COMMENT LETTER 8 - CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, NORTH COAST REGION, BENJAMIN D. KOR, (OCTOBER 1, 1996), RECEIVED OCTOBER 3, 1996

Response to Comment 8-1

Comment Summary: The comment asks for substantiation that the maximum flow of incidental agricultural runoff would be 0.1 cfs.

A condition involving irrigation equipment malfunction is defined (and substantiated based on actual data from the existing system in 1993 and 1994) on page 3.3-40 as involving discharge of 34,000 gallons. The assumption was made that this volume would flow into a surface water over a 12-hour period, which results in an average flow of 0.1 cfs. Refer also to Response to Comment 92-87. The assumption of the 12-hour duration is not explicit in the Draft EIR/EIS.

To clarify this point, the following change is made to the Draft EIR/EIS:

Page 3.3-40. The second paragraph is revised as follows:

> . . . incidences involved runoff to waterways, the remainder involved ponding or contained runoff (i.e., runoff that did not discharge to surface waters). The maximum volume of runoff reported was 34,000 gallons. The majority of incidences involved runoff or ponding of less than 1,000 gallons. The duration of the runoff event is not typically reported; however, good irrigation management practices generally involve daily inspection of irrigation facilities. A 12-hour irrigation equipment malfunction is considered appropriate in light of irrigation management practices required in the Mitigation Monitoring Plan which is adopted as part of the Project.

Response to Comment 8-2

Comment Summary: The comment states that the Draft EIR/EIS should recognize that reclaimed water discharges to Stemple and Americano Creeks is prohibited at all times, and discharges to the Russian River and its tributaries is prohibited from May 15 through September 30.

The EIR/EIS authors agree that information about discharge prohibitions should be included in the EIR/EIS.

The following change is made to the Draft EIR/EIS:

Page 4.6-3. Add the following paragraph after the first paragraph of the Inland Water Regulation section:

The North Coast and Bay Basin Plans both contain relevant discharge prohibitions. The North Coast Basin Plan prohibits discharge to Stemple and Americano Creeks at any time. The Basin Plan also prohibits discharge into the Russian River or its tributaries in excess of one percent of the flow at the point of discharge and during the period from May 15 through 30 September. The North Coast Basin Plan includes provisions for exceptions to the Russian River discharge prohibitions. The Bay Basin Plan prohibits discharge where 10:1 dilution would not occur and in any non-tidal water, dead-end slough or similar confined waters. Exception criteria are established in the Bay Basin Plan.

Response to Comment 8-3

Comment Summary: The comment requests consideration of alternative mitigation measures to prevent impacts of reservoir leakage on groundwater quality due to reservoir seepage, in order to comply with State Water Resources Control Board Resolution No. 68-16.

State Water Resources Control Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) is described on page 4.5-20 of the Draft EIR/EIS and on page 4.6-4 of the Draft EIR/EIS as the Antidegradation Policy. Resolution No. 68-16 and the equivalent federal policy allow degradation of water quality only if the Regional Board finds that such degradation would be "consistent with the maximum benefit to the people of the State, and will not unreasonably affect present and anticipated beneficial uses of such water and will not result in water quality less than that prescribed in the policies." Impacts 5.5.1 on page 4.5-32 indicate that the Project could cause the concentration of nitrate in groundwater to increase to as much as 16.3 mg-N/L. This concentration would exceed the drinking water MCL of 10 mg-N/L, in which case the impact would be inconsistent with Resolution 68-16. However, the projected maximum concentration of 16.3 mg-N/L in groundwater is based on several conservative assumptions about reclaimed water quality and reservoir leakage, as follows:

- The concentration of nitrate in reclaimed water is estimated to be 16.3 mg-N/L (as indicated on page 4.5-18 of the Draft EIR/EIS). Treatment plant modifications currently under construction are expected to reduce the nitrate concentration, and a final nitrate concentration of less than 10 mg-N/L is possible.

- Nitrate was assumed not to convert to ammonia in the storage reservoir (for purposes of this analysis). This overestimates the amount of nitrate because most of the nitrogen is expected to convert to ammonia for about half of each year.

- Dilution effects from upgradient flow were calculated only the groundwater discharge from the subbasin adjacent to and directly upgradient of the reservoir. Actual upgradient contribution would be proportional to the size of the entire upgradient watershed, and the dilution would actually be greater.

- Groundwater flow rates are expected to be 3 feet per year, but travel times from reservoirs to wells were calculated using rates of 30 feet per year. This overestimates travel time by an order of magnitude.

- Reservoir seepage will typically decrease over time because sediments that accumulate in the bottom of the reservoir tend to reduce the permeability of the bottom.

If lower-than-assumed reclaimed water nitrate concentration and/or seepage could result in a groundwater nitrate concentration which is less than 10 mg-N/L, the Project impact would be consistent with Resolution 68-16.

