burden of the Regional Boards. On that ground alone we ask the Board to reconsider the wisdom of the proposed objectives and the no-mixing-zone policy. | |
| 3 | 51 | Objectives | Recommendation: Allow the RWQCBs to continue setting criteria for TRC and CPO based on: (1) the current achievable detection limits, (2) the non-conservative nature of chlorine, and (3) the assimilative capacity of the receiving water. | Chlorine is a fast-acting, highly toxic constituent that has been shown to cause mortality in aquatic organisms within minutes. Facilities may need to upgrade their analytical equipment in order to achieve the required sensitivity of 10 ppb. Facilities have a compliance schedule of up to 5 years to optimize the performance of the analytical method and equipment to the manufacturer-stated sensitivity of 10 ppb. In addition, facilities may use the alternative method of showing an excess of dechlorination product to determine compliance with the permit limit. |
| 3 | 52 | Mixing Zones | Continue to allow mixing zones and dilution credits where appropriate, according to federal regulations. | See response to Comment 3.14. |
| 3 | 53 | Monitoring Requirements | Allow flexibility of monitoring requirements, depending upon the type of discharge. | The policy already has flexibilities built into several provisions. |
| 3 | 54 | General | The proposed Policy is not required, or even justified, by the California state laws cited in the SED. The legal reasoning in the SED seems to be that the Clean Water Enforcement and Pollution Prevention Act of 1999 (SB 709), by creating Mandatory Minimum Penalties (MMPs), created a situation in which occasional spikes in chlorine concentrations will trigger penalties in a way that is inconsistent from one Regional Board to another. As the SED put it, "with the implementation of SB 709, the ability to interpret violations has been greatly limited for the Regional Water Boards, subjecting dischargers to multiple MMP enforcement actions when in fact the violations may be a monitoring artifact." SB 709 did not make the regulation of | The State Water Board is clearly authorized to adopt the proposed policy. Under the Clean Water Act, the states are required to adopt water quality standards for surface waters. 33 U.S.C. §1313(c). Under state law, the State Water Board is authorized to adopt state policy for water quality control that includes appropriate water quality objectives. Wat. Code §§13140-13147, 13170. The enactment of the Clean Water Enforcement and Pollution Prevention Act did not require the State Water Board to adopt |

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| | | | chlorine more complex, only enforcement. The enforcement inconsistency can and should be remedied by means other than development of a statewide Policy. | the proposed policy. Nevertheless, one factor that the State Water Board considered, in deciding to develop a chlorine residual policy, was the impact of the law on dischargers in those cases where TRC violations were monitoring artifacts. |
| 3 | 55 | General | The proposed Policy goes on to suggest that what is really needed are sampling procedures that are "representative" of discharges and procedures that are consistent among all the nine Regional Water Boards (SED, p. 7). The SED also implies that the draft Policy is justified by the requirement for basin plans under the State Porter-Cologne Water Quality Act and by the requirement that the State Water Board adopt state policy for water quality control (SED p. 10). Lastly, the SED states that it is required to establish effluent limits for chlorine under the SB 709 added provision of CWC § 13263.6. But none of these state laws requires the Board to adopt any of the proposals in the draft Policy. | See response to Comment 3.54. The State Water Board need not be "required" to adopt a policy, but rather "authorized". |
| 3 | 56 | General | Furthermore, § 13263.6 is a trigger only for POTWs, and only for those substances that have been reported under Emergency Planning and Community Right to Know Act (EPCRA) where a reasonable potential exists for those same substances to cause a water quality standard excursion. | Comment noted. The policy is not based on §13263.6. |
| 3 | 57 | General | Recommendation: For the reasons stated above, SWRCB should consider that a uniform policy for the State may not be needed. Even the most flagrant exceedances caused by negligence can be handled by the RWQCBs. | Comment acknowledged. |

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| 3 | 58 | General | On page 61 of the SED, the number of violations for all dischargers was described. The SED states "the above violations resulted in recorded fish kills and negative effects on aquatic life..." The implication of this statement is that any discharge above the Policy's proposed Water Quality Objectives (WQO) will result in fish kills and negative effects on aquatic life. Yet as previously noted, LADWP, via its state exception and Federal 301(g) variance, has been operating for over 20 years at discharge limits significantly above the Policy's proposed WQO with demonstrable evidence of no fish kills or adverse effects. LADWP believes that this serves to illustrate two things. One, a statewide chlorine policy cannot address the site-specific responses of chlorine in the receiving water environment. Two, the Policy is flawed when it attempts to make broad sweeping justifications for its existence. | See response to Comment 3.7. |
| 3 | 59 | General | Recommendation: Evaluate the historical violations and fish kills and place them in the proper context if they are to be used as justification for having a statewide chlorine policy. An analysis of the extent of environmental improvement for these discharges causing fish kills should be included due to the economic impact on the public. | State regulations do not require cost/benefit type analysis. Justification for this policy is the extreme toxicity to aquatic organisms as shown by a vast number of scientific studies. |
| 3 | 60 | Economic | LADWP reviewed the economic analysis (April 2006) provided by the SWRCB, in particular, the description for the power plants of Pacific Gas and Electric at Hunters Point (page A-8) and Duke Energy LLC at Chula Vista (page A-33). These plant capacities are 709 and 396 megawatts, respectively. LADWP's Haynes and Harbor plant capacities are 1619 and 316 megawatts, respectively. As might be expected, the design of a dechlorination system needs to be site-specific based on factors such as cooling water flow, effective chlorine dosage, contact time for the dechlorination chemical, location of the generating units in relation to chemical storage, and available space. Accordingly, LADWP undertook an effort to estimate the capital cost (for total system installation) and the annual O&M cost for a dechlorination process using sodium bisulfite with the best chlorine monitoring instrumentation currently available on the market. In the estimate, we assume all installation can be installed above ground and there are existing spare conduits available for running the power and control/data cables. The estimated capital cost in 2006 dollars is \$1.3 million for the Haynes plant and \$500,000 for the Harbor plant. The | See response to Comment 3.7. |

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| | | | <p>annual O&M cost including chemicals is \$84,000 and \$27,000 for the Haynes and Harbor plants, respectively. Refer to Attachment 5 for a breakdown of the costs.</p> <p>Given the capital costs of \$1.8 million and annual O&M of \$111,000 for both power plants, LADWP questions the environmental benefit to be gained when contrasted with the quite significant costs to install dechlorination to achieve the Policy's WQO. As previously commented, LADWP demonstrated (in pursuit of its state exception and federal variance), and continues to demonstrate, that its site-specific TRC limits are protective of aquatic life and beneficial uses. LADWP questions, therefore, what environmental benefits will result by the expenditure of the \$1.8 million capital and \$111,000 annual O&M to install and operate a dechlorination system that is clearly not needed.</p> | |
| 3 | 61 | General | In short, the draft Policy does not allow for past site-specific decisions based on science to provide appropriate criteria that are protective. | See response to Comment 3.7. |
| 3 | 62 | Applicability | it does not consider temporary discharges due to maintenance and repair of the potable water system | Please see response to comment 3.5 and 3.6 |
| 3 | 63 | Quantification/Reporting Requirements | it does not address real world detection levels or QRLs and the difficulties in mobilizing to monitor intermittent discharges in the field. | Please see response to comment 3.5 and 3.6 |
| 3 | 64 | Monitoring Requirements | Page 6, Monitoring Requirements section: Water main breaks, hydrostatic tests, or other water system maintenance and repair projects should be exempt from continuous monitoring. We should not need to apply in every instance for an exemption to continuous monitoring. | Please see response to comment 3.6 |
| 3 | 65 | Quantification/Reporting Requirements | Page 7 top paragraph: The term "solution" needs to be identified more specifically in the sentence, "Facilities must verify the solution concentration by Method 4500-Cl E as found in Standard Methods for the Examination of Water and Wastewater, 20th Edition". It is not clear if method 4500-Cl E is used to verify the calibration stock standard, the solutions in the calibration curve, a quality control sample, or some of the samples collected during discharge. Also, method 4500-Cl E is an amperometric titration method, not suited for field use (as mentioned previously). | <p>The referenced policy language will be changed to Dischargers must verify the concentration of all standard solutions used for calibration and quality control purposes for TRC or CPO continuous monitoring devices using Method 4500-Cl E as found in Standard Methods for the Examination of Water and Wastewater, 20th edition, whose stated detection limit is 0.010 part per million.</p> <p>Please also see response to comment 3.6</p> |

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| 3 | 66 | Objectives | Page 39 of the SRD states that the equation $C=1070/T^{.740}$ is appropriate for ocean dischargers; therefore, the additional equation for intermittent CPO on page 4 of the Policy is not necessary. Delete the intermittent CPO equation from the Policy. | Please see response to comment 3.5 |
| 4 | 1 | Applicability | <p>The Introduction and Policy Applicability sections of the draft Policy state that any NPDES permit with one or more numeric water-quality based effluent limits will be subject to this Policy. The implication is that whether one of those effluent limits is for Total Residual Chlorine (TRC) or Chlorine-Produced Oxidants (CPO) or not, or even whether chlorine is used at a facility or not, those dischargers will be subject to this Policy.</p> <p>However, in Part II of the Policy, in the section titled "Determining the Need for Water Quality-Based Effluent Limits", a different stipulation is used. Here, the language states "If a discharger uses chlorine in its processes, the discharger's NPDES permit must include an effluent limit." Another statement that supports the Policy's intent to cover processes that actually add chlorine is found in the Monitoring Requirements section. The language there directs that at least one grab sample shall be collected at the maximum of a chlorination event.</p> <p>WSPA agrees with the wording in Part II under, "Determining the Need for Water quality-Based Effluent Limits". Only facilities/processes that actually use chlorine by adding it in their operations should be subject to this policy. Without this clarifying language, the mere use of municipal or other potable water can trigger this policy. For instance, the use of municipal water for the hydrotesting of tanks or pipelines or for fire test water would trigger this policy even though the process did not add any chlorine. Extending applicability to any permittee that has one or more numeric limits, regardless of whether they use chlorine or even whether residual chlorine is present at any point, seems overreaching.</p> <p>WSPA requests the State Board amend the sentence (in underline/strikeout) in the Policy Applicability section to be consistent with Part II:</p> | Please see response to comment 3.5 and 3.6 |

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| | | | <p>Part II of this Policy applies only to dischargers that add chlorine in their effluent treatment processes and whose NPDES permits that contain one or more numeric water quality-based effluent limitations.</p> | |
| 4 | 2 | Applicability | <p>In addition, small line replacements for repairs, relocations & tie-ins often involve one-time short duration discharge of relatively small volumes (< 5,000 gals.) of municipally supplied water from hydrostatic testing, as mentioned above. Regional Boards, like the Los Angeles, Santa Ana, and Central Valley, allow the discharging of these volumes under waiver, that is to say without the need of any analysis prior to discharge. WSPA recommends this practice of using waivers by the Regional Boards be incorporated into this Policy.</p> | <p>Please see response to comment 3.5 and 3.6</p> |

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| 4 | 3 | Applicability | <p>The proposed Policy attempts to recognize the difference between continuous and intermittent dischargers. While one type of intermittent discharger is described in the Policy, another type of intermittent discharger inappropriately remains in the continuous discharger category.</p> <p>Currently the Policy defines intermittent dischargers as those that discharge less than 2 hours per day. While this characterizes some discharges that occur for a short duration each day, it does not include those discharges that may occur for only a few days each year but for more than 2 hours per the days of discharge. An example of the latter category is the discharge of hydrotest water. A tank is tested every few years. When the test occurs, the discharge will last for only a few days, but will exceed the 2 hours per day definition. This situation would be avoided if the Applicability section was modified as mentioned above. However, if that change is not made, it is critical that large volume but infrequent discharges not be considered continuous discharges and subject to continuous monitoring requirements.</p> | Please see response to comment 3.5 and 3.6 |
| 4 | 4 | Monitoring Requirements | Even the large water utilities have concerns about the cost and efficacy of continuous monitoring. To require such an expensive and complex monitoring system for an infrequent discharge is inappropriate. | Please see response to comment 3.6 |
| 4 | 5 | Applicability | A more practical approach is to base the definition of intermittent discharge on an annual basis rather than a daily basis. That would cover both daily discharges of short duration, and infrequent discharges of a longer duration. An alternative approach would be to set a volume limit per year. | Please see response to comment 3.5 |
| 4 | 6 | Applicability | <p>WSPA requests the State Board amend the description of intermittent discharger (in underline/strikeout) to encompass both types of intermittent dischargers:</p> <p>For intermittent discharges of chlorine residual concentrations less than two hours per day 730 hours/year, the objectives for intermittent discharges apply in lieu of the 1-hour and 4-day averages.</p> | Please see response to comment 3.5 |

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| 4 | 7 | Monitoring Requirements | The current sampling requirement for intermittent discharges is a grab sample every 15 minutes. This requirement is burdensome and unnecessary for discharges such as hydrotest waters. As mentioned above, certain discharges may only occur every few years, but the duration of the discharge may last for a few days. Requiring a grab sample every 15 minutes, day and night, would be very difficult. This requirement would be particularly unnecessary when no chlorine has been added to the discharge. An alternate approach would be to require three discrete samples, taken at 30-minute intervals for the first hour and a half of discharge. | Please see response to comment 3.5 and 3.6 |
| 4 | 8 | Monitoring Requirements | WSPA requests the State Board amend the language in the Monitoring Requirements (in underline/strikeout) section to read: Intermittent chlorine discharge must adequately characterize the discharge. Grab samples shall be collected at least every 15 minutes three times, at 30-minute intervals for the first hour and a half of discharge, during each intermittent period of chlorination. | Please see response to comment 3.5 |
| 4 | 9 | Monitoring Requirements | WSPA is concerned about the availability of "field-friendly" testing methodology for the low concentrations in the proposed TRC objective. Particularly for grab samples in the field, test results may not be immediately available. The experience at some facilities has been a lag of several days to receive laboratory results. In addition, it is not clear whether currently available analysis equipment for field application can achieve the limits in the Policy. | Please see response to comment 3.5 |
| 4 | 10 | Monitoring Requirements | WSPA believes the State Board must insure that appropriate and cost-effective field methodology is available to provide timely and reliable results at the levels proposed in this Policy prior to placing compliance limits in an enforceable policy. Otherwise, dischargers may be faced with compliance requirements that are not feasible. | See response to Comment 1.17. |