The EIR/EIS authors considered providing treatment of reclaimed water to reduce nitrate levels. This mitigation measure was not recommended for the following reasons:

- Treatment plant modifications currently under construction are expected to reduce nitrate concentrations. It is possible that nitrate concentrations could be lowered below the MCL of 10 mg/L.

- The best available technology for waste water denitrification would result in nitrate levels of 2 to 3 mg/L which could still result in groundwater quality degradation.

- Reducing nitrate to very low levels in agricultural irrigation water increases the need for fertilizer application which can, itself, be associated with decreased surface and groundwater quality.

The reservoirs will be designed and constructed to minimize reservoir leakage. The extent of anticipated seepage varies with bedrock type and structural configuration at each of the reservoir sites. The Project description includes installation of partial clay liners at some reservoir sites. The most extensive clay liner would be installed at the Lakeville reservoir where 40 percent of the reservoir foundation would be blanketed with clay. Grout or clay blankets were recommended to reduce permeabilities in areas underlain by coarse-grain lenses or other high permeability zones.

Preliminary estimates indicate that a synthetic liner with a clay blanket could be installed at a cost of generally 20 to 40 percent of the total reservoir earthworks cost (presented in Appendix F-1 (Geotechnical Assessment of Alternative Reservoir and Pipeline Routes) of the Draft EIR/EIS), depending on the reservoir site. Costs would be lower at the reservoir sites with smaller footprints, such as Adobe Road, and would add about 11 million dollars to the cost of reservoir construction. At the larger reservoir sites, such as Tolay and Sears Point, lining would add 20 to 30 million dollars to construction costs. Lining a reservoir would be costly but would create an essentially impervious barrier, isolating the reclaimed water from the groundwater. If this option is implemented the alternative water supply may not be needed to comply with Title 22.

The State Water Code, sections 13510-13512, states that the people of the state have a primary interest in the development of facilities to recycle water to supplement existing water supply. the legislature finds that the use of recycled water by local communities for agricultural uses will contribute to the health, safety and welfare of the people of the state. It is the intention of he legislature that the state undertake all possible steps to encourage development of water recycling facilities.

Mitigation Measure 2.3.12, as proposed, will mitigate the Project's environmental impacts on degradation of groundwater due to nitrates in reservoir leakage. However, reduced nitrate concentrations in reclaimed water and more extensive lining would be considered by the Regional Water Quality Control Board when reviewing Waste Discharge Requirements or making a finding regarding the Statement of Policy with Respect to Maintaining High Quality of Water in California.

Response to Comment 8-4

Comment Summary: The comment refers to Impact 5.5.1, concerning the potential for storage reservoirs to increase nitrate concentrations in the groundwater.

Refer to Response to Comment 8-3.

Response to Comment 8-5

Comment Summary: The comment refers to Impact 5.5.1, concerning the potential for storage reservoirs to increase nitrate concentrations in the groundwater.

Refer to Response to Comment 8-3.

Response to Comment 8-6

Comment Summary: The comment states that the basis for the water quality estimates presented in the many tables of Section 4.6 was difficult to determine. The comment goes on to say that some of the water quality relationships are complex, and were not clearly explained.

The overall organization of the Draft EIR/EIS is addressed in Master Response 1, located in Section 6.2 of this document. The complex water quality relationships are explained in detail in Appendices I-8 (Russian River Water Quality Model) and I-16 (Water Quality Impact Analysis Vol. 1). Some of this explanation is also included in Section 4.6, but space and readability considerations prevent moving all of the explanation into Section 4.6. Also, each of the 60 tables in the Water Quality section provides a note at the bottom of the table identifying the source of the data or conclusions. For example, Table 4.6-57 on page 4.6-146 gives the source at the bottom of the table: "Table 4-46 in Water Quality Impacts technical report (Merritt Smith Consulting 1996)". That document is Appendix I-16 of the Draft EIR/EIS.

Response to Comment 8-7

Comment Summary: The comment states that the discussions of dissolved oxygen seemed to minimize the importance of the Basin Plan minimum objective of 7.0 mg/L in the Laguna de Santa Rosa.

The EIR/EIS authors agree that the minimum dissolved oxygen objective is important. The EIR/EIS authors attempted to treat all impacts as equally important. Refer to Response to Comment 8-21 for additional data on dissolved oxygen.

Response to Comment 8-8

Comment Summary: The comment asks that historical dissolved oxygen values be presented with the simulated values for each alternative.

The historical values are presented in the Affected Environment section of Section 4.6, beginning on page 4.6-1, and in Appendices I-4 (Laguna de Santa Rosa Water Quality Monitoring Results) and I-6 (Russian River Water Quality Monitoring Results). The impacts of the Project on dissolved oxygen in the Laguna and Russian River are simulated for particular hydrologic conditions (dry, normal, and wet) using flow records from particular years. Thus, the impact of the Project on dissolved oxygen is based on the impact of the existing discharge as simulated for the particular month in the hydrologic year. Therefore, historic conditions are not directly comparable to the simulated dissolved oxygen conditions. Because the data are not comparable, the historic dissolved oxygen data are not presented with the simulated data in discussion of dissolved oxygen impacts.

Response to Comment 8-9

Comment Summary: The comment states that the presentation of biostimulatory effects is unclear and the rationale for the 10 percent point of significance for biostimulatory effects is not well substantiated.

The EIR/EIS authors agree that additional clarification is needed for this point of significance.

The following change is made to the Draft EIR/EIS:

Page 4.6-66. The following paragraph is added at the end of the Narrative Water Quality Objectives section:

> Narrative criteria, by definition, do not specify quantitative values or thresholds. The EIR/EIS authors could find no precedent for establishing a point of significance for evaluating Project effects on algae. Therefore, a quantitative point of significance for evaluating Project impacts of biostimulatory substances was established as a matter of professional judgement. The point of significance was established at 10 percent change from existing conditions based on several

considerations. Changes in algae biomass affect the dissolved oxygen regime and turbidity (which affects the sight-feeding of fish and aesthetic qualities of the water). Attached algae in particular affect the characteristics of the River bottom, and can make rocks slippery (which is considered a nuisance and safety concern). The combination of the biostimulatory substance, dissolved oxygen, and turbidity evaluation criteria was considered redundant. The 10 percent point of significance was established, based on the professional judgment of the EIR/EIS authors, to be consistent with the 0.5 mg/L dissolved oxygen change (i.e., the authors believe that a 10 percent algae change would result in approximately a 0.5 mg/L dissolved oxygen change). The turbidity criterion was established at 20 percent to be consistent with the 20 percent value established in the North Coast Regional Board Basin Plan, and is intended to address aesthetic concerns.

Response to Comment 8-10

Comment Summary: The comment states that the return frequency of the selected dry, normal and wet years should be discussed.

As described on page 4.6-70 of the Draft EIR/EIS and on page 25 of Appendix I-16 (Water Quality Impact Analysis Volume I - Text) water quality impacts were evaluated in dry, normal and wet years using flow data from 1976 (dry), 1961 (normal) and 1982 (wet) Russian River flow data. Based on the 70-year record of total annual River flow as adjusted to meet future demand for diversion of River water, the return frequencies of the flows that occurred in 1976, 1961, and 1982 are estimated to be 18.5, 2, and 14.5 years, respectively.

The following changes are made to the Draft EIR/EIS:

Page 4.6-70. Table 4.6-29 is revised as follows:

Table 4.6-29

Russian River Flows

Condition	Russian River Flows Year / Approximate Rank	Estimated Return Frequency (years)
Very Dry	1976 ~~10th percentile~~ / 10th percentile ~~1976~~	18.5
Normal	1961 ~~50th percentile~~ / 50th percentile ~~1961~~	2
Very Wet	1982 ~~90th percentile~~ / 90th percentile ~~1982~~	14.5

Page 25, Appendix I-16. The last paragraph is revised as follows:

". . . during the period of record (see Surface Water Hydrology section of EIR/S). The estimated return frequencies of the total annual Russian River flows that occurred in 1976, 1961, and 1982 is 18.5, 2, and 14.5 years, respectively. Operations of the Subregional System, including . . . ."

Response to Comment 8-11

Comment Summary: The comment states that the Draft EIR/EIS did not clearly set forth if the cumulative impacts of discharges upstream of the alternative discharge locations had been addressed.

The last paragraph on page 4.6-140 of the Draft EIR/EIS states that "The Regional Board estimated the change in the discharges of other permitted discharges in the Russian River basin, and these are summarized in Table 4.6-52. The flows and effluent quality described therein are being used to evaluate for cumulative impacts." Thus, particular discharges upstream of the alternative discharge locations are addressed in the cumulative impacts assessment.

Response to Comment 8-12

Comment Summary: The comment states that a graph of observed and simulated conductivity data versus river mile for each alternative would provide substantiation of the cumulative impact.

The data requested are not available. A qualitative, non-graphical approach was used to address this issue, as described in Response to Comment 8-33.

Response to Comment 8-13

Comment Summary: The comment states that the Regional Board's Waste Reduction Strategy is incorrectly cited on page 4.6-3 as the Waste Reduction Policy.

The EIR/EIS authors agree that this should be clarified.

The Draft EIR/EIS is changed as follows:

Page 4.6-3. The last paragraph is revised as follows:

> The North Coast Regional Board has established a Waste Reduction ~~Policy~~ Strategy (North Coast Regional Board 1995) for total nitrogen and ammonia for the Laguna de Santa Rosa in compliance with Section 303(d) of the federal Act. Dissolved oxygen and ammonia criteria are not currently attained in the Laguna and the Waste Reduction ~~Policy~~ Strategy sets load reduction goals for nitrogen and ammonia sources, including the Subregional System, such that the criteria will be attained.