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| 5 | 1 | Applicability | <p>San Jose Water Company uses a chlorine residual as a critical water treatment tool to ensure disinfection of water supplies and water conveyance systems to protect public health. We occasionally have to discharge treated (chlorinated) drinking water into public storm water collection systems or other surface drainage systems as a part of routine maintenance (such as line flushing and hydrostatic testing), and sometimes on an emergency basis due to water line ruptures or accidental discharges at water treatment facilities.</p> <p>When the April 2006 draft Chlorine Policy was released for public comment, San Jose Water Company was troubled by the language of the new draft that would capture almost all drinking water dischargers. ACWA reported that the SWRCB staff had reiterated drinking water utilities were not intended to be part of the policy.</p> | Please see response to comment 3.6 |
| 5 | 2 | Applicability | <p>ACWA has been working to develop compromise language that would allow potable water agencies to continue to operate under their current MS4 and NPDES permits and not be subject to the effluent limits in the Chlorine Policy. As of this date, language has not been offered by SWRCB staff to address this issue. San Jose Water Company shares the concern of ACWA over conflicting comments made by SWRCB staff indicating that language would instead be inserted requiring potable water dischargers to prove to our Regional Board we could not feasibly adhere to the Chlorine Policy when staff and the SWRCB Board has acknowledged drinking water utilities are not supposed to be included under the Policy's requirements.</p> | Please see response to comment 3.6 |
| 5 | 3 | Applicability | <p>San Jose Water Company is concerned that the draft Chlorine Policy includes drinking water utilities under its restrictions where we simply cannot dechlorinate to the level that is required in the policy document. We must dechlorinate in the field using Best Management Practices and Best Available Technology Economically Achievable.</p> | Please see response to comment 3.6 |
| 5 | 4 | Quantification/ Reporting Requirements | <p>There is no field monitoring equipment available that will detect total residual chlorine to the proposed Chlorine Policy dechlorination level of 0.019 mg/L (1-hr average, freshwater).</p> | See response to Comment 1.17. |
| 5 | 5 | Monitoring Requirements | <p>Additionally, there are no field devices that can ensure precise dechlorination to that stringent level.</p> | Please see response to comment 3.6 |

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| 5 | 6 | General | Water utilities, instead, are regulated under MS4 Permits and RWQCB General Permits to ensure that potable water discharges do not impact water quality. Under these permits, water utilities are required to implement Best Management Practices (BMPs) or meet numeric effluent limits that are based on BAT to reduce the discharge of total residual chlorine to the maximum extent practicable (MEP). Consistent and effective BMPs and BATs have been developed for the state of California and are used by many water agencies throughout the state. | Please see response to comment 3.6 |
| 5 | 7 | Applicability | Since the first draft of the Chlorine Policy was published, potable water dischargers were given assurances by SWRCB staff that they were not included in this policy and would instead be regulated by their existing permits. | Please see response to comment 3.6 |
| 5 | 8 | Applicability | Potable water utilities were not included in the Economic Analysis for the Chlorine Policy; further demonstrating there was no intent to include drinking water activities. | Please see response to comment 3.6 |
| 5 | 9 | Applicability | SWRCB staff has also agreed that regulation of potable water discharges through BMPs and BATs is the only feasible option. | Please see response to comment 3.6 |
| 5 | 10 | Applicability | Even with the repeated acknowledgement that the SWRCB understood the infeasibility of drinking water utilities' ability to adhere to the policy, the draft Chlorine Policy released in April 2006 and proposed for adoption includes potable water dischargers. | Please see response to comment 3.6 |
| 5 | 11 | Applicability | SJWC has heard only anecdotal evidence as to why, if the SWRCB does not intend to capture potable water under this policy, the State Board is not able to exempt them from the policy. | Please see response to comment 3.6 |
| 5 | 12 | General | While the Chlorine Policy is designed to create statewide consistency, the language is confusing and could result in several different interpretations if adopted as currently written. | Please see response to comment 3.6 |
| 5 | 13 | Applicability | If it is in fact determined that a categorical exemption for potable water discharges is not legally allowable, then language that otherwise accomplishes this stated goal must be developed. It is San Jose Water Company's belief that this can be resolved. | Please see response to comment 3.6 |
| 5 | 14 | General | The aforementioned issues will take time to resolve and as a result we urge the SWRCB not to take action on this policy during the Public Hearing on June 19th. We are committed to a collaborative process that will best serve the needs of our industry and statewide water quality. | Please see response to comment 3.6 |

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| 6 | 1 | Quantification/ Reporting Requirements | We know of no instrument manufacturer that currently produces an on-line instrument for the measurement of TRC and CPO that can be verified from a calibration standard below 10 ug/L. The 4-day average of 7.5 ug/L for CPO in saltwater is below the practical quantification limit of the method (Standard Method 4500-Cl E, 20th ed.) specified to verify solution concentration in off-line measurements. Verification concentration is inconsistent with the 4-day CPO average. | Please see response to comment 1.16. |
| 6 | 2 | Compliance Determination | The minimum positive residual of sulfite that can be detected in water is 2000 ug/L or 2 parts per million. This would lead to significant overdosing of sulfite to demonstrate a dechlorination residual. | Online devices for the measurement of dechlorination agents are available with sensitivity of 20 ppb when using the measurement range of 0 – 500 ppb. |
| 6 | 3 | General | Hach Company believes that before the State of California takes final action as to this Policy, a consensus technical workgroup consisting of representatives from the State Water Resources Control Board, stakeholders and their advocates, engineering firms, and instrument manufacturer be established to resolve these above cited issues. | Comment Acknowledged |
| 7 | 1 | General | The proposed TRC Policy is a critical issue for water utilities because we cannot dechlorinate to the level that is being required under the proposed TRC Policy. Water utilities must dewater pipelines or reservoirs and flush fire hydrants to ensure public safety. These activities must also be performed in order to comply with the Department of Health Services regulations for safe drinking water. Water utilities have no other options and no equipment, monitoring devices, or other means available to dechlorinate in the field to the level being required by the proposed TRC Policy. | Please see response to comment 3.6 |
| 7 | 2 | General | When dewatering from pipelines and fire hydrants in the field there are no stationary treatment facilities at these locations and water utilities must therefore dechlorinate in the field using Best Management Practices (BMPs) and Best Available Technology Economically Achievable (BAT). | Please see response to comment 3.6 |
| 7 | 3 | Monitoring Requirements | There is no field monitoring equipment available that will detect total residual chlorine to the proposed Chlorine Policy dechlorination level of 0.019 mg/L (1-hr average, freshwater). | See response to Comment 3.6. |
| 7 | 4 | Monitoring Requirements | Additionally, there are no field devices that can ensure precise dechlorination to that stringent level. | See response to Comment 3.6. |

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| 7 | 5 | General | Water utilities, instead, are regulated under MS4 Permits and RWQCB General Permits to ensure that potable water discharges do not impact water quality. Under these permits, water utilities are required to implement Best Management Practices (BMPs) or meet numeric effluent limits that are based on BAT to reduce the discharge of total residual chlorine to the maximum extent practicable (MEP). | Please see response to comment 3.6 |
| 7 | 6 | Applicability | At the September 2005 Stakeholder meeting held in Los Angeles, the SWRCB staff and the SWRCB Board Members that were present agreed, after hearing our presentation, that due to the technology limitations, it is infeasible for potable water dischargers to comply with the proposed TRC Policy numeric effluent limits. The SWRCB staff indicated that they would therefore provide language in the TRC Policy and Substitute Environmental Document (SED) that would exclude potable water discharges from the TRC Policy. They indicated that instead, these types of discharges would continue to be regulated under the MS4 Permits and RWQCB General Permits as the only feasible alternative option since it is technologically infeasible for potable water discharges to comply with the proposed TRC Policy numeric effluent limits. The water utilities concurred that this would resolve our issues. During the informal comment period (January 4, 2006), we provided comments to the SWRCB staff to help ensure that the language included in the second draft of the TRC Policy accomplished what had been promised by the SWRCB staff at the September 2005 Stakeholder Meeting. | Please see response to comment 3.6 |

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| 7 | 7 | Applicability | <p>The revised language in the subsequent April 2006 draft of the proposed TRC Policy changed such that is now unfortunately and unintentionally captures almost all drinking water dischargers. The April 2006 draft language inadvertently includes discharges from drinking water utilities if operating under an NPDES permit (such as the various RWQCB General Permits for Potable Water Discharges or De Minimus Discharges). After reviewing the April 2006 draft, we immediately discussed this problem with SWRCB staff. The SWRCB confirmed again that they did not intend to capture potable water discharges under the proposed TRC Policy, which is why there is no cost estimate for water utilities to comply with the TRC Policy contained in the Economic Analysis.</p> <p>The SWRCB has acknowledged that the current language in the April 2006 draft produced unintended consequences for potable water discharges and is currently working on revised language to be presented at the Public Hearing on June 19, 2006. We are anxiously awaiting review of the revised language that the SWRCB staff has indicated will resolve our issue. If the revised language adequately addresses our issues and concerns, we will support it at the Public Hearing. Until that time, we are providing the recommendation below and will continue to work closely with the SWRCB staff to resolve our issue.</p> | Please see response to comment 3.6 |
| 7 | 8 | Applicability | <p>It is recommended that the SWRCB include explicit language in the TRC Policy and SED that specifically states that it is technologically infeasible for potable water discharges to comply with the TRC Policy numeric effluent limits as authorized under the Code of Federal Regulations (CFR), Title 40, Section 122.44(k), revised July 1, 2004. It is recommended that the SWRCB establish conditional authorization or other exclusion in the TRC Policy that allows potable water discharges to continue to be regulated under MS4 Permits or RWQCB General Permits that already require the implementation of BMPs and/or BAT based numeric effluent limits to reduce the discharge of total residual chlorine to the maximum extent practicable (MEP). To allow the SWRCB staff time to revise the current language in the proposed TRC Policy, it is recommended that the SWRCB not take action to adopt the TRC Policy during the Public Hearing on June 19, 2006.</p> | Please see response to comment 3.6 |

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| 8 | 1 | Applicability | As a water utility that could be impacted by the proposed Total Residual Chlorine and Chlorine-Produced Oxidants Policy of California, we would like offer a brief comment. It appears that the proposed limit of 0.19 ug/l total residual chlorine for all discharges is infeasible for discharges from potable water systems. For one thing, it's not possible to achieve the required level of accuracy required using field monitoring equipment. Therefore, discharges could only be made following laboratory analyses and by the time these results are obtained, the parameters of the water in the water system may have changed. | Please see response to comment 3.6 |
| 8 | 2 | General | In addition, we have conducted field tests, which indicate that in most cases the chlorine levels in the water degrade within a few minutes following discharge. | Comment Acknowledged. |
| 8 | 3 | Applicability | Since potable water disinfection and flushing are valuable tools for providing healthy water, we recommend that this proposed policy exclude potable water discharges. This will allow water systems to continue to provide safe drinking water to their communities. | Please see response to comment 3.6 |
| 9 | 1 | Applicability | <p>The proposed 19 ppb chlorine residual limit is significantly lower than the chlorine concentration of the incoming municipal source water used for Resort cleaning.</p> <p>Recent data indicate that chlorine concentrations in incoming municipal source water can be as high as 200 - 600 ppb depending upon the location of the specific sample location within our potable water infrastructure. The proposed blanket state-wide 19 ppb limit therefore prohibits the Resort from discharging this grounds washing without treatment, even though the Resort has no control over the chlorine concentration in the incoming water. We believe this poses an unnecessary and undue hardship on the Resort, especially considering that routine grounds washing is necessary for maintaining proper cleanliness and hygiene at the Resort.</p> <p>Exemptions from the proposed state-wide 19 ppb standard must be permitted when compliance is beyond the reasonable control of the discharger. Clearly the pass-through use of municipal water for grounds washing at the Resort should be subject to such an exemption. We recommend that the State Policy for Residual Chlorine</p> | Please see response to comment 3.6 |

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| | | | allow for such exceptions, and that they be granted by the Regional Water Quality Control Boards on a case-by-case basis, taking into account region-specific and facility-specific conditions. | |
| 9 | 2 | Monitoring Requirements | <p>The Resort should be exempt from chlorine monitoring requirements with respect to the discharge of a grounds washing.</p> <p>The Draft Policy states that the Regional Water Quality Control Boards "shall require continuous monitoring of chlorine residual and/or dechlorination agent residual concentrations for all facilities unless an exemption is granted." We believe the Resort should be exempted from chlorine monitoring requirements with respect to the discharge of the municipal water used for grounds washing for the following reasons:</p> <p>First of all, the grounds washing discharge is an intermittent discharge which occurs between midnight and 9:00 am. In our view this makes monitoring impractical. More importantly, the Resort does not add any chlorine to the wash water used for grounds washing, so the Resort should not be asked to monitor for a pollutant which it is not introducing into the discharge. Finally, since the incoming municipal water contains chlorine, the Resort should not be required to monitor for the concentration of a pollutant over which it has no control.</p> | Please see response to comment 3.5 |
| 9 | 3 | Quantification/Reporting Requirements | With respect to the discharge of chlorine-containing water from Resort water features and water-based attractions, we are concerned with the frequency of the proposed sampling requirements, which will necessitate reliance on on-line monitoring systems to demonstrate compliance with the proposed 1-hour and 4-day average limits for continuous discharges and intermittent discharges longer than 2 hours. The sensitivity and reliability of current technology is questionable at the proposed compliance limits. Continuous instrumentation for residual chlorine does not have established minimum detection levels (MDLs) or reporting levels (RLs). | The statement on required detection limits has been replaced in the revised draft policy (dated June 2006) with the statement: "On-line devices must have a manufacturer-stated sensitivity corresponding to 10 ppb." Online devices are available with a sensitivity of 1 ppb chlorine. Facilities have a compliance schedule of 5 years to optimize the performance of the analytical method and equipment to the stated sensitivity of 10 ppb. In addition, facilities may use the alternative method of showing an excess of dechlorination product to determine compliance with the permit limit. |
| 9 | 4 | Quantification/Reporting Requirements | Furthermore there are no EPA 40 CFR Part 136 approved methods that are specific to on-line continuous monitors. Measurement of RLs and MDLs are a necessary and important element to ensure confidence in analytical data used in compliance and enforcement. | Please see responses to Comments 1.18, 1.19, 2.10, and 9.3. |

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| 9 | 5 | Quantification/ Reporting Requirements | Attainment of manufacturer-specified detection limits is often difficult under routine applications of the technology in 'real world' settings, resulting in generation of 'false positives'. It is essential that the policy provide guidance on how on-line system MDLs and RLs can be derived under conditions of varying water quality and how the resultant values are to be used in compliance determination. | Please see response to comment 9.3. |
| 9 | 6 | Monitoring Requirements | We recommend that the State Board assess the reliability of continuous monitoring chlorine systems under field conditions representative of those found in the State before it mandates their use in the policy. | Comment acknowledged. |
| 9 | 7 | Compliance Determination | Additionally, the policy should include provisions for determining residual chlorine levels in effluent through mass balance calculations or other means in situations where on-line monitoring systems operating at or below their MDLs and RLs show possible exceedances of the policy limits. | Please see response to comment 1.12. Additionally, the policy has been revised to clarify the Stoichiometric calculations may be used in situations where the required continuous monitoring systems are off line. |
| 9 | 8 | Monitoring Requirements | We feel that the back-up system proposal outlined in the policy is inappropriate for Resort discharges and potentially very costly to implement. The proposed method is to conduct hand-monitoring every 15 minutes. While this approach may be feasible for potable or wastewater systems with well defined, accessible, and proximate sample locations, monitoring of diffuse source locations in a stormwater-based infrastructure with this approach would be overly burdensome. | <p>The draft policy states [emphasis added]: "When continuous monitoring systems are off-line, such as for calibration, maintenance, and troubleshooting, a back-up system must be in place to show compliance. These systems can include, but are not limited to, monitoring for dechlorination residual (bisulfite or sulfite analyzer), redundant analyzers, stoichiometry method, or grab samples (in 40 CFR 136.3 Table 1B, revised as of July 1, 2004) using U.S. Environmental Protection Agency approved methods. However, if grab samples are used they must adequately characterize the discharge. This means collecting at least one sample at 15 minute intervals of the discharge prior to its release into the receiving water and until the continuous monitoring system is back on-line. If the system is off-line less than 15 minutes, at least one sample must be obtained.</p> <p>If grab samples taken at the end-of-pipe show chlorine residual above the stated effluent limit, the discharger must begin monitoring receiving water to adequately characterize and assess impacts to aquatic life within the receiving water. During situations where sampling the receiving water becomes a safety hazard, such as during the night in a swift moving</p> |

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| | | | | river, the discharger can develop an alternative method to assess impacts to the receiving water and aquatic life. The Regional Water Board must approve the alternative method, however, prior to the exceedance. |
| 9 | 9 | Applicability | It is our understanding that the State Board will be proposing that dischargers that implement BMPs for reducing chlorine discharge will be exempt from the proposed 19 ppb chlorine residual limit. We believe this would be a very positive development and encourage the Board to adopt such an exemption. In addition, we recommend that the State Board establish written policy guidelines on the establishment and effectiveness of appropriate BMPs for reducing chlorine discharge. | Please see response to comment 3.6 |
| 10 | 1 | Applicability | The revised language in the April 2006 draft of the proposed TRC Policy unintentionally captures drinking water dischargers operating under an NPDES permit, including the City of Roseville. It is our understanding SWRCB staff did not intend to capture potable water discharges under the proposed TRC Policy. This is confirmed by the fact there we no cost estimates for water utilities to comply with the TRC Policy contained in the April 2006 Economic Considerations for Proposed Total Residual Chlorine and Chlorine-Produced Oxidants Policy for California. | Please see response to comment 3.6 |
| 10 | 2 | Applicability | The proposed TRC Policy is a critical issue for the City because we cannot dechlorinate to the level that is being required under the proposed TRC Policy. Water utilities must dewater pipelines or reservoirs and flush fire hydrants to ensure public health. These activities must be performed in order to comply with the Department of Health Services regulations for safe drinking water. | Please see response to comment 3.6 |
| 10 | 3 | Monitoring Requirements | Specifically, the City is required to chlorinate potable water discharges in the field. There is no field monitoring equipment currently available that will detect total residual chlorine to the proposed TRC Policy dechlorination level of 0.019 ug/l (1-hr average, freshwater). | Please see response to comment 3.6 |

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| 10 | 4 | Applicability | The City's water utility is regulated under the City's MS4 Permit and other RWQCB General Permits to ensure that potable water discharges do not impact water quality. Under these permits, water utilities are required to implement Best Management Practices or meet numeric effluent limits to reduce the discharge of total residual chlorine to the maximum extent practicable. The SWRCB staff has acknowledged that regulation of these discharges in this manner is the only feasible option and the only alternative since it is not technically feasible for potable water discharges to comply with the proposed TRC Policy numeric effluent limits. | Please see response to comment 3.6 |
| 10 | 5 | Applicability | The SWRCB has indicated the current language in the April 2006 draft produced unintended consequences for potable water discharges; we understand the SWRCB will present revised language at the Public Hearing on June 19, 2006. We are awaiting review of the revised language that will resolve the issue described above. Until that time, we are providing the emendation below for your consideration. | Please see response to comment 3.6 |
| 10 | 6 | Applicability | It is recommended the SWRCB include language in the TRC Policy and Substitute Environmental Document that states it is not technically feasible for potable water dischargers to comply with the TRC Policy numeric effluent limits as authorized under the Code of Federal Regulations, Title 40, Section 122.44(k), revised July 1, 2004. It is recommended that the SWRCB instead establish a conditional authorization or other exclusion in the TRC Policy that allows potable water dischargers to continue to be regulated under MS4 Permits or RWQCB General Permits. | Please see response to comment 3.6 |
| 10 | 7 | General | In addition to the above recommendation, the City of Roseville supports the conclusions and recommendations contained in the June 5, 2006 letter from the Association of California Water Agencies as well as the comments from the California Association of Sanitation Agencies, the Central Valley Clean Water Agencies and Tri-TAC. | Comment acknowledged. |
| 11 | 1 | General | As a California Water District that provides both domestic and non-potable water through two separate and extensive water distribution systems, IRWD has a number of the same concerns as the water agencies who have provided detailed comments on the proposed policy and strongly supports the comments provided by the Metropolitan Water District, East Bay Municipal Utilities District and others. | Please see response to comment 3.6 |

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| 11 | 2 | Applicability | We would like to evaluate proposed policy language regarding discharges from water distribution systems prior to policy adoption. | Please see response to comment 3.6 |
| 11 | 3 | Monitoring Requirements | We would like to evaluate any proposed policy language that addresses the inherent difficulty with operating chlorine residual monitoring equipment, under less than ideal field conditions, imposed by current policy language. | Please see response to comment 3.6 |
| 11 | 4 | General | We are concerned that the proposed policy does not fully consider the prescriptive effect of SB709, The Clean Water Enforcement and Pollution Prevention Act of 1999, with respect to water distribution system maintenance, operations, and system failures, which could expose water agencies to penalties, not anticipated under SB709. | Please see response to comment 3.6 |
| 11 | 5 | General | We understand the desire of the SWRCB to adopt a comprehensive statewide policy toward total chlorine residual and chlorine produced oxidants, however, we are concerned that the proposed policy does not resolve the concerns we have with respect to achieving the proposed limits in a quantifiable and verifiable manner. We suggest that, after reviewing the proposed policy, the SWRCB return it to staff for further clarification and modification. | Comment acknowledged. |
| 12 | 1 | Objectives | <p>The USEPA recommends that water quality criteria (called water quality objectives in California) for the protection of aquatic organisms be stated as Criteria Chronic Concentration (CCC) and Criteria Maximum Concentration (CMC). The USEPA states that CCCs and CMCs should consist of a magnitude, duration (averaging period), and allowable frequency of exceedance of the criteria (see USEPA's Technical Support Document for Water Quality Based Toxics Control (TSD), page 36-38]. The duration of CCCs and CMCs are given as a 4-day average and as a 1-hour average, respectively, while the exceedance frequency for both CCC and CMC are stated as once every three years.</p> <p>Chronic and acute toxicity responses are biologically different responses requiring different criteria. Consequently, the CCC is established as a receiving water concentration that protects against chronic toxicity responses while the CMC is a receiving water concentration that protects against acute toxicity responses. The USEPA's Ambient Water Quality Criteria for Chlorine -1984, recommends a CCC and a CMC for chlorine, each consisting of a</p> | <p>The consideration of chronic toxicity was incorporated into USEPA's chlorine criteria. The criteria were calculated to be protective of aquatic species in receiving waters.</p> <p>Chlorine is a non-conservative constituent that generally does not persist within the greater water body in significant concentrations (except in the case of catastrophic releases). The 1-hour and 4-day limits are necessary to protect aquatic life surrounding the discharge area. These limits are far more protective than any limit based on receiving water concentrations.</p> <p>The exceedance frequency is zero, as stated under Compliance Determination in the Policy: "Any excursion over the 1-hour average or 4-day average is a violation."</p> <p>Chlorine is not a USEPA priority pollutant and is not regulated by the California Toxics Rule.</p> |

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| | | | <p>magnitude, duration and exceedance frequency. When calculating effluent limitations, permitting authorities must calculate effluent limitations based on the CCC or CMC, whichever is determined to be more protective.</p> <p>The water quality objectives (WQOs) of the draft policy are stated as 4-day and 1-hour averages without a statement of frequency of exceedance and without regard to acute or chronic toxicity effects. Consequently, while the proposed WQOs of the draft policy are numerically equal to the USEPA national chlorine criteria recommendations contained in Ambient Water Quality Criteria for Chlorine -1984, the draft policy misinterprets CMCs and CCCs. The proposed WQOs do not have the same effect as CCCs and CMCs, and may not be sufficiently protective of receiving waters. The proposed chlorine WQOs are also not expressed in the same manner as other WQOs in the California Toxics Rule, which are also given as CCC and CMC. The draft policy should contain WQOs stated as CCCs and CMCs rather than 4-day and 1-hour average concentrations.</p> | |
| 12 | 2 | Objectives | <p>The Draft Substitute Environmental Document for the draft policy suggests that the US EPA's recommended chlorine criteria is being recommended for adoption; however, this suggestion is inaccurate since not all aspects of the recommended criteria are included in the draft policy. No explanation has been provided why the proposed WQOs deviate from the USEPA recommended criteria and why they are not stated as CCCs and CMCs.</p> | See response to Comment 12.1. |
| 12 | 3 | Effluent Limits | <p>The effluent limitation calculation procedure of the draft chlorine policy consists of merely assigning the proposed 4-day and 1-hour average WQOs as effluent limitations without regard to effluent variability and effluent sampling frequency. The proposed calculation procedure is contrary to procedures in the USEPA's TSD and the State Water Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) for developing appropriate effluent limitations from CCCs and CMCs.</p> | <p>The consideration of effluent variability in effluent limit calculation is employed to predict the long-term performance of the effluent. In other words, the variability of daily, weekly or monthly data points is evaluated in attempt to predict the potential effluent performance between sampling points, over time. Consideration of effluent variability is imbedded within the continuous monitoring process. The concentration of Cl in effluents will be measured every minute, which leaves a negligible interval of unknown performance. Rather than estimating the potential that an effluent may exceed the objective at some point, the policy requires dischargers to determine whether or not the effluent exceeds the objectives</p> |

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| | | | | <p>based on a minute-by-minute quantification of the effluent. This concept is reflected in NPDES procedures. For example, when determining reasonable potential, a permit writer may use the coefficient of variability to estimate the maximum potential effluent concentration or may use the greatest value of at least 330 effluent samples as the maximum potential effluent concentration.</p> <p>The use of continuous monitoring is a progressive and highly protective approach. Further, EPA must approve the proposed policy. Based on their review of the draft policy, EPA believes that the policy is appropriate for implementation of the chlorine objectives.</p> |
| 12 | 4 | Effluent Limits | <p>The TSD and SIP procedures both utilize the concept of long-term averages based on either the CCC or CMC. For a discharge without dilution in the receiving water and with typical effluent variability, the long-term average concentration in the effluent would necessarily have to be lower than either the proposed 4-day or 1-hour average concentrations in order to meet the CCC or CMC (whichever is more protective) in the receiving water. The more frequently an effluent is monitored, the closer the average effluent concentration can be expected to be to the long-term average. US EPA's Ambient Water Quality Criteria for Chlorine -1984 does not provide any information that would suggest that the recommended CCC and CMC for chlorine should be treated differently than water quality criteria for any other toxic pollutant with regards to effluent limitation calculation. Based on our assessment, because the draft policy's proposed calculation procedures differ from the TSD and SIP and because the proposed WOOs are not expressed as CCCs and CMCs, the draft policy could result in allowing higher chlorine concentrations in receiving waters than the acceptable concentrations recommended by USEPA to protect against toxic effects.</p> | <p>NPDES procedure dictates that criteria are applied at the end of pipe when dilution is not allowed for a specific constituent. This policy does not incorporate dilution into effluent limits for TRC and CPO, due to the acute toxicity of chlorine to aquatic organisms.</p> <p>Please also see Comment 12.3.</p> |

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| 12 | 5 | Objectives | Dechlorination procedures and systems at existing permitted facilities may not be able to remove chlorine and chlorine-produced oxidants in the effluent to the levels required if effluent limitations were calculated based on CCCs and CMCs and according to the TSD and SIP. However, current treatment capabilities should not be the only factor considered in determining what WQOs are necessary to maintain beneficial uses and should not be a primary reason for deciding which calculation procedures are adopted by the State Water Board. | Please see responses to Comments 12.3 and Comment 12.4. |
| 12 | 6 | Compliance Determination | Also, because current analytical methods may not be able to detect chlorine and chlorine-produced oxidants (CPO) at the level of the WQOs and the effluent limitations, and therefore actual compliance cannot be ascertained, the draft policy should require a pollution prevention program, as is currently required in the SIP. | The use and control of chlorine in treatment and industrial facilities is currently under strict control procedures, particularly due to human health hazards. |
| 12 | 7 | Definition of Terms | The draft policy defines chlorine-produced oxidants (CPO) as "the sum of oxidative products [HOBr, OBr-, and bromamines] in salt water". This definition is not entirely accurate. The Ambient Water Quality Criteria for Chlorine -1984 states that the terms "total residual chlorine" and "chlorine-produced oxidants" are both intended to refer to the sum of free and combined chlorine (Cl ₂ , HOCl, OCl-, and chloramines) and the bromine species as measured by the methods for "total residual chlorine." While chlorine will react with bromide ions found in saltwater to form HOBr, OBr-, and bromamines, the reaction depends on pH, salinity, and amount of available amino-nitrogen compounds (see Sugam and Helz, 1977) such that it should not be assumed that CPOs are all only in the form of bromine species. It is likely that in lower salinity portions of bays and estuaries, CPOs would be in the form of both chlorine and bromine species. In the least, the draft policy's CPO definition should state that CPO is to be measured for receiving waters using analytical methods for total residual chlorine. | In saltwater, chlorine atoms can be completely or partially replaced by bromine atoms. This reaction produces three reactive compounds: hypobromous acid (HOBr), hypobromous ion (OBr), and bromamines. CPO refers to the sum of oxidative products in saltwater. In freshwater, total chlorine residuals become hypochlorous acid (HOCL) and hypochlorite ion (OCl-). Therefore, the definitions in the policy are correct, and all the reactions or products of TRC and CPO are covered by this policy. The Policy has been changed to clarify that "for freshwater discharges into saltwater receiving waters, CPO effluent limits will be set at CPO Objectives however CPO must be measured using analytical methods that include quantification of TRC." Online continuous analyzers that measure TRC and bromine are currently available. |
| 12 | 8 | Effluent Limits | Because freshwater effluents, prior to chlorination and prior to discharge into saline receiving waters, would likely not contain significant bromine species if the effluent did not initially contain sufficient bromide ions, the draft policy should also explicitly state that effluent limitations for discharges to saline receiving waters are to be expressed as total chlorine residual. | The Policy has been changed to clarify that "for freshwater discharges into saltwater receiving waters, CPO effluent limits will be set at CPO Objectives however CPO must be measured using analytical methods that include quantification of TRC." Online continuous analyzers that measure TRC and bromine are currently available. |