Response to Comment 8-14

Comment Summary: The comment states that the lead agency for the EIR/EIS is responsible for including information needed by the Regional Board to conduct an antidegradation analysis.

Technical information needed for any antidegradation finding is provided in the Draft EIR/EIS, including information about the beneficial uses of potentially affected waters, and a description of how the beneficial uses would be affected. The Draft EIR/EIS is explicit on page 4.6-4 that particular non-technical information may be needed for a determination as to whether the proposed Project "is necessary to accommodate important economic or social development" but that information to support such a determination is not required by CEQA or NEPA. Also refer to the minutes of the 29 October 1996 meeting with the North Coast Regional Water Quality Control Board, contained in Section 6.4 of this document.

Response to Comment 8-15

Comment Summary: The comment states that Table 4.6-1 on page 4.6-6 should include values for specific conductance and total dissolved solids.

The EIR/EIS authors concur.

The following changes are made to the Draft EIR/EIS:

Page 4.6-6. Table 4.6-1 is revised as follows:

Table 4.6-1

Detectable[1] Chemical Constituents of Reclaimed Water

Chemical	Concentration Range (mg/L)	Mean Concentration (mg/L)	Reporting Limit(s)[2] (mg/L)	Number of Detects	Number of Samples
Calcium	22 - 63	31	N/A	19	19
Total chromium	N.D. - 0.014	0.0023	0.001 - 0.02	49	90
Conductivity (mmhos/CM)	644-803	724	N/A	40	40
Total copper	N.D. - 0.04	0.012	0.005 - 0.10	88	90
dissolved copper	0.006 - 0.013	0.010	N/A	8	8
Cyanide	N.D. - 0.03	0.01	0.005 - 0.01	6	11
Total dissolved solids	381-495	444	N/A	45	45
Fluoride	0.18 - 0.31	0.22	N/A	4	4
Total lead	N.D. - 0.020[5]	0.0045	0.001 - 0.04	19	90
Magnesium	15 - 23	19	N/A	18	18

Response to Comment 8-16

Comment Summary: The comment asks for a list of the beneficial uses that the Regional Board has designated for the Russian River.

Beneficial uses of waters in the Project area are identified in Table 7 on page 55 of Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts).

Response to Comment 8-17

Comment Summary: The comment states that Table 4.6-9 on page 4.6-21 should be corrected to show that Ukiah treats to a tertiary level.

The EIR/EIS authors concur.

The following change is made to the Draft EIR/EIS:

Page 4.6-21. Table 4.6-9 is revised as follows:

Table 4.6-9

Wastewater Dischargers to the Russian River

Discharger	Avg Dry Weather Flow (mgd)[1]	Design Wastewater Flow (mgd)	Treatment	Receiving Water	Type of Discharge	Discharge Season	Facilities
Ukiah	2.4	2.8	tertiary~~secondary~~	Russian River	direct, limited to 1% of Russian River flow	Oct 1 - May 14	primary and secondary sedimentation, trickling filters, chlorination, oxidation/percolation ponds, dechlorination, sludge digestion
Cloverdale	0.5	0.7	secondary	percolation pond	indirect, percolation from pond	N/A	primary and secondary oxidation ponds, disinfection, percolation pond
Healdsburg	1.0	1.4	secondary	open pit quarry	indirect, percolation from quarry	N/A	four aerated ponds, two oxidation/sedimentation ponds, disinfection
Windsor	1.1	1.5	tertiary	Laguna at Trenton-Healdsburg	direct, limited to 1% of Laguna de Santa Rosa flow	Oct 1 - May 14	aerated ponds, settling, coagulation, flocculation, disinfection, storage
Occidental	0.02	0.05	secondary	Dutch Bill Creek	direct, limited to 1% of Dutch Bill Creek flow	Oct 1 - May 14	aerated pond, settling pond, disinfection
Graton	0.08	0.14	secondary	Atascadero Creek	direct, limited to 1% of Atascadero Creek flow	Oct 1 - May 14	aerated ponds, disinfection, storage
Forestville	0.05	0.1	secondary	Green Valley Creek	direct, limited to 1% of Green Valley Creek flow	Oct 1 - May 14	aerated ponds, disinfection, storage
Guerneville	0.35	0.71	tertiary	Russian River	direct, limited to 1% of Russian River flow	Oct 1 - May 14	aeration, clarification, coagulation, filtration, disinfection, solids dewatering

Source: North Coast Regional Water Quality Control Board. Data collected by dischargers 1994-1995

[1] 1994 data - average of 3 consecutive months of lowest flow.

Response to Comment 8-18

Comment Summary: The comment states that in Table 4.6-25 on page 4.6-49, the listed value for the average concentration of iron at station BIS-16 exceeds the reported range.