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| 12 | 9 | Effluent Limits | The rationale for the use of 4-day and 1-hour average effluent limitations instead of monthly, weekly and daily averages should be supported with scientific information so that the policy, when adopted, is less subject to legal challenges when used as a basis for permitting by the Regional Boards, especially with regards to POTWs. The Ambient Water Quality Criteria for Chlorine -1984 cites many toxicity studies that indicate LC50 toxicity to aquatic systems from chlorine that are observed within several hours to several days, and these were the bases for the US EPA's recommended chlorine CCCs and CMCs. The statement in the draft policy that "chlorine residual can be acutely toxic within minutes of exposure to fish and other aquatic life" should be supported with information about what is meant by "acutely toxic" and what chlorine concentrations are toxic within minutes. It would be in the best interest of the environment, dischargers, the State Water Board, and the Regional Boards to implement legally sound policies. | <p>Please see responses to Comments 1.6 and 1.25.</p> <p>A table containing examples of highly acute toxic responses to chlorine has been included in the SED. Citations for the referenced data have been also been included in the SED.</p> <p>The terms acute and chronic refer to the amount of time between an exposure to a toxicant and a toxic response. As stated in the Policy glossary, acute refers to a rapid effect (from seconds to days). Chronic refers to a slower induction of toxicity (typically from weeks to years).</p> |
| 12 | 10 | Compliance Determination | The draft policy states that measurements that are non-detect (ND) shall be considered zero. Substitution with zero could tend to bias low the calculated average and therefore give an apparent lower average chlorine concentration than what is actually discharged to the environment. The proposal should instead recommend improved statistical approaches for handling non-detects and other censored data, such as nonparametric methods, similar to the procedures in the SIP and Ocean Plan, or parametric "maximum likelihood" methods. | In a December 23, 1998 letter on the Ocean Plan, EPA recommends that for situations dealing with arithmetic averages, values of non-detect should be set at zero. In addition, due to the stringency of the monitoring requirements and potential effluent limits (continuous monitoring and 1-hour and 4-day average limits), Staff believes that using zero for any non-detect value will sufficiently protect aquatic life while allowing dischargers time to correct malfunctions without incurring penalties for effluent limit exceedances. Additionally, non-detects should not be set above zero if backup methods verified the presence of excess dechlorination agent. |
| 12 | 11 | Effluent Limits | If 4-day and 1-hour average effluent limitations are retained in the draft permit, please explain why the draft policy provides discretion in calculating these averages as either rolling or discrete averages. For consistency between regional boards and between permits issued by a regional board, the draft policy should select either rolling or discrete averages, but should not allow both. | The proposed policy defines the 1-hour average as the average of at least 60 discrete data points in each 1-hour interval. The 4-day average is an average of a discrete data set in 4-day intervals. |
| 13 | 1 | Applicability | Based on the September 29, 2005 stakeholder meeting at MWD in Los Angeles and subsequent discussions with SWRCB staff, it is the District's understanding that the SWRCB did not intend to include drinking water discharges under the TRC Policy since these types of discharges are appropriately regulated under the Municipal Separate | Please see response to comment 3.6 |

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| | | | Storm Sewer System (MS4) Permits and RWQCB General Permits. We further understand that Board staff did not include a cost estimate for water utilities to comply with the TRC Policy in the Economic Analysis of the Substitute Environmental Document (SED) for this reason. However, the April 2006 draft Policy and SED now unfortunately includes almost all drinking water dischargers. | |
| 13 | 2 | Applicability | We understand that the SWRCB is currently working to correct the unintended consequences of the TRC Policy by providing a conditional authorization or other exclusion that would allow drinking water discharges to continue to be regulated under MS4 Permits or RWQCB General Permits, and that Board staff intends to present the revised language at the June 19, 2006 Public Hearing. We look forward to reviewing the revised language, and appreciate your responsiveness in addressing drinking water utility concerns regarding this matter. | Please see response to comment 3.6 |
| 13 | 3 | Applicability | This is a complex issue with potentially significant impacts on our utility if the TRC Policy is adopted without certain revisions. Western Operations staff periodically dewater pipelines and reservoirs, and flushes distribution system piping on a routine basis to maintain high water quality. Such activities are currently regulated under MS4 Permits or RWQCB General Permits, which require implementation of Best Management Practices (BMPs) or compliance with numeric effluent limits that are based on Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce the discharge of total residual chlorine to the Maximum Extent Practicable. These BMPs are highly effective in destroying chlorine that is present in such discharges and ensuring environmental protection. Therefore, it is Western's position that the existing approach towards regulating chlorine in drinking water discharges be continued. | Please see response to comment 3.6 |
| 13 | 4 | Quantification/Reporting Requirements | WMWD's field monitoring equipment (which is widely used by many California water utilities) cannot achieve the detection limits specified in the TRC Policy. Western staff is unaware of any field monitoring equipment currently available that will detect total residual chlorine to the proposed TRC Policy dechlorination level of 0.019 ug/L (1-hr average). | See response to Comment 3.6. |

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| 13 | 5 | Compliance Determination | The proposed TRC Policy states that under the intermittent limit, non-compliance for each sample will be considered separately. Western believes this is inconsistent with Senate Bill 709, which states that a single operational upset leading to simultaneous violations of more than one pollutant parameter shall be treated as a single violation. | Please see response to comment 3.5 |
| 13 | 6 | Applicability | Western Municipal Water District respectfully recommends that the SWRCB include explicit language in the TRC Policy and SED specifically stating that it is technologically infeasible for potable water discharges to comply with the TRC Policy numeric effluent limits as authorized under the Code of Federal Regulations (CFR), Title 40, §122.44(k), revised July 1, 2004. We would further recommend that the SWRCB instead establish a conditional authorization or other exclusion in the TRC Policy that allows potable water discharges to continue to be regulated under MS4 Permits or RWQCB General Permits that require the implementation of BMPs and/or BAT-based numeric effluent limits to reduce the discharge of total residual chlorine to the maximum extent practicable. | Please see response to comment 3.6 |
| 14 | 1 | Applicability | Based on results of the September 29, 2005 stakeholder meeting at Metropolitan Water District in Los Angeles, and subsequent discussions with SWRCB staff, it is our understanding that the SWRCB did not intend to include drinking water discharges under the Policy, since these types of discharges are already appropriately regulated under the Municipal Separate Storm Sewer System (MS4) Permits and Regional Water Quality Control Board (RWQCB) General Permits. We further understand that no cost estimates were included for water utilities to comply with the Policy in the supporting economic analysis for this reason. However, the April 2006 draft Policy and Substitute Environmental Document (SED) now include almost all drinking water discharges. | Please see response to comment 3.6 |
| 14 | 2 | Applicability | We understand that the SWRCB is currently working to revise the Policy by providing a conditional authorization or other exclusion that would allow drinking water discharges to continue to be regulated under MS4 Permits or RWQCB General Permits, and that the SWRCB intends to present the revised language at the Public Hearing scheduled for June 19, 2006. We look forward to reviewing the revised language, and appreciate your responsiveness in addressing drinking water utility concerns regarding this issue. | Please see response to comment 3.6 |

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| 14 | 3 | Applicability | Given the complexity of this issue and potential significant impacts upon our drinking water operations that might result if the Policy is adopted without the above-described revisions, we would like to emphasize and reiterate several key issues. Water utilities must periodically dewater pipelines and reservoirs, flush fire hydrants, and backwash filters. These activities are critical and necessary in complying with federal and state regulations to provide safe drinking water. Discharges from such activities are currently regulated under MS4 Permits or RWQCB General Permits, which require implementation of Best Management Practices (BMPs) or compliance with numeric effluent limits that are based on Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce the discharge of total residual chlorine to the Maximum Extent Practicable (MEP). BMPs and other technologies used by water utilities are highly effective in destroying chlorine that is present in such discharges and in ensuring environmental protection. Therefore, we advocate that the existing approach toward drinking water discharges be continued. | Please see response to comment 3.6 |
| 14 | 4 | Quantification/ Reporting Requirements | Equipment and monitoring devices available for use in field applications simply cannot meet the requirements of the proposed Policy. | Please see response to comment 3.6 |
| 14 | 5 | Quantification/ Reporting Requirements | As noted above, field monitoring equipment cannot achieve the detection limits specified in the Policy, nor can continuous monitoring equipment at stationary locations consistently achieve such low detection limits (particularly in wastewater). Rather than rely on manufacturer's specifications, the Policy should be revised to provide a technically defensible detection limit that can be achieved over the broad and diverse range of discharges that are intended to be regulated. | See response to Comments 3.6 and 1.23. |
| 14 | 6 | Quantification/ Reporting Requirements | The level of accuracy required for continuous monitoring analyzers should be similarly reviewed and revised. | Please see responses to Comments 1.15 and 1.17. |
| 14 | 7 | Compliance Determination | The Policy states that under the intermittent limit, non-compliance for each sample will be considered separately. This approach is inconsistent with Senate Bill 709, which states that a single operational upset that leads to simultaneous violations of more than one pollutant | Please see response to comment 3.5 |

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| | | | parameter shall be treated as a single violation (see Section 6). | |
| 15 | 1 | General | DFG-OSPR commends the SWRCB for developing this Policy and overall supports the provisions of the Policy. | Comment acknowledged. |
| 15 | 2 | Objectives | DFG-OSPR supports the Policy proposal to adopt the U.S. Environmental Protection Agency (EPA) 304(a) criteria to protect aquatic life from continuous discharges of total residual chlorine (TRC) in freshwater and chlorine-produced oxidants (CPO) in saltwater (U.S. EPA, 1985). These criteria are based on a reliable scientific foundation and are a logical choice for protecting aquatic life from TRC and CPO toxicity. The U.S. EPA criteria document (U.S. EPA, 1985) notes that the criteria are protective of aquatic organisms, except possibly where locally important species are very sensitive. DFG-OSPR encourages the Regional Water Quality Control Boards (RWQCBs) to consider site-specific sensitive resources when issuing NPDES permits and setting compliance schedules that address chlorine limits. | Comment acknowledged. |
| 15 | 3 | Objectives | DFG-OSPR has concerns about the protectiveness of the instantaneous maximum objectives for intermittent chlorine discharges (i.e., not to exceed 120 minutes). These objectives are based on a study by Mattice and Zittel (1976) where acute and chronic toxicity thresholds were developed for freshwater and marine organisms. In this study, toxicity thresholds were graphically depicted as a function of the organism's duration of exposure in minutes (x-axis) and the chlorine concentration in the water (y-axis). The draft Substitute Environmental Document for the Total Residual Chlorine and Chlorine-Produced Oxidants Policy of California (April 2006) recreates these acute toxicity thresholds (see pages 40-41) but incorrectly refers to duration of exposure (x-axis) as the discharge duration in minutes. The Mattice and Zittel (1976) study concludes that the duration of exposure of the organism in the discharge plume should be used to determine whether a chlorine concentration exceeds the toxicity threshold. Thus, the basis of DFG-OSPR's concern is that the intermittent discharge effluent limitations appear to consider the duration of the discharge and not the duration of exposure of the aquatic organisms in the receiving water. Since allowable instantaneous maximum chlorine concentrations may exceed the U.S. EPA 1-hour average TRC/CPO criteria, there is the potential for inadequate protection of aquatic life when the duration of exposure in the water body exceeds the duration | Please see response to comment 3.5 |

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| | | | of the discharge. Thus, DFG-OSPR recommends that these intermittent criteria be applied on a site-specific basis by the RWQCBs, considering the flow dynamics of the discharge and the receiving water and the potential exposure duration of the aquatic organisms. - Additionally, it is recommended that the RWQCBs consider whether these intermittent discharges will occur on an occasional or a daily basis. Mattice and Zittel (1976) did not-address the impacts of chronic exposure to intermittent discharges. | |
| 15 | 4 | Monitoring Requirements | DFG-OSPR supports the Policy proposal to use continuous monitoring for continuous discharges. | Comment acknowledged. |
| 15 | 5 | Mixing Zones | DFG-OSPR supports the Policy proposal to apply the criteria for continuous discharges as "end-of-pipe" effluent limits. | Comment acknowledged. |
| 16 | 1 | Applicability | At the September 2005 Stakeholder Meetings held in Oakland and Los Angeles, SWRCB staff, SWRCB Board Members and stakeholders discussed the first draft of the Chlorine Policy. Participants at the Los Angeles meeting heard a presentation by Metropolitan Water District of Southern California (MWD) describing the technology limitations that made it infeasible for potable water discharges to comply with the proposed Chlorine Policy numeric effluent limits. Both the State Water Board members and the SWRCB staff indicated they understood the issues facing drinking water utilities and staff would provide language in the revised Chlorine Policy and Substitute Environmental Document (SED) excluding potable water discharges from the Chlorine Policy. They indicated that these types of discharges would continue to be regulated under the Municipal Separate Storm Sewer System (MS4) Permits and Regional Water Quality Control Board (RWQCB) General Permits, which would have been acceptable to the groups participating in the meeting. | Please see response to comment 3.6 |

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| 16 | 2 | Applicability | <p>ACWA and other drinking water agencies provided comments to the SWRCB staff to help ensure that the language included in the second draft of the Chlorine Policy accomplished what had been promised by the SWRCB staff at the September 29, 2005 Stakeholder Meeting.</p> <p>When the April 2006 draft Chlorine Policy was released for public comment, ACWA and other stakeholders were troubled to read that the new draft would unfortunately capture almost all drinking water dischargers. The new draft language would include discharges from drinking water utilities if operating under an NPDES permit (such as the various RWQCB General Permits for Potable Water Discharges or De Minimus Discharges). The SWRCB staff reiterated that drinking water utilities were not intended to be part of the policy and gave evidence of their intention by a lack of cost estimates for drinking water utilities to comply with the Chlorine Policy in the Economic Analysis.</p> | Please see response to comment 3.6 |
| 16 | 3 | Applicability | <p>Since the April draft was released, ACWA has been working with MWD and other stakeholders to develop compromise language that would allow potable water agencies to continue to operate under their current MS4 and NPDES permits and not be subject to the effluent limits in the Chlorine Policy. Unfortunately as of the date of this letter language has not been offered by SWRCB staff to address this issue. While we have been working diligently to find a solution, ACWA is concerned over conflicting comments made by SWRCB staff indicating that language would be inserted requiring potable water dischargers to prove to their respective Regional Boards they could not feasibly adhere to the Chlorine Policy when staff and the SWRCB Board has already acknowledged drinking water utilities were never supposed to be included under the Policy's requirements. In addition, the original intent of the Chlorine Policy was to create a consistent chlorine policy for California, which would not result from deferring feasibility decisions to the Regional Boards.</p> | Please see response to comment 3.6 |
| 16 | 4 | Applicability | <p>ACWA is extremely concerned by the proposed draft Chlorine Policy since drinking water utilities are currently included under its restrictions and simply cannot monitor dechlorination to the level that is required in the policy document. Drinking water utilities do not have stationary treatment facilities and must dechlorinate in the field using Best Management Practices (BMPs) and Best Available Technology</p> | Please see response to comment 3.6 |

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| | | | Economically Achievable (BAT). | |
| 16 | 5 | Quantification/Reporting Requirements | There is no field monitoring equipment available that will detect total residual chlorine to the proposed Chlorine Policy dechlorination level of 0.019 mg/L (1-hr average, freshwater). | See response to Comment 3.6. |
| 16 | 6 | Quantification/Reporting Requirements | Additionally, there are no field devices that can ensure precise dechlorination to that stringent level. | Please see response to comment 3.6 |
| 16 | 7 | Applicability | Water utilities, instead, are regulated under MS4 Permits and RWQCB General Permits to ensure that potable water discharges do not impact water quality. Under these permits, water utilities are required to implement Best Management Practices (BMPs) or meet numeric effluent limits that are based on BAT to reduce the discharge of total residual chlorine to the maximum extent practicable (MEP). Consistent and effective BMPs and BATs have been developed for the state of California and are used by many water agencies throughout the state. | Please see response to comment 3.6 |
| 16 | 8 | Applicability | Since the first draft of the Chlorine Policy was published, potable water dischargers were given assurances by SWRCB staff that they were not included in this policy and would instead be regulated by their existing permits. | Please see response to comment 3.6 |
| 16 | 9 | Applicability | Potable water utilities were not included in the Economic Analysis for the Chlorine Policy; further demonstrating there was no intent to include drinking water activities. | Please see response to comment 3.6 |
| 16 | 10 | Applicability | SWRCB staff has also agreed that regulation of potable water discharges through BMPs and BATs is the only feasible option. | Please see response to comment 3.6 |
| 16 | 11 | Applicability | Even with the repeated acknowledgement that the SWRCB understood the infeasibility of drinking water utilities' ability to adhere to the policy, the draft Chlorine Policy released in April 2006 and proposed for adoption includes potable water dischargers. | Please see response to comment 3.6 |
| 16 | 12 | Applicability | ACWA has been given only anecdotal evidence as to why, if the SWRCB does not intend to capture potable water under this policy, the State Board is not able to exempt them from the policy. | Please see response to comment 3.6 |
| 16 | 13 | General | While the Chlorine Policy is designed to create statewide consistency, the language is confusing and could result in several different interpretations if adopted as currently written. | Please see response to comment 3.6 |
| 16 | 14 | General | Lastly, ACWA also represents POTWs throughout the state and supports the concerns addressed in the California Association of | Comment acknowledged. |