The EIR/EIS authors agree that Table 4.6-25 should be corrected.

The following change is made to the Draft EIR/EIS:

Page 4.6-49. Table 4.6-25 is revised as follows:

Table 4.6-25

Summary of Water Quality in Geysers Creeks

Constituent[1] (in mg/L unless otherwise noted)	Big Sulphur Creek BiS-26.2		Big Sulphur Creek BiS-16.1		Cobb Creek Co-0.1		Squaw Creek Sq-8.1	
	Range	Average[2]	Range	Average[2]	Range	Average[2]	Range	Average[2]
Alkalinity (as $CaCO_3$)	62-246	132	71-180	127	66-198	119	103-180	145
Aluminum	ND (0.020)-0.13	<0.081	0.21-0.95	0.50	ND (0.030)-0.25	<0.109	ND (0.030)-1.2	<0.500
Arsenic	ND (0.002-0.002)	ND (0.002)	ND (0.002)-0.020	<0.0039	ND (0.002)-0.011	<0.0028	ND (0.002-0.002)	ND (0.002)
Boron	ND (0.05)-1.4	<0.45	0.42-3.90	1.53	0.29-1.2	0.57	ND (0.05)-0.40	<0.26
Cadmium	ND (0.0005-0.001)	<0.00083	ND (0.0005-0.001)	<0.00083	ND (0.0005-0.001)	<0.00083	ND (0.0005-0.001)	<0.00083
Chromium	0.0015-.0002	<0.0018	0.0014-0.012	0.0055	ND (0.001)-0.002	<0.0014	ND (0.001)-0.0029	<0.0020
Chromium Hexavalent	ND (0.001-0.002)	<0.002	ND (0.001-0.002)	<0.002	ND (0.001-0.002)	<0.002	ND (0.001-0.002)	<0.002
Copper	0.003-0.0088	0.0053	ND (0.002)-0.005	<0.0033	ND (0.002-0.003)	<0.0023	ND (0.002)-0.006	<0.0037
Dissolved Oxygen	7.6-11.3	9.4	8.7-11.4	10.0	8.0-10.8	9.6	8.3-10.9	9.6
Conductivity (µmhos/cm)	150-570	300	185-660	391	148-395	250	215-345	287
Flow (cu ft/sec)	0.7-87.0	19.4	2.3-239.9	54.2	0.5-44.6	12.4	0.1-21.1	6.2
Hardness (as $CaCO_3$)	75-170	123	100-190	145	83-130	107	100-150	125
Iron	0.060-0.18	0.109	0.11-1.1	0.54~~540~~	0.060-0.200	0.111	0.12-1.00	0.447

Response to Comment 8-19

Comment Summary: The comment asks for clarification that the Basin Plan turbidity criterion applies to all types of turbidity, not just that due to plankton.

The Project can affect turbidity due to stimulation of planktonic algae growth, soil erosion, and streambed and bank erosion. The impact of erosion is addressed in Sections 4.3 (soil) and 4.4 (streambed and bank) using different criteria. The effect of the Project on planktonic growth will not occur at the same time and place as erosion. Any erosion resulting from construction or irrigation will generally occur in a different watershed than will discharge, and streambed and bank erosion will only occur during high flow periods when algal growth is not important due to low detention time. Therefore, application of the turbidity criterion only to plankton does not underestimate Project impacts on turbidity.

The following changes are made to the Draft EIR/EIS:

Page 4.6-61, Table 4.6-27 is revised as follows:

Page 50, Appendix I-12. Table 6 is revised as follows:

Table 4.6-27

Evaluation Criteria with Point of Significance - Surface Water Quality

Evaluation Criteria	As Measured by	Point of Significance: Fresh-water	Point of Significance: Salt-water	Justification[1]
Turbidity - Adverse	monthly average planktonic algal biomass as chlorophyll *a*	20% increase	20% increase	Basin Plans narrative criterion~~.~~ of 20%, ~~established by professional judgment,~~ to protect visual-related beneficial uses (i.e., aesthetics and fish feeding). Other causes of turbidity (i.e., soil, streambed, and streambank erosion) are addressed in Sections 4.3 (soil) and 4.4 (streambed and bank).
Turbidity - Beneficial	monthly average planktonic algal biomass as chlorophyll *a*	20% decrease		20%, established by professional judgment, to protect visual-related beneficial uses (i.e., aesthetics and fish feeding).
Waste Reduction Strategy - Adverse a) Discharge to the Laguna may increase the concentration of ammonia. Discharge to the Laguna may cause ammonia-nitrogen load to the Laguna not to be reduced by 21,500 pounds per year	Pounds ammonia-nitrogen/year	a) If ammonia-nitrogen load in the Laguna is not reduced by 21,500 pounds per year.		This criterion applies only to the Laguna a) The North Coast Regional Water Quality Control Board Waste Reduction Strategy establishes an ammonia-nitrogen load reduction goal of 21,500 pounds per year for the Subregional System (see Table 4 in North Coast Regional Board 1995) The waste reduction strategy for ammonia was developed to bring the Laguna into attainment with EPA and Basin Plan ammonia water quality objective.
b) Discharge to the Laguna may cause total nitrogen load to the Laguna not to be reduced by 159,000 pounds per year	Pounds total nitrogen/year	b) If total nitrogen load in the Laguna is not reduced by 159,000 pounds per year.		b) The North Coast Regional Board Waste Reduction Strategy establishes a total nitrogen reduction goal of 159,000 pounds per year for the Subregional System (see Table 4 in North Coast Regional Board 1995).is the basis for the adverse impact criterion and point of significance.