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| | | | Sanitation Agencies (CASA) comment letter. | |
| 16 | 15 | Applicability | If it is in fact determined that a categorical exemption for potable water discharges is not legally allowable, then language that otherwise accomplishes this stated goal must be developed. It is ACWA's belief that this can be resolved and we have been working to that end since the second draft of the Chlorine Policy was published in April 2006. | Please see response to comment 3.6 |
| 16 | 16 | General | However, the aforementioned issues will take time to resolve and as a result we urge the SWRCB not to take action on this policy during the Public Hearing on June 19th. | Comment acknowledged. |
| 17 | 1 | General | In general, we support a statewide policy that establishes Total Residual Chlorine (TRC) and Chlorine-Produced Oxidants (CPO) objectives for inland surface waters and enclosed bays and estuaries. Chlorine is extremely toxic to aquatic life and its discharge should be regulated in a uniform and comprehensive manner. | Comment acknowledged. |
| 17 | 2 | General | Having said this, Heal the Bay has some significant concerns with regard to the proposed implementation and compliance determination procedures outlined in the Policy. Specifically, the proposed procedures fail to ensure that the water quality objectives actually will be attained. | Please see response to Comments 12.1, 12.3, 12.4, 12.10, and 12.11. |
| 17 | 3 | Applicability | The Policy states that Part II does not apply to NPDES permits that contain best management practices in lieu of numeric water quality-based effluent limitations. Policy at 4. There is no sound rationale for this decision. If a stormwater discharger, for instance, chooses to chlorinate its discharge to meet bacteria standards, it should be subject to monitoring requirements and subsequent compliance determination for TRC and CPO. This is a substance they are adding to the discharge at some point when it has been collected and there is no justification for not requiring them to monitor for it and meet specific limits in the subsequent discharge to the state's waters. Furthermore, how will the Regional Boards determine compliance with TRC and CPO objectives for this category of NPDES discharger? They will not be able to measure this. We urge the Board to instead require that any NPDES discharger that uses chlorine in its process, including stormwater dischargers adding chlorine to their discharge, should be subject to the requirements of Part II of the Policy. Not only is this entirely feasible and justified, it is the only way that the Regional Boards will be able to determine attainment with water quality | Please see response to comment 3.6. |

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| | | | objectives. | |
| 17 | 4 | Applicability | The Policy proposes to authorize the Regional Boards to provide an exemption to continuous monitoring requirements if deemed appropriate. Policy at 6. However, both the Policy and the California Ocean Plan establish a two-hour threshold for distinguishing between continuous and intermittent dischargers. The Policy should require the Regional Boards to apply this threshold consistently to all NPDES dischargers of chlorine. | Please see response to comment 3.5 |
| 17 | 5 | Compliance Determination | To determine compliance, the Policy directs the Regional Boards to convert non-detect values to zero. Policy at 7. This approach is non-conservative; thus does not fully protect water quality. The State Board should amend the Policy to require that non-detect values be converted to half of the detection limit. The State Board has utilized this more protective procedure in the past. | See response to Comment 12.10. |
| 17 | 6 | Quantification/ Reporting Requirements | The second paragraph on page 7 of the Policy is confusing. Why would one discharger be able to meet a quantification/reporting limit ("QRL") set at the effluent limit and another not? Is this intended to allow dischargers who cannot meet their effluent limits to report at a higher limit? What is the justification for this? No justification for this is provided and we urge the Board to remove this provision. However, if some justification is provided and this provision is retained in the final Policy, it should at a minimum state what a "QRL study" must include in order to qualify for consideration for a higher QRL. Policy at 7. How will these studies be evaluated? Against what requirements or benchmarks? | See response to Comment 1.23. |
| 17 | 7 | Compliance Determination | The Policy states that "[a] positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limits." Policy at 8. What is the basis for assuming that 100 percent of the chlorine will react with the de-chlorination agent? This may be an incorrect assumption, which will in turn lead to an inappropriate compliance determination. Assuming that all detectable free chlorine in this situation is a false positive is not substantiated and certainly not protective. As it is not proven, this assumption should be removed from the Policy. | Dechlorination agents react rapidly (contact time on the order of minutes) with residual chlorine at about a 1:1 ratio. Thus, the detection of dechlorinating agents in the effluent indicates that chlorine is no longer present. |

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| 17 | 8 | Monitoring Requirements | When a continuous monitoring system is off-line, the Policy provides that the discharger must use a backup system, such as monitoring for dechlorination residual, utilizing a stoichiometry method or collecting grab samples. Policy at 8. The State Board should include a cap for the maximum amount of time that a continuous monitoring system can be kept off-line before the discharger is in non-compliance. With no explicit maximum time included in the Policy, maintenance may not be performed in a timely manner. And again, as stated above, there is no basis for assuming that the presence of a dechlorination residual necessarily means compliance with the criteria, thus this may not be an adequate backup methodology. | California would be the first state to require state-wide use of TRC, CPO or SO ₂ /sulfite continuous monitoring devices for the compliance determination. Currently there is not sufficient information on reasonable times for maintenance and troubleshooting procedures to impose a maximum amount of time that a continuous monitoring system can be kept off-line. The compliance schedules allowed for the optimization of equipment and procedures should provide information on this subject. Please also see response to Comment 17.7. |
| 17 | 9 | Mixing Zones | The Policy provides that the Regional Boards can grant a mixing zone for a discharge of TRC or CPO if deemed appropriate. Policy at 8. It is unclear why the State Board would include this provision when the accompanying Draft Substitute Environmental Document notes that "[m]ixing zones for chlorine residual are not recommended for inland surface waters, enclosed bays, and estuaries in most cases." Environmental Document at 39. Heal the Bay strongly opposes mixing zones in inland surface waters and enclosed bays and estuaries. Unlike in ocean environments, aquatic life inhabiting inland surface waters and estuaries are less likely to avoid, or be able to avoid, toxic chlorine plumes. We strongly urge the State Board to remove the discretionary mixing zone allowance from the Policy. | The Regional Water Boards are most knowledgeable in the waters they regulate. Therefore, if mixing zones are authorized in a Basin Plan and discharge does not violate mixing zone requirements (lack of acute toxicity in the zone, etc.) then it is appropriate for the Regional Water Board to exercise its discretion on this issue. |
| 17 | 10 | Compliance Determination | If a discharger is conducting continuous monitoring and back-up monitoring at the same time, the Policy allows for a determination of compliance if either both or one of the results shows compliance with objectives. Policy at 8. This approach is not protective as it assumes that the data from the monitoring system showing compliance is correct, and not vice-versa. The State Board should remove this provision from the Policy and require that compliance be determined from the results of all monitoring systems in use. | The proposed policy indicates that a discharger would be in compliance with the objectives if it conducts continuous monitoring and can demonstrate, through data collected from the back-up monitoring system that a purported excursion is not an actual exceedance, but rather reported as a false-positive. It would not allow a discharger to be deemed in compliance if the continuous monitoring did not show an exceedance but the back up monitoring system did. |

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| 18 | 1 | Applicability | The proposed policy is supposed to establish consistent procedures for non-storm water NPDES permits to regulate TRC and CPO. It is our understanding that it also applies to all holders of general NPDES discharge permits, which have one or more numeric water quality-based effluent limitations. A typical general discharge permit, such as the "NPDES Permit for Deminus Discharges", covers intermittent hydrant discharges within the service area of the discharger, and they are not at a fixed location. On a typical day, the total discharge time could well exceed the 2-hour limit as defined in Part I of the Intermittent Discharge guidelines. So, that makes these general discharges covered under the proposed policy. The current monitoring method for TRC only is grab sampling using handheld chlorine testers. Requiring continuous monitoring for these types of intermittent discharges would be difficult for the dischargers to comply technically and practically. Setting up an on-line continuous analyzer for intermittent discharges with varying locations is impossible because of environmental factors (sunlight, motion, temperature, etc), which could affect the readings. The Policy should allow exemption of continuous monitoring compliance with permits with multiple discharge points on the same day. | Please see response to comment 3.6 |
| 18 | 2 | Quantification/ Reporting Requirements | The effluent limits for TRC and CPO, which are to be issued to a discharge permit, should have consideration for the current technical limitations of available on-line chlorine analyzers. A quick survey of on-line chlorine analyzers indicates that the accuracy or detection limits are generally in the range of 0.035 mg/L to 0.05 mg/L, and the sensitivity is 0.01 mg/L. If the effluent limit is set too low, such as same as the objective of 0.019 mg/L for freshwater, most of the analyzers can not even detect it to that low level. To calibrate analyzer to that low range is also a challenge for the discharger. As indicated on Page 5 of your draft information package, most calibration of chlorine at low range is only down to 0.5 mg/L only. | Please see response to Comments 1.15, 1.16 and 1.23. |
| 18 | 3 | Monitoring Requirements | If continuous monitoring is required, the policy should also address the frequency of calibration for the analyzer. Whether it is weekly, monthly or quarterly, the policy should also address the appropriate calibration procedures, such as the expected strength of the calibration solution. It would be nice to also specify the procedures to make up this solution. It is anticipated that the laboratory personnel of the discharge will have | The Policy states the following: "Facilities should also utilize manufacturer's recommendations regarding reagent replenishment, reagent shelf life, and calibration. Facilities must verify the concentration of all standard solutions used for calibration and quality control purposes for TRC or CPO continuous monitoring devices using Method 4500-Cl E as |

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| | | | to make up this solution because there is no chlorine calibration solution available on the market for this low range. | found in Standard Methods for the Examination of Water and Wastewater, 20 th edition, whose stated detection limit is 0.010 part per million." Please also see response to Comment 1.16. |
| 18 | 4 | Quantification/ Reporting Requirements | As mentioned in the draft document, a backup system should be provided during the period when the on-line analyzer is off-line for various reasons. The backup system, if it is specified to be grab sampling and testing with handheld testers, should have the same analytical capabilities as the on-line model, and with similar detection limits. Again, it would be technically challenging to locate handheld testers with the same capabilities as the on-line analyzers. Of course, other laboratory-based methods will work. The limitations are the holding time for the samples. Chlorinated species have the tendency to degrade rapidly. | The policy indicates that backup monitoring methods can include, but are not limited to, monitoring for dechlorination residual (bisulfite or sulfite analyzer), redundant analyzers, stoichiometry method, or grab samples (in 40 CFR 136.3 Table 1B, revised as of July 1, 2004) using U.S. EPA-approved methods. Also see response to Comment 3.6. |
| 18 | 5 | Quantification/ Reporting Requirements | For compliance monitoring, the proposed policy allows for monitoring of chlorine residual and/or dechlorinating agent residual concentrations. Technically, I am not sure there is any reliable on-line monitoring equipment that can monitor dechlorinating agent residual at low levels, especially on field intermittent discharges. The State Board should give technical advices on the equipment specifications or availability so the discharges can evaluate whether it is even feasible to monitor dechlorinating agent residual. | Please see responses to Comments 3.6 and 6.2. |
| 18 | 6 | Monitoring Requirements | For compliance monitoring, the proposed policy specifies that the readings should be taken at least once per minute. As I understand, most on-line chlorine analyzers have a cycling time of several minutes, i.e. the time period between readings. Some amperometric (probe) type chlorine analyzers, without buffering agents, may be able to log continuous readings. Chlorine analyzer users all agree that the analyzers with chemical buffers are most reliable, especially in a treatment plant setting. We suggest that the continuous monitoring data gathering period be extended to at least one every five minutes or ten minutes. | Please see response to Comment 2.7. |

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| 19 | 1 | Applicability | We have carefully reviewed the draft TRC Policy dated April 2006 and attended workshops by SWRCB staff who explained the intent and rationale for the proposed policy. In those workshops, it was explained by SWRCB staff that the regulation was not intended to pertain to non-point drinking water dischargers who are typically regulated (like MMWD) under MS4 Stormwater permits that do not contain numeric effluent limits. We are concerned that the latest draft language in the TRC Policy does not communicate that intent and could easily be misconstrued by staff at the various regional boards. | Please see response to comment 3.6 |
| 19 | 2 | Applicability | The SWRCB staff also stated that drinking water utilities were not intended to be part of the policy and gave evidence of their intention by a lack of cost estimates for drinking water utilities to comply with the Chlorine Policy in the Economic Analysis. While this makes us feel that staff is communicating their honest intent, it is not a substitute for precision in regulatory wording. We fail to understand or appreciate the legal obstacle to crafting a TRC Policy that does what was initially intended - but without the unintended consequences. | Please see response to comment 3.6 |
| 19 | 3 | Quantification/ Reporting Requirements | Drinking water utilities do not have stationary treatment facilities and must dechlorinate at constantly-changing field locations using Best Management Practices (BMPs) and Best Available Technology Economically Achievable (BAT). There is no field monitoring equipment available that will detect total residual chlorine to the proposed TRC Policy level of 0.019 mg1L (1-hr average, freshwater). | Please see response to comment 3.6 |
| 19 | 4 | Applicability | That does not mean that dechlorination is not accomplished, because field dechlorination techniques are just as effective as stationary, the chemistry is all the same. It is just impractical and unnecessary to regulate a small intermittent discharge in the same manner as a large continuous point discharge. A one-size-fits-all regulation is simply not practical and that is why non-point drinking water discharges all across the USA are regulated by BMPs and not numeric effluent limits. | Please see response to comment 3.5 and 3.6 |

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| 19 | 5 | Applicability | It is recommended that the SWRCB include explicit language in the TRC Policy and SED that specifically states that it is technologically infeasible for potable water discharges to comply with the TRC Policy numeric effluent limits as authorized under the Code of Federal Regulations (CFR), Title 40, Section 122.44(k), revised July 1, 2004. It is recommended that the SWRCB instead establish a conditional authorization or other exclusion in the TRC Policy that allows potable water discharges to continue to be regulated under MS4 Permits or RWQCB General Permits that require the implementation of BMPs and/or best available technology economically achievable (BAT) based numeric effluent limits to reduce the discharge of total residual chlorine to the maximum extent practicable (MEP). These steps will remove MMWD's concerns about this regulation and further contribute to the stated goals of the draft TRC policy: "to protect aquatic beneficial uses, promote consistency, and improve clarity for dischargers and water board permit writers." | Please see response to comment 3.6 |
| 20 | 1 | Effluent Limits | The proposed regulations rely on a time-based equation to establish instantaneous maximum discharge limits, which appears to both raise the city's limit for short-term discharges and lower the limits for long-term discharges. | Please see response to comment 3.5 |
| 20 | 2 | Applicability | The proposed regulation will essentially establish limit ranges between 0.2 ppm and 0.011 ppm. Under optimum conditions, current and readily available field monitoring equipment has detection limits of 0.060 ppm or more than 5 times the most restrictive limit. It does not seem reasonable or practical to set a concentration limit below what can be tested for. More appropriate limitation language would be "Dischargers that implement BMPs with known chlorine reduction capabilities and in accordance with manufacturer's directions shall be deemed in compliance with this regulation if field monitoring equipment shows the residual chlorine concentration in the discharge is less than the time-based limit or is non-detectable." | Please see response to comment 3.6 |