Table 6

Summary of Narrative Water Quality Objectives and Evaluation Criteria

Narrative Objective or Policy	**Source**	**Evaluation Criterion** (Impact Significant If:)	**Rationale for Evaluation Criterion**
Turbidity. Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.	North Coast Basin Plan (3/24/94) page 3-3.00, Bay Basin Plan (9/16/92) page III-2	An impact is significant and adverse if monthly average turbidity increases more than 20 percent above estimated background levels as a result of the discharge . An impact is significant and beneficial if monthly average turbidity decreases more than 20 percent below estimated background levels as a result of the discharge.	Narrative Objective The narrative objective is intended to protect visual-related beneficial uses (i.e., aesthetics and fish feeding) from the effects of a reclaimed water discharge. Other project components that could affect turbidity (i.e., soil, streambed, and streambank erosion) are addressed in Sections 4.3 (soil) and 4.4 (streambed and bank).- ~~as described in the Sediment criterion Rationale~~ An evaluation criterion of 20 percent was established based on the Basin Plan ~~by professional judgment~~ to protect visual-related beneficial uses.

Response to Comment 8-20

Comment Summary: The comment refers to page 4.6-71 and asks for substantiation of the claim that exposure to water from pipeline ruptures will be of short duration.

Page 4.6-71 does not address the duration of pipeline ruptures. The first paragraph on page 4.6-67 states that the duration of reclaimed water flow from a ruptured pipe will be short. Page 3.3-6 of the Draft EIR/EIS describes the pipeline rupture scenarios and identifies the maximum volume of the spill as 1.7 million gallons. Page 149 of Appendix I-16 (Water Quality Impacts Analysis Volume I - Text) identifies the duration as 2 hours. The volume and duration estimate are based on pipeline design, as described in Measure 2.2.13 on page 2-55 of the Draft EIR/EIS. Measure 2.2.13: Pipeline Features in Active Fault Zones states that the City will design pipelines crossing the Rodgers Creek/Healdsburg and Maacama faults with manually operated isolation valves. The isolation valves will be on both sides of the pipeline crossing, located a distance of 1,000 feet from the fault zone.

Response to Comment 8-21

Comment Summary: The comment states that the monthly average dissolved oxygen concentration was used in the three years simulated in the model runs instead of the minimum dissolved oxygen concentration which is more critical to aquatic life. The comment further states that a discussion of how the various alternatives impact the minimum concentration of dissolved oxygen in the affected stream reaches should be compared against the Basin Plan objectives and included in the Final EIR/EIS. The comment states that a graphical presentation could help clarify this comparison.

Monthly average dissolved oxygen values were used in the impacts evaluation of direct discharge to be consistent with the Regional Board's objective for dissolved oxygen. The Regional Board's dissolved oxygen objective includes a component that is based on monthly means and a component that is based on an instantaneous minimum. In response to this comment, an analysis of the instantaneous minimum dissolved oxygen was conducted. No significant impacts were identified based upon the minimum dissolved oxygen analysis.

The following changes are made to the Draft EIR/EIS:

Page 8, Appendix I-12. Table 2 is revised as follows:

Table 2

Water Quality Objectives (Conductivity, Total Dissolved Solids, and Dissolved Oxygen) for the North Coast Region

	Conductivity (µmhos/cm^2) at 77 °F		Total Dissolved Solids (mg/L)		Dissolved Oxygen (mg/L)		
	90% Upper Limit[a]	50% Upper Limit[b]	90% Upper Limit[a]	50% Upper Limit[b]	Min.	90% Lower Limit[a]	50% Lower Limit[b]
Russian River upstream of the Laguna	320	250	170	150	7.0	7.5	10.0
Russian River downstream of the Laguna	375	285	200	170	7.0	7.5	10.0
Laguna de Santa Rosa					7.0	7.5	10.0
Other waters designated warm, marine, or saline					5.0		
Other waters designated cold including Santa Rosa Creek					6.0		
Other waters designated spawning					7.0		
Other waters designated spawning during critical periods[c]					9.0		

Source: North Coast Regional Water Quality Control Board. 1994. Water Quality Control Plan for the North Coast Region.

[a] 90% upper and lower limits represent the 90th percentile values for a calendar year. 90 percent or more of the values must be less than or equal to an upper limit and greater than or equal to a lower limit for the water to be in attainment.

[b] 50% upper and lower limits represent the 50th percentile values of the monthly means for a calendar year. 50 percent or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit for the water to be in attainment. The 50th percentile upper limit point of significance ~~for conductivity~~ is more stringent than the 90th percentile upper limit point of significance. Therefore, compliance with the 50th percentile upper limit point of significance was evaluated. Compliance with the minimum dissolved oxygen point of significance was also evaluated.

[c] Critical periods are during spawning and egg incubation.

Page 3, Appendix I-16. Table 1-1 is revised as follows:

Table 1-1.

Summary of Significant Adverse and Beneficial Surface Water Quality Impacts[a]

Evaluation Criterion	Santa Rosa Creek	Laguna	Russian River	West Co. Creeks	Esteros	Tolay Creek	Petaluma River	Other Waters
Cyanide	~~10%, 20%, NP~~	~~20%, NP~~	None	None		None	None	None
Conductivity	Criterion not applicable		*20% River*	Criterion NA		Criterion not applicable		
Average Dissolved Oxygen	**20%, NP**	20%, **NP**	None	~~Storage~~		~~Storage~~	None	None
Hydrogen Sulfide	None	None	None	~~Storage~~	None	~~Storage~~	None	None
Lethal Toxicity	~~20%, NP~~	~~20%, NP~~		None	None	None	None	None
Waste Red. Strategy			Criterion not applicable					
Adverse								
Total Nitrogen								
Ammonia	~~10%, 20%,~~ NP ~~20%, NP~~	~~10%, 20%, NP 20%, NP~~						
Beneficial								
Total Nitrogen								
Ammonia	1%, 5%, 20%River, G 1%, 5%, 10%, 20% River, G	1%, 5%, 20%River, G 1%, 5%, 10%, 20% River, G						
Other criteria	None	None	None	None	See top note	None	None	None

[a] Components causing a significant adverse or beneficial impact are shown. Since impacts were evaluated for all months and three hydrologic years, both beneficial and adverse impacts can result for some parameters at different times from the same component. Overstriking indicates impact avoided with mitigation or measures that need to be considered by the city for the No Project component, italics indicates no mitigation proposed, bold indicates impacts that are significant after mitigation that are not significant before mitigation. Components are identified as follows:

1% = 1% design discharge component
5% = 5% design discharge component
10% = 10% design discharge component
20% = 20% design discharge component to Laguna
20% River = 20% design discharge component to River
Storage = Storage reservoir
NP = No Project discharge component
G = Geysers discharge component
Irrig = Irrigation e

Page 27, Appendix I-16. The second paragraph is revised as follows:

> … monthly means and a component that is based on an instantaneous minimum. ~~The instantaneous minimum dissolved oxygen concentration caused by any of the discharge components cannot be reliably assessed.~~ Model-predicted changes in dissolved …

Page 27, Appendix I-16. The following paragraph is added after the second paragraph:

> Model estimates of the minimum dissolved oxygen level (based on hourly estimates) were also evaluated for impacts. These minimum hourly concentrations for each month were evaluated for the same hydraulic years and locations as the monthly average dissolved oxygen. If any predicted minimum monthly dissolved oxygen concentration for the Project alternatives was 1) 0.5 mg/L below the estimated existing monthly dissolved oxygen minimum and 2) below the point of significance for minimum dissolved oxygen, the impact was considered significant. This is consistent with the approach used for average dissolved oxygen, as described in the preceding paragraph.

Page 37, Appendix I-16. The first paragraph after Table 4-2 is revised as follows:

> The results of the water quality simulation model, using existing conditions as a baseline for benthic algae, planktonic algae, average and minimum dissolved oxygen, and ammonia are presented in this section. The~~se~~ results, except for minimum dissolved oxygen, are presented as changes from the existing conditions baseline which is presented in Table 4-3. The minimum dissolved oxygen existing conditions baseline concentrations are shown in Table 4-3A.

Page 37, Appendix I-16. The second paragraph after Table 4-2 is revised as follows:

> The water quality impacts of reclaimed water discharges on benthic algae, planktonic algae, average dissolved oxygen, and ammonia in Santa Rosa Creek, Laguna, Russian River above the confluence with the Laguna, and Russian River below the Laguna confluence are shown in Figures 4-13 to 4-17. The water quality impacts of reclaimed water on minimum dissolved oxygen are shown in Table 4-3A.