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| 20 | 3 | Applicability | The regulations appear to be more directed for facilities with long term ongoing discharges where in-line monitoring equipment might be feasible. There are no provisions for accidental or emergency conditions. It is well known that vehicles often hit fire hydrants and that water supply line and valves break. For these unplanned incidents, the first responders will shut off the supply valve to the discharges. This is the best BMP to reduce the residual chlorine and should be acknowledged as such in the language of the proposed regulation: "Where a discharge is the result of an unplanned incident, if the discharge source is stopped as quickly as possible by the first responders, no instantaneous or continuous discharge limits apply." | Please see response to comment 3.5 and 3.6 |
| 20 | 4 | General | The City appreciates the effort the State Board's staff has put into drafting these proposed regulations and the innovative time-base equations that have been developed. The City supports scientifically based and economically achievable efforts to reduce the discharge of pollutants into the waterways. | Comment acknowledged. |
| 21 | 1 | Applicability | The Policy should only be applicable to facilities/processes that actually use chlorine by adding it in their operations. As it currently reads there is a discrepancy between the Policy Applicability and Part II of the Policy. CCEEB believes the Policy Applicability section should be amended to be consistent with Part II. | The chlorine residual objectives apply to all inland surface waters and enclosed bays and estuaries to protect freshwater and saltwater aquatic life. |
| 21 | 2 | Applicability | CCEEB understands small line replacements for repairs, relocations and tie-ins often involve one time short duration discharge of relatively small volume (<5,000 gals) municipally supplied water from hydrostatic testing. RWQCBs, like the Los Angeles, Santa Ana, and Central Valley, allow the discharging of these volumes under waiver, without the need of any analysis prior to discharge. What will the proposed Policy do with the analysis waiver provisions that various RWQCBs currently have? CCEEB suggests an analysis waiver provision for discharges like these resulting from low volume (< 5,000 gals) hydrostatic tests. | Please see response to comment 3.6 |

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| 21 | 3 | Applicability | The Policy inappropriately defines the continuous discharger category, failing to recognize large volume infrequent discharges as intermittent. By amending the above stated discrepancy, the cost and efficacy burdens brought about by continuous monitoring requirements can be avoided. A more practical approach to base the definition of intermittent discharge on is an annual basis rather than a daily basis. As such, the Policy would cover both daily discharges of short duration, and infrequent discharges of a longer duration. An alternative to the annual base approach would be to set a volume per year approach. | Please see response to comment 3.5 |
| 21 | 4 | Monitoring Requirements | The current 15 minute grab sample is burdensome and unnecessary for discharges such as hydrotest waters. Certain discharges may only occur every few years, but may be several days long. The difficulty of a grab sample every fifteen minutes is obvious--and particularly unnecessary when no chlorine has been added to the discharge. An alternative approach would be to require three discrete samples taken at 30-minute intervals for the first hour and a half of discharge during each intermittent period of chlorination. | Please see response to Comments 3.5 and 3.6. |
| 21 | 5 | Applicability | The Policy should state that monitoring for temporary intermittent discharges, such as hydrostatic testing, construction dewatering, well development, water line flushing, handling of water main ruptures, and other water system-related events are not required by this policy. | Please see response to comment 3.5. |
| 21 | 6 | Monitoring Requirements | SWRCB should insure that cost-effective field methodology is available to provide timely and reliable results at the levels proposed by the Policy. We are concerned that no "field-friendly testing methodology" exists for 1 hour and 4 hour averages, rather most tests typically take approximately 4 days to get results particularly with grab samples. | Please see response to comment 3.5. |
| 21 | 7 | Quantification/ Reporting Requirements | To our knowledge there are no commercially available on-line chlorine analyzers that will reliably achieve the performance standards (detection limits and sampling frequency) required by the Policy. This is of particular concern for dischargers of seawater because the saltwater matrix provides additional interference that makes accurate, low-level quantification impossible. | Please see response to Comments 1.15, 1.16, 1.23, and 3.30. |

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| 21 | 8 | Quantification/ Reporting Requirements | Address situations where the QRL is greater than the exposure limit. Allow tests with higher QRLs and detection limits, especially when the assimilative capacity of the waterbody allows the chlorine to be reduced rapidly. To avoid exceedances caused by analytical noise, exceedances should be determined based on the site-specific QRL, not a vendor's detection limit. Allow the use of currently available online instrumentation with a longer analysis cycle. | See responses to Comments 1.23, 2.7, and 2.12. |
| 21 | 9 | Applicability | SWRCB should include explicit language in the TRC Policy and SED that specifically states that it is technologically infeasible for potable water discharges to comply with the TRC Policy numeric effluent limits as authorized under the Code of Federal Regulations (CFR), Title 40, Section 122.44(k), revised July 1, 2004. CCEEB recommends that the SWRCB instead establish a conditional authorization or other exclusion in the TRC Policy that allows potable water discharges to continue to be regulated under MS4 Permits or RWQCB General Permits that require the implementation of BMPs and/or best available technology economically achievable (BAT) based numeric effluent limits to reduce the discharge of total residual chlorine to the maximum extent practicable (MEP). | Please see response to comment 3.6 |
| 22 | 1 | General | To begin, the Districts would like to support the State Board's desire to protect aquatic life by adopting the chlorine criteria established by USEPA in 1984 in the Ambient Water Quality Criteria for Chlorine. | Comment acknowledged. |
| 22 | 2 | Quantification/ Reporting Requirements | Whereas it is commendable to adopt these standards (0.019 mg/L for a one-hour objective and 0.011 mg/L for a four-day average), there has not yet been technology developed that can measure chlorine at these levels instantaneously in a wastewater matrix. Whereas several other states in the U.S. have adopted these same criteria, they recognize the limitations of current technology and most do not require continuous monitoring AND most do not require that permit limits be set at the levels of the criteria (because there is no way to measure chlorine levels that low). | See responses to Comments 1.6, 1.15, 1.16, 1.17 and 1.23. |
| 22 | 3 | Quantification/ Reporting Requirements | Despite several submittals and testimony from the Districts and other parties, the State Board is forging ahead and specifying the use of technology that cannot measure chlorine reliably below 0.05 mg/L under controlled laboratory conditions. | See responses to Comments 1.15, 1.16, 1.17 and 1.23. |

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| 22 | 4 | Quantification/Reporting Requirements | Not only is there significant disparity between manufacturer claims and actual performance with regard to the detection limit of the instrument but also with its detection response time. For instance, the same on-line analyzer's rate of stabilization was evaluated in the Districts' laboratory and it took between 15 and 30 minutes for the analyzer to stabilize to a change in concentration; the manufacturer claims that the instrument takes 1.5 to 2 minutes for a 90% response. In this regard, the Districts believe the State Board's proposed Policy, despite being born of good intentions, is inherently flawed due to misrepresented manufacturer instrument claims. | See responses to Comments 1.23 and 2.7. |
| 22 | 5 | Quantification/Reporting Requirements | There are three components of the Policy that especially concern the Districts. They are all related to the fact that the currently available continuous on-line analyzers cannot reliably, precisely, and accurately measure chlorine residual at levels of the chlorine criteria. The Districts request the State Board review these three areas and make the requested changes to the Policy. | See responses to Comments 1.15, 1.16, 1.17 and 1.23. |
| 22 | 6 | Quantification/Reporting Requirements | The proposed Policy requires that facilities have a quantification/reporting limit (QRL) that does not exceed the facility's effluent limit (p. 7). At the same time, the effluent limits must be set at the criteria levels: 0.019 mg/L for a one-hour objective and 0.011 mg/L for a four-day average. Given that continuous on-line analyzers cannot measure chlorine at those low levels, every discharger will need to pursue an alternate QRL with their Regional Water Quality Control Board (as provided in the Policy). However, the Policy specifies alternate QRLs cannot be pursued by dischargers if they can otherwise show compliance by proving the presence of excess dechlorination agent. The Policy requires that each facility measure dechlorinating agent or otherwise be able to prove there is excess dechlorinating agent (see Compliance Determination section, p. 8). Thus, in effect, the draft Policy establishes a QRL that no discharger can meet and allows no opportunity for dischargers to petition for an alternate QRL. Consequently, all dischargers will need to operate without QRLs. At the same time, the Policy implies that a QRL is needed. | Please see response to Comment 1.23. |

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| 22 | 7 | Quantification/Reporting Requirements | <p>The State Board should recognize this shortcoming of the draft Policy and allow dischargers to pursue an alternate QRL as needed. Alternatively, the Policy can be modified to specifically state that a facility may operate without a QRL if the discharger can demonstrate the presence of residual dechlorinating agent. The Districts suggest the following language be added to the Policy on page 7 (the first paragraph already is in the Policy but is shown here to provide context):</p> <p>"The quantification/reporting limit (QRL) shall not exceed the facility's effluent limitation. However, if the Regional Water Board determines on a case-by-case basis that the discharger cannot meet the QRL set at the effluent limit and that it is infeasible for the discharger to show compliance via the presence of residual dechlorination agent or by other means (see Compliance Determination section of this Policy), the Regional Water Board may establish a QRL, provided that the discharger completes and submits a QRL study.</p> <p>If a discharger CAN demonstrate on a continuous basis the presence of residual dechlorinating agent via stoichiometric records (based on the same recording interval as the on-line chlorine analyzer) or with an on-line dechlorinating agent analyzer, then compliance with the QRL provisions in this Policy is not required." (Underlined text has been added.)</p> <p>(This section of the Policy has been edited in redline/strikeout format according to this request, including proposed language for allowing the use of stoichiometric checks for compliance determinations; these edits are shown in Attachment 3.)</p> | <p>Please see Comment 1.23.</p> <p>Facilities may demonstrate the presence of residual dechlorinating agent by continuously monitoring the dechlorination agent. This may be used as the primary means of compliance determination. Policy language has been clarified regarding this issue.</p> |
| 22 | 8 | Monitoring Requirements | <p>In addition, to allow the use of new monitoring methods that may be developed in the future, the Districts request the policy be revised to allow the discharger to submit data on proposed alternative monitoring methods to their local regional board and to grant regional boards the authority to review and approve such methods for use to comply with this Policy.</p> | <p>See response to Comment 2.22.</p> |

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| 22 | 9 | Monitoring Requirements | <p>Continuous on-line analyzers are required by the Policy to determine if chlorine criteria are being met in a discharger's effluent. In the "Compliance Determination" section (p. 8), the Policy indicates that continuous monitoring of dechlorinating agent is the preferred method to provide back-up confirmation to results from continuous chlorine residual analyzers. It was our understanding that representatives from the State Board indicated that use of stoichiometric calculations would be acceptable in lieu of continuous monitors for dechlorinating agents, not just for use as a back-up method when continuous monitoring systems are off-line for calibration and maintenance (as implied in the Policy). Stoichiometry can be used to show if any exceedances indicated by the on-line chlorine analyzers are valid exceedances or false positives readings. Similar to on-line analyzers, volumetric flow rate of dechlorinating agent can be monitored continuously, therefore a stoichiometric check to demonstrate sufficient dechlorinating agent could also be continuously calculated and recorded. However, unlike dechlorinating agent analyzers, the use of stoichiometry does not require calibration and maintenance of an additional analyzer (which is subject to the same limitations in terms of reliability and accuracy as the chlorine residual analyzers). Therefore, we request that the draft Policy be revised to clarify that stoichiometric calculations can be used to confirm nondetect results from a continuous on-line chlorine analyzer. Please modify the Policy on p. 8 to read:</p> <p>"When continuous monitoring systems are off-line, <u>such as</u> for calibration and maintenance, a back-up system must be in place to show compliance." (Underlined text has been added.)</p> <p>(This section of the Policy has been edited according to this request and is shown in Attachment 3.)</p> | <p>See response to Comment 2.21.</p> <p>Please see related changes made to the Policy under Compliance Determination.</p> |

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| 22 | 10 | Compliance Schedules | <p>Presently, in addition to using continuous chlorine analyzers to indicate when Districts' facilities are complying with their current effluent residual chlorine limitation of 0.1 mg/L, the Districts measure chlorine residual in daily confirmatory grab samples using Standard Method 4500 Cl-C at a reporting level of 0.05 mg/L. So, the Districts' compliance history with a chlorine residual level of 0.05 mg/L to 0.1 mg/L is well documented. As affirmed repeatedly by the Districts, the best currently available continuous on-line analyzer cannot measure the levels of chlorine residual specified by the U.S. EPA criteria or this Policy. In the future (after the proposed 5-year compliance schedule provisions sunset), when the analyzer technology is advanced/improved and on-line analyzers can detect chlorine at these low levels, it is conceivable that the Districts may experience low-level exceedances of the criteria that were undetectable until this point (i.e., concentrations above the criteria levels and below 0.05 mg/L). Since there is no visibility at this very low concentration range and since there is a documented time lag response of the continuous analyzers, it is possible that future disinfection dosing and control optimization may be necessary.</p> <p>Furthermore, as the performance of wastewater treatment facilities is pushed to meet ever increasingly more restrictive requirements, with each modification of the wastewater treatment plant, there is a potential for unforeseen changes in treated effluent characteristics. Some of the Districts' facilities recently experienced such a change in the generation of disinfection-by-products as a result of converting its facilities to operate in a denitrification/nitrification (NDN) mode at a cost of approximately \$80 million to meet USEPA ammonia criteria. Planning, design and construction of the NDN facilities took approximately 8 years to implement at 7 of the Districts' facilities. The reason the change in treated effluent quality was not detected in the early years of research development was because the detection limit of the constituent of concern was above the notification limit. The analytical methods improved near the time the construction of the facilities was being completed. Consequently, the Districts are in the process of evaluating additional changes to disinfection processes to minimize the generation of disinfection-by-products. So, in the case</p> | <p>Please see Comments 6.2 and 22.7.</p> <p>In addition, Regional Boards have discretion to provide an additional compliance schedule under a Cease and Desist Order.</p> |

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| | | | <p>where there are required process changes that may affect effluent quality, and/or when analytical techniques improve, dischargers should be afforded a compliance schedule to make the necessary process/control modifications without being subject to mandatory minimum penalties. Imposing hourly effluent limitations significantly increases the potential liability of wastewater treatment facilities where a facility could under the new Policy face up to \$72,000 per day in penalties for a situation where the only change that occurred was either the advancement of analyzer technology and/or a process change required by other regulations. Under the Policy as currently drafted (p. 5-6), obtaining a compliance schedule would not be possible; the draft Policy specifies that the need for a compliance schedule only be considered at permit issuance, reissuance or modification. The Districts request that the issuance of a compliance schedule also be allowed if deemed appropriate by the individual Regional Water Quality Control Board (Regional Board) if a discharger can show good cause. The Districts suggest the following language for the Policy:</p> <p>"A compliance schedule may be issued at permit issuance, reissuance or modification, or if otherwise deemed appropriate by the individual Regional Water Quality Control Board (Regional Board) in the case of a discharger showing good cause."</p> <p>(This section of the Policy has been edited according to this request and is shown in Attachment 3.)</p> | |
| 22 | 11 | General | <p>In conclusion, we thank the State, Board for this opportunity to provide comments on this draft Policy and urge the Board and staff to revisit the Policy and make our requested changes. The Districts are available to work with, you on refining this Policy. We request that our comments, in this letter and Attachments 1 and 2, be considered and that the State Board provide responses.</p> | <p>Comment acknowledged.</p> |
| 22 | 12 | General | <p>For the most part, the changes requested in these comments and in the main letter are reflected in Attachment 3 (Suggested Edits to the Policy). If these changes are made (shown in redline/strikeout), the Districts' major concerns with the Policy will have been addressed.</p> | <p>See responses to Comments 22.7, 22.9, and 22.10.</p> |

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| 22 | 13 | Effluent Limits | Under the Calculation section, the draft Policy states: "Because chlorine residual can be acutely toxic to fish and other aquatic life within minutes of exposure, weekly and monthly limits are not protective and are, therefore, impracticable." The Districts would like the State Board staff to consider the study submitted in January 2006 by the Districts in which facilities in 9 states besides California were surveyed, and while the acute and chronic USEPA chlorine criteria had been adopted into their respective statewide guidances, the permits for these facilities had either daily and/or longer-term discharge limits in most cases. The Districts request that the State Board consider these approaches before deciding limits of one hour and four days are necessary to determine compliance. | See response to Comment 1.6. |
| 22 | 14 | Effluent Limits | Some of the WRPs operated by the Districts discharge intermittently (for 120 minutes or less within a 24-hour period as defined by the Policy) at certain times of the year when the treated effluent is not discharged because it is diverted for reuse purposes. The same WRPs discharge continuously in other parts of the year (normally in winter when reuse demand is much lower). Because we operate facilities that meet the definitions for both continuous discharge and intermittent discharge under this Policy, the Districts request that the Policy be modified to allow permits to include chlorine residual limits for both continuous and intermittent discharges where appropriate. Therefore, we request the following language be added to the Policy: "For discharges that can be either continuous or intermittent (e.g., in the situation where the water is discharged continuously at some times and intermittently at others due to circumstances such as water reuse demands, the NPDES permit for that discharge shall include both the continuous and intermittent chlorine residual objectives. The intermittent chlorine residual objectives shall apply when the discharge time is less than two hours in a 24-hour period, and the continuous objective shall apply at all other times." This would allow dischargers such as the Districts more flexibility in meeting the limitations while maximizing reuse of treated effluent. | Please see response to comment 3.5 |
| 22 | 15 | Mixing Zones | Although later in the Policy mixing zones are discussed, the calculation section in the Policy does not address calculating limits for areas with approved mixing zones. The language in this section should be revised to accommodate calculation of limits for discharges with approved | See response to Comment 3.14. If a mixing zone is authorized, the Regional Water Board has discretion to calculate appropriate limits and may use any available guidance in doing so, such as USEPA's Technical Support |

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| | | | mixing zones. | Document for Water Quality-Based Toxics Control (1991). |
| 22 | 16 | Compliance Schedules | The Districts support the inclusion of a provision allowing 5-year compliance schedules for dischargers to meet the residual chlorine discharge limitations. Whereas the Policy allows for a compliance schedule and states that justification must be provided before one is approved, the Districts request that the words "planned or" be added to the second item listed under justification (on p. 6), so it reads "2. Documentation that facility upgrades are planned or underway, if applicable". In many cases an agency may decide to upgrade facilities in order to comply, but may not have had sufficient time to begin such changes yet at the time of permit issuance. | If facility upgrades are required to achieve compliance with the Objectives of this Policy, then such upgrades must be underway prior to receiving a compliance schedule for the upgrades. This is necessary to avoid prolonged delays in the critical upgrades |
| 22 | 17 | Compliance Schedules | The Districts also request that the issuance of a compliance schedule, in addition to being considered at permit issuance, reissuance or modification, also be allowed if deemed appropriate by the individual Regional Water Quality Control Board (Regional Board) if a discharger can show good cause. Furthermore, the Districts suggest that the Policy specify that interim residual chlorine limits be based on past performance at the specific discharge. | See response to Comment 22.10. The suggested change appears to be unnecessary. The proposed compliance schedule provisions allow sufficient time for the dischargers to come into compliance with the policy. In addition, the dischargers can demonstrate compliance by alternate means, i.e. by showing that residual dechlorination agent is present in the effluent. The proposed policy provides the Regional Water Boards with discretion to calculate appropriate interim limit. |
| 22 | 18 | Compliance Schedules | We also recommend that the language referring to "new or modified effluent limit" be removed in two places (one on page 5 and one on page 6 of the Policy) within this section. The Regional Boards should be afforded more discretion for providing dischargers with compliance schedules, other than just when new or more restrictive effluent limits are applied or other provisions of this Policy are applied in a permit. Again, if a discharger can show good cause, the Policy should allow the Regional Board to grant or extend a compliance schedule. | See responses to Comments 22.10 and 22.17. |
| 22 | 19 | Monitoring Requirements | The monitoring requirements section of the Draft Policy states that: "Continuous monitoring of chlorine residual or dechlorination residual concentrations shall be required in all facilities." The monitoring frequency is specified as "one or more data points, every minute." The equipment sensitivity level specified under the Quantification/Reporting Requirements is 1 ug/L. As previously discussed at the workshops, the sensitivity and monitoring frequency requirements presented in the draft Policy do not reflect the actual limitations of the instruments | See responses to Comments 1.15, 1.23, 2.4, 2.7, 3.2, 3.32, 3.34, and 6.2 Staff points out that continuous monitoring devices for chlorine residual have been designed specifically for continuous monitoring of waste water and are available with a manufacturer-stated sensitivity of 1 ppb. This Policy requires a sensitivity of 10 ppb. |

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| | | | currently available on the market or the realities of layers of variables (errors) in a continuous on-line field environment. We are unaware of any current on-line analytical technology that is capable of accurately or reliably measuring chlorine at 1 ug/L or with sufficient response time to take discrete measurements at one-minute intervals under continuous monitoring conditions in the field. Information we submitted in our October 2005 data submittals provides evidence of the sensitivity issues for continuous analyzers. Therefore, the Districts continue to have significant concerns about the proposed approach because of these issues/problems. | |
| 22 | 20 | Monitoring Requirements | Additionally, the Districts request that continuous monitoring be allowed for intermittent discharges (as well grab samples) to characterize the discharge. This request can be accommodated by adding the following text to the sentence that begins "Grab samples shall be collected..." (p. 6): "If continuous chlorine monitoring is not used for intermittent discharges". | Please see response to comment 3.5 |
| 22 | 21 | Site-specific Objectives | As detailed in previous submittals and discussed further below, the Districts have performed toxicity testing recently that suggests that our receiving water may have a buffering capacity to partially protect aquatic life from residual chlorine. The Districts are committed to operate all our facilities to comply with every effluent limitation, but there have been times (infrequent and unavoidable) when chlorine has been discharged in amounts higher than our current discharge limitation of 0.10 mg/L. (A detailed exceedance summary was sent to the State Board in October 2005.) Our recent testing suggests that aquatic life may be able to tolerate short-term exceedances of residual chlorine discharge limits in some receiving waters without experiencing adverse impacts. Therefore, we request that the State Board pursue the development of an approved methodology for site-specific objectives for short-term exposures as expeditiously as possible so that both the Regional Boards and dischargers will have sufficient guidance to pursue the successful and timely development of site-specific objectives, as allowed under the draft Policy. | See response to Comment 3.2. USEPA has published clear direction on appropriate SSO methodology. |

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| 22 | 22 | General | Table 1 (p. 13-14), which lists the current chlorine criteria applied by each California Regional Water Quality Control Board and is also included in the economic analysis for the Policy, is incorrect, with regards to the range of existing permit limits in the Lahontan Region. Whereas the table correctly reports that Lahontan's Basin Plan includes chlorine criteria of 0.002 and 0.003 mg/L (for a median and maximum, respectively), the Region has also established a method detection limit of 0.05 mg/L (which becomes the effective limit) for some permits, so the listed range of 0.011 to 0.019 mg/L in Table 1 is incorrect. | The range of permit limits in both tables represents the range of effluent limits as reported in EPA's Permit Compliance System (PCS) database. The State Board acknowledges that the database may not contain the most up to date information. Footnote 1 at the bottom of Table 1 in the SED states the date of the information source. |
| 22 | 23 | | The Draft Substitute Environmental Document lists 7 alternatives in this section and recommends adopting portions of two of them. For continuous, freshwater discharges, this analysis concludes adopting the USEPA developed chlorine criteria is the right choice. The document states: "the proposed criteria show a solid scientific foundation and are a logical choice for protecting aquatic life from TRC and CPO toxicity," (p.38) primarily because these criteria have been adopted in other states, such as "Virginia, Illinois, Delaware and Connecticut" and is proposed to be adopted in Arizona. That is true; these states have or are about to adopt the criteria. However, the results of a study performed by the Districts indicate that these other states do not implement the criteria in the same manner as what is being proposed in the Policy. (See Attachment 2.) For instance, whereas Virginia has adopted the USEPA chlorine criteria of 0.011 mg/L for a four-day average and 0.019 mg/L for a one-hour maximum concentration, the Hampton Roads Sanitary District operates 9 POTWs that have to maintain effluent with less than 0.1 mg/L of chlorine (the defined reporting limit). They ensure compliance by taking one effluent grab sample per day. So, while the Districts do support the State Board's decision to adopt these criteria, the Districts urge the State Board to review and consider the implementation methods undertaken by the states listed in the environmental document as justification for adopting these criteria. | See response to Comment 1.6. |

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| 22 | 24 | Mixing Zones | The State Board analyzed three alternatives for mixing zones: 1) Prohibit mixing zones, 2) Allow mixing zones in a small area near an outfall and 3) Policy should remain silent with regards to mixing zones (and leave the decision to the individual Regional Boards). The recommendation is to adopt Alternative 1 or 3. The Districts support Alternative 2 and think that in the event that a mixing zone can be proven to still be protective of aquatic life near an outfall, a mixing zone should be considered. Therefore, the Districts support Alternative 2, or at the least, Alternative 3. The Regional Boards currently need to determine if mixing zones are appropriate for dischargers, so this Policy should be implemented in the same manner to ensure consistency (otherwise an individual discharge may have mixing zones for some constituents, but none for chlorine, despite providing scientific justification for one). | See response to Comment 1.8. |
| 22 | 25 | Site-specific Objectives | In an earlier submittal (see Attachment 2), the Districts submitted the results of a study investigating the sensitivity of aquatic life to a short-term exposure of a relatively high concentration of chlorine. Test organisms were exposed to concentrations of chlorine between 0 and 4 mg/L for a total of five minutes and then their survival 48 hours after the exposure was recorded. The results of the study clearly showed that the test organism used was more sensitive to chlorine in a synthetic control dilution water environment than in receiving water, This finding would suggest that the receiving water might provide some buffering ability for aquatic life to tolerate levels of chlorine residual higher than the proposed objectives for very short duration. We believe that this type of study could be done to develop a site-specific objective, and we request that the State Board work with the Districts and other interested parties to develop an approved scientific methodology referenced in the Policy for such work so that those parties and Regional Boards wishing to pursue site-specific objectives can do so efficiently. | See response to Comment 22.21. |

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| 22 | 26 | Effluent Limits | The State Board recommendation is to apply the chlorine objectives as end-of-pipe limits and to apply them as a one-hour maximum (0.019 mg/L) and a four-day average (0.011 mg/L). Again, while the Districts support the adoption of the chlorine criteria, the Districts think the State Board should reconsider the implementation of the criteria. The study of 31 POTWs in other states (see Attachment 2) indicates that only two facilities have one-hour average limits in their permits in addition to daily or longer-term limits. (These POTWs are located in eleven different states, nine of which have adopted the USEPA chlorine criteria.) All of the 31 POTWs have either daily or some combination of daily, weekly and monthly limits. Thus, although most of the states in which these facilities operate have adopted EPA's chlorine criteria into their water quality standards, they have implementation practices that don't include translating the acute and chronic criteria into one-hour and four-day averages for permit limits. The Districts urge the State Board to reconsider the frequencies of these limits and to instead adopt longer-term averages. | See response to Comment 1.6. |
| 22 | 27 | Compliance Schedules | The State Board recommendation for compliance schedules is to adopt either 2 years (with the ability for each Regional Board to extend the compliance schedule to five years) or five years. The Districts support a five-year compliance schedule and request the State Board follow suit in this regard. Adopting two-year compliance schedules would not give dischargers enough time to upgrade their facilities (to implement continuous monitoring and refine a facility's process control and/or to upgrade the facility with better chlorination/dechlorination capabilities or to change from chlorination practices to other types of disinfection processes such as UV disinfection), and thus, the individual Regional Boards would be flooded with requests for extended compliance schedules. | See response to Comment 1.27. |

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| 22 | 28 | Quantification/ Reporting Requirements | The State Board recommendation for monitoring and reporting frequency is to use continuous analyzers for chlorine monitoring and reporting. As we have mentioned previously in our comments, there has not yet been technology developed that can measure chlorine at the levels of the criteria instantaneously. The Districts do currently utilize continuous monitors for process control; when the analyzers record high levels of residual chlorine, the dosage of dechlorination agent is increased. The lag time between detecting a residual at the final chlorine analyzer and the actual increase in dechlorinating agent dose can range from approximately <1 to 5 minutes depending on the WRP configuration. (This lag time includes the time it takes for the controller to change the chemical flow rate, which is estimated to be less than 10 seconds, as well as the distance between the location of the chemical storage and chemical dosing point and is also a function of the physical layout and concomitant restrictions at each plant.) | Please see response to Comment 2.7. State Board staff acknowledges that facilities may need to install continuous monitoring devices calibrated and operated specifically for measurement ranges appropriate to compliance monitoring. |
| 22 | 29 | Monitoring Requirements | The State Board's reasoning for the need for continuous monitoring is to prevent 'catastrophic failures' that could occur if the process is not being carefully monitored. The Districts agree that continuous monitors are an important tool for refining a chlorination/dechlorination system but contend that these measurements should be used with caution to demonstrate compliance with the proposed criteria because they do not accurately measure the chlorine concentration in the treated effluent. The Districts submitted the results of a study in which a continuous analyzer was used to measure the chlorine in a sample of secondary- effluent wastewater from a Districts' facility in October 2005 (see Attachment 2). Collected samples were spiked with concentrations ranging from 0.04 mg/L to 1.12 mg/L. The lowest concentration at which 50% recovery was observed (the concentration at which the meter even estimated half the actual concentration) was 0.15 mg/L in wastewater. That is ten times the concentrations specified in the criteria. Thus, the Districts suggest that while continuous monitors can indicate a gross exceedance of the criteria that the State Board instead put more emphasis on the analysis of daily grab samples taken from the final effluent and operational parameters such as sufficient and continuous dosing of dechlorinating agent to | Please see responses to comments 3.32, 3.34 and 22.28. |

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| | | | demonstrate compliance with the proposed effluent limits. | |
| 22 | 30 | Monitoring Requirements | The State Board's recommendations in this chapter also address the quantification/reporting limit and the appropriate back up to continuous monitoring for continuous chlorine residual analyzers. The Districts have strongly recommended changes on both of these topics; please see the main letter for these comments. | See responses to Comments 1.23 and 2.21. |
| 22 | 31 | Compliance Determination | The State Board's recommendations in this chapter include having each facility maintain a chlorinating and dechlorinating analyzer to show compliance. It was our understanding that representatives from the State Board indicated that use of stoichiometric calculations would be acceptable in lieu of continuous monitors for dechlorinating agents, not just for use as a back-up method when continuous monitoring systems are off-line for calibration and maintenance (as implied in the Policy). Since chemical dosing measurements are continuously monitored, stoichiometry can be reliably used to demonstrate the there is a presence of residual dechlorinating agent present in the effluent prior to discharge in addition to showing if any exceedance indicated by the on-line chlorine analyzers are valid exceedances or false positives readings. We request, therefore, that this chapter of the Substitute Environmental Document be revised to clarify that stoichiometric calculations can be used to confirm the presence of dechlorinating agent in conjunction with the use of a continuous chlorine residual analyzer. | Stoichiometry can be used as a back-up when continuous analyzers are offline, or as a means to identify intermittent chlorine spikes detected by continuous analyzers as false positives. This has been further clarified in the Policy under Compliance Determination. |

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| 22 | 32 | Economic | The compliance costs for a number of case studies are used in the Economic Considerations report to estimate the economic impact of this Policy. Unfortunately, many of the facilities examined (p. 5-2 of the report), are listed as having chlorine effluent concentrations that are non-detectable. Even the averages that are listed for other agencies are most likely averages of detected and non-detected concentrations. This report assumes a non-detected value is equivalent to a zero chlorine residual and assumes that the facilities that have non-detected levels of chlorine can comply with this Policy. However, the lowest detected level of chlorine residual is not identified for most facilities (p. A-2 through A-35). Thus, facilities may have detection limits of 0.1 mgfL and a chlorine residual of 0.95 mg/L is reported as a non-detect. The Economic Considerations report assumes that facilities that report non-detects have no residual chlorine and can meet the proposed Policy. Given that the individual limits for facilities in California are currently much higher than the proposed objectives and that the proposed Policy will require monitoring at much lower levels, this report should not make this assumption. In doing so, it grossly underestimates the potential expense of all facilities statewide to come into compliance with the proposed Policy. | See response to Comment 2.14. |
| 22 | 33 | Economic | Under Section 4 of the Economic Considerations, the use of alternate disinfection systems is explored (i.e., non-chlorination systems). The Districts have had some recent experience with a UV disinfection system that suggests that dosing with a small amount of chlorine will remain necessary even with a UV system. The Districts recently converted the Whittier Narrows Water Reclamation Plant to UV disinfection. However, when a validation test was conducted, we discovered that UV disinfection does not adequately destroy adenovirus. This means that facilities that switch to UV disinfection to avoid chlorination (and thus the chlorine residual objectives in the Policy) will likely still have to use some chlorine in their disinfection process and thus will still have to dechlorinate and to comply with the objectives in the Policy. Two recent letters from the Los Angeles County Department of Health Services regarding this specific problem are included with this submittal in Attachment 4. Both letters state that whereas the poliovirus is typically used as the target organism by UV disinfection guidelines, recent research indicates that double-stranded | Whittier Narrows Water Reclamation Plant produces tertiary treated water for reuse as groundwater recharge or irrigation. The Los Angeles County Department of Health Services (DHS) requires that disinfection system at the facility be designed based on the UV dose recommendations specified in the NWR/AAWWARF UV Disinfection Guidelines. Currently, these guidelines target 4 logs of enteric inactivation using poliovirus as the target organism. The letters from the Los Angeles County DHS state that recent research indicates that double-stranded DNA viruses may be capable of UV repair. However, the letters also state that they do not anticipate an immediate change in public policy, but acknowledge that there may be changes in the future. Although any future changes related to UV disinfection requirements or targets in drinking water for recycled or reclamation water could increase treatment costs related to compliance with chlorine residual limit (due to the use of chlorine in addition to UV light), State Board staff has |

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| | | | DNA viruses may be capable of UV repair and much more resistant to UV disinfection than poliovirus. This means that chlorination may be a necessary component to a UV disinfection system. | requested that commenter provide scientific studies supporting this claim prior to offering a response. |
| 23 | 1 | General | Golden State Water Company (GSWC) would like to express our support of comments submitted by the Association of California Water Agencies. GSWC provides drinking water to more than one million people in 10 counties throughout California and is member of the Association of California Water Agencies (ACWA). As a drinking water provider, we have a vested interest in preserving the quality of our streams, lakes and underground aquifers. We are dedicated to providing our customers with water that meets strict State and Federal drinking water standards and chlorine is a critical tool used to meet those standards. | Please see response to comment 3.6 |
| 23 | 2 | Applicability | At the September 2005 stakeholder meeting held with SWRCB staff and SWRCB board members, we were relieved to learn that both staff and board members agreed, that due to technology limitations, it was infeasible for potable water discharges to comply with the proposed effluent limits and that these type of discharges were already adequate regulated under other types of Municipal Separate Storm Sewer Permits and General Permits. Water utilities must periodically dewater pipelines and reservoirs, flush fire hydrants and backwash filters in order to comply with federal and state drinking water regulations. We discharge under several General Permits and are required to use Best Management Practices (BMPs) to dechlorinate all our discharges. These BMPs are very effective but there is no field monitoring equipment available to detect total residual chlorine down to the level proposed in the policy. | Please see response to comment 3.6 |

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| | | | <p>We understand that staff is still working on language to clearly reflect these technology limitations and to clearly demonstrate that it is not the intent of the policy to further regulate these discharges. We support their efforts to develop a policy that is technologically feasible, protective of natural resources and can be uniformly interpreted and implemented by the regional water boards.</p> | |
| 23 | 3 | Applicability | <p>We support the recommendation to include explicit language in the Substitute Environmental Document and the TRC Policy that states the current technologic infeasibility and establishes a conditional authorization or other type of exclusion that allows authorized non-stormwater discharges to continue to be regulated under MS4 permits or General permits that require implementation of BMPs and/or Best Available Technology based effluent limits to reduce total residual chlorine to the maximum extent possible.</p> | Please see response to comment 3.6 |
| 24 | 1 | Applicability | <p>At the September 2005 Stakeholder Meetings held in Oakland and Los Angeles, SWRCB staff, SWRCB Board Members and stakeholders discussed the first draft of the Chlorine Policy. Participants at the Los Angeles meeting heard a presentation by Metropolitan Water District of Southern California (MWD) describing the technology limitations that made it infeasible for potable water discharges to comply with the proposed Chlorine Policy numeric effluent limits. Both the State Water Board members and the SWRCB staff indicated they understood the issues facing drinking water utilities and staff would provide language in the revised Chlorine Policy and Substitute Environmental Document (SED) excluding potable water discharges from the Chlorine Policy. They indicated that these types of discharges would continue to be regulated under the Municipal Separate Storm Sewer System (MS4) Permits and Regional Water Quality Control Board (RWQCB) General</p> | Please see response to comment 3.6 |

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| | | | <p>Permits, which would have been acceptable to the groups participating in the meeting.</p> <p>Association of California Water Agencies and other drinking water agencies provided comments to the SWRCB staff to help ensure that the language included in the second draft of the Chlorine Policy accomplished what had been promised by the SWRCB staff at the September 29, 2005 Stakeholder Meeting.</p> <p>When the April 2006 draft Chlorine Policy was released for public comment, many of us stakeholders were troubled to read that the new draft would unfortunately capture almost all drinking water dischargers. The new draft language would include discharges from drinking water utilities if operating under an NPDES permit (such as the various RWQCB General Permits for Potable Water Discharges or De Minimus Discharges). The SWRCB staff reiterated that drinking water utilities were not intended to be part of the policy and gave evidence of their intention by a lack of cost estimates for drinking water utilities to comply with the Chlorine Policy in the Economic Analysis.</p> <p>While we have been working cooperatively with the SWRCB staff to find a solution, we are concerned over conflicting comments made by SWRCB staff indicating that language would be inserted requiring potable water dischargers to prove to their respective Regional Boards they could not feasibly adhere to the Chlorine Policy when staff and the SWRCB Board has already acknowledged drinking water utilities were never supposed to be included under the Policy's requirements. In addition, the original intent of the Chlorine Policy was to create a consistent chlorine policy for California, which would not result from deferring feasibility decisions to the Regional Boards.</p> | |
| 24 | 2 | Applicability | <p>We are extremely concerned by the proposed draft Chlorine Policy since drinking water utilities are currently included under its restrictions and simply cannot dechlorinate to the level that is required in the policy document. We, as well as other drinking water utilities, do not have stationary treatment facilities and must dechlorinate in the field using Best Management Practices (BMPs) and Best Available Technology Economically Achievable (BAT).</p> | Please see response to comment 3.6 |

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| 24 | 3 | Quantification/ Reporting Requirements | There is no field monitoring equipment available that will detect total residual chlorine to the proposed Chlorine Policy dechlorination level of 0.019 mg/L (1-hr average, freshwater). | Please see response to comment 3.6. |
| 24 | 4 | Applicability | Additionally, there are no field devices that can ensure precise dechlorination to that stringent level. | Please see response to comment 3.6. |
| 24 | 5 | Applicability | Water utilities, instead, are regulated under MS4 Permits and RWQCB General Permits to ensure that potable water discharges do not impact water quality. Under these permits, water utilities are required to implement Best Management Practices (BMPs) or meet numeric effluent limits that are based on BAT to reduce the discharge of total residual chlorine to the maximum extent practicable (MEP). Consistent and effective BMPs and BATs have been developed for the state of California and are used by many water agencies throughout the state. | Please see response to comment 3.6. |
| 24 | 6 | Applicability | Since the first draft of the Chlorine Policy was published, potable water dischargers were given assurances by SWRCB staff that they were not included in this policy and would instead be regulated by their existing permits. | Please see response to comment 3.6 |
| 24 | 7 | Applicability | Potable water utilities were not included in the Economic Analysis for the Chlorine Policy; further demonstrating there was no intent to include drinking water activities. | Please see response to comment 3.6 |
| 24 | 8 | Applicability | SWRCB staff has also agreed that regulation of potable water discharges through BMPs and BATs is the only feasible option. | Please see response to comment 3.6 |
| 24 | 9 | Applicability | Even with the repeated acknowledgement that the SWRCB understood the infeasibility of drinking water utilities' ability to adhere to the policy, the draft Chlorine Policy released in April 2006 and proposed for adoption includes potable water dischargers. | Please see response to comment 3.6 |
| 24 | 10 | Applicability | ACWA has been given only anecdotal evidence as to why, if the SWRCB does not intend to capture potable water under this policy, the State Board is not able to exempt them from the policy. | Please see response to comment 3.6 |
| 24 | 11 | General | While the Chlorine Policy is designed to create statewide consistency, the language is confusing and could result in several different interpretations if adopted as currently written. | Please see response to comment 3.6 |
| 24 | 12 | General | Lastly, ACWA also represents POTWs throughout the state and supports the concerns addressed in the California Association of Sanitation Agencies (CASA) comment letter. | Comment acknowledged. |

Response to Comments on Draft Total Residual Chlorine and Chlorine-Produce Oxidants Policy of California

| Commenter ID | Comment No. | Subject | Comment | Response |
|--------------|-------------|---------------|--|---|
| 24 | 13 | General | If it is in fact determined that a categorical exemption for potable water discharges is not legally allowable, then language that otherwise accomplishes this stated goal must be developed. It is our belief that this can be resolved and we have been working to that end since the second draft of the Chlorine Policy was published in April 2006. However, the aforementioned issues will take time to resolve and as a result we urge the SWRCB not to take action on this policy during the Public Hearing on June 19th. We are committed to a collaborative process that will best serve the needs of our member agencies and statewide water quality. | Please see response to comment 3.6 |
| 25 | 1 | Applicability | Specifically, the regulations propose a standard relating to temporary and intermittent pipeline hydrostatic test water discharges and construction dewatering of which it is not technically or chemically possible for either SDG&E or SCG to comply. | Please see response to comment 3.5 |
| 25 | 2 | General | SDG&E and SCG operate and maintain thousands of miles of natural gas pipelines that are routinely monitored and checked for integrity and safety. These pipelines are hydrostatically pressure tested according to safety regulations with potable water; other methods are often impractical due to location. There are no analytical methods to test the level of residual chlorination or to apply dechlorination treatment processes that would result in the proposed level of treatment. It would be technically impossible for SDG&E and SCG to meet the proposed standard, which could result in future permits prohibiting such discharges and making it impossible to comply with both mandatory safety regulations. | Please see response to comment 3.5 |
| 25 | 3 | Applicability | Sempra Energy requests that the proposed regulations be amended to include exceptions to the policy or provide a mechanism for situation-specific regulation at the discretion of the local RWQCB or municipality. While we understand the desire to have statewide policy and regulations, a broad brush approach to address chlorine discharges is impractical, will be impossible for SDG&E and SCG to comply with, and could potentially impact their ability to provide safe and reliable utility service. | Please see responses to Comments 3.5 and 3.6. |

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| Commenter ID | Comment No. | Subject | Comment | Response |
|--------------|-------------|---------------|--|-------------------------------------|
| 25 | 4 | Applicability | Sempra Energy requests that the SWRCB amend the proposed regulations to allow regulated utilities to operate under local MS4 permits and ordinances and local RWQCB General Permits and variances that are able to ensure that local potable water discharges do not impact local water quality, yet provide more situation-specific regulation allowing compliance with both safety and water quality requirements. | Please see response to comment 3.6. |

| Commenter ID | Commenter Name |
|--------------|---|
| 1 | Sacramento Regional County Sanitation District |
| 2 | California Association of Sanitation Agencies (CASA/TRIAC) |
| 3 | LADWP |
| 4 | WSPA |
| 5 | Andrew Gere, San Jose Water Company |
| 6 | Cary Jackson, Hach Company |
| 7 | Daniel Guillory, Metropolitan Water District of Southern California |
| 8 | Dick Wilson, Anaheim Public Utilities Department |
| 9 | Frank Dela Vara, Disneyland Resort Environmental Affairs |
| 10 | Gina Garbolino, City of Roseville |
| 11 | John Hills, Irvine Ranch Water District |
| 12 | John Robertus, San Diego Water Board |
| 13 | John Rossi, Western Municipal Water District |
| 14 | John Schroeter, East Bay MUD |
| 15 | Kenneth Mayer, Department of Fish & Game |
| 16 | Krista Clark, Association of California Water Agencies |
| 17 | Mark Gold, Heal the Bay |
| 18 | Phillip Miller, Esinore Valley Municipal Water District |
| 19 | Robert Castle, Marin Municipal Water District |
| 20 | Robert Dickey, City of South Gate |
| 21 | Robert Lucas, California Council for Environmental & Economic Balance |
| 22 | Victoria Conway, County Sanitation Districts of Los Angeles County |
| 23 | William Gedney, Golden State Water Company |
| 24 | Steve Setodeh, El Dorado Irrigation District |
| 25 | Bernie Orozco and Scott Koken, Sempra Energy |