Page 50 Appendix I-16. The second and third paragraphs in the dissolved oxygen section are revised as follows:

> There are no significant decreases in average dissolved oxygen predicted with the 1, 5, and 10 percent design discharge components, 20 percent design discharge to the River, and design discharge components associated with No Project and Geysers alternatives.
>
> The only discharge alternative that is predicted to cause decreases in average dissolved oxygen greater than or equal to 0.5 mg/L is the 20 percent design

discharge to the Laguna (Figure 4-15). The predicted decrease in average dissolved oxygen in Santa Rosa Creek in January of a dry year is 0.5 mg/l. The predicted decrease in average dissolved oxygen in the Laguna in November is 0.5 mg/L in dry and normal years. All other decreases in dissolved oxygen predicted to occur with a 20 percent design discharge to the Laguna are less than 0.5 mg/L.

Page 50, Appendix I-16. The following paragraph and table are added at the end of the dissolved oxygen section:

The predicted minimum monthly dissolved oxygen concentrations (in mg/L) for the different discharge alternatives are shown in Table 4-3A. No predicted minimum dissolved oxygen concentrations for the Project alternatives are more than 0.5 mg/L below existing conditions and less than the points of significance (6.0 mg/L for Santa Rosa Creek and 7.0 mg/L for the Laguna and Russian River). Therefore, no significant decreases in dissolved oxygen are predicted with the 1, 5, and 10 percent design discharge components, the 20 percent design discharge to the Laguna, the 20 percent design discharge to the River, and design discharge components associated with the No Project and Geysers alternatives.

Table 4-3A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Design Discharge (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			No Project			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Santa Rosa Creek																								
Oct	7.5	7.9	7.7	7.5	7.9	8.0	7.5	7.9	8.0	7.5	7.9	8.0	7.9	8.1	8.1	7.5	7.9	8.0	7.6	8.0	8.0	7.5	7.9	9.1
Nov	7.6	8.3	8.2	7.6	8.3	8.4	7.6	8.3	8.4	7.6	7.7	8.4	8.0	8.1	8.1	7.6	8.3	8.4	7.9	8.1	8.1	7.6	8.3	9.1
Dec	8.6	8.3	8.6	8.7	9.2	8.8	8.7	8.7	8.6	8.7	8.6	8.6	8.7	8.5	8.8	8.7	9.2	8.8	8.7	8.6	8.8	8.7	9.1	9.3
Jan	8.9	8.9	8.8	8.9	9.9	8.8	8.9	8.9	8.8	8.9	8.7	8.8	8.9	8.6	8.7	8.9	9.9	8.8	8.9	8.7	8.8	8.9	9.9	9.7
Feb	8.8	8.4	8.5	8.9	9.1	8.7	8.8	8.8	8.7	8.8	8.6	8.6	8.8	8.5	8.8	8.8	8.3	8.7	8.8	8.6	8.8	8.9	9.1	9.9
Mar	8.7	8.3	8.6	8.7	8.3	8.7	8.7	8.3	8.7	8.7	8.2	8.7	8.7	8.2	8.6	8.7	8.3	8.7	8.7	8.2	8.6	8.7	8.3	9.4
Apr	8.3	8.0	8.5	8.4	7.9	8.7	8.1	6.9	8.6	8.3	6.4	8.6	8.3	8.1	8.6	8.4	7.9	8.7	8.3	8.1	8.6	8.4	7.9	9.5
May	7.1	5.7	8.0	7.1	5.9	8.0	7.1	5.8	8.0	7.1	5.8	8.0	7.1	5.5	8.0	7.1	5.9	8.0	7.1	5.7	8.0	7.1	5.9	9.5
Jun	6.2	6.1	7.6	6.2	6.3	7.6	6.2	6.2	7.6	6.2	6.3	7.6	6.1	6.1	7.6	6.2	6.3	7.6	6.1	6.1	7.6	6.2	6.3	8.9
Jul	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	8.9
Aug	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	8.9
Sep	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	8.9
Laguna de Santa Rosa																								
Oct	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.1	8.1	8.1	8.2	8.2	8.2	8.0	8.1	8.0	8.2	8.2	8.2
Nov	8.2	8.8	8.2	8.2	8.8	8.2	8.2	8.8	8.2	8.2	8.8	8.2	8.2	8.5	8.2	8.2	8.8	8.2	8.2	8.5	8.2	8.2	8.8	8.2

Table 4-3A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Design Discharge (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			No Project			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Dec	9.0	8.1	9.0	9.1	8.1	9.1	9.0	8.1	9.0	9.0	8.1	9.0	9.0	8.1	9.0	9.0	8.1	9.0	9.0	8.1	9.0	9.0	8.1	9.0
Jan	9.2	10.1	9.2	9.2	10.2	9.2	9.2	10.1	9.2	9.2	10.0	9.2	9.2	9.9	9.2	9.2	10.2	9.2	9.2	10.0	9.2	9.2	10.2	9.2
Feb	9.1	7.2	9.1	9.1	7.2	9.1	9.1	7.2	9.1	9.1	7.2	9.1	9.2	7.2	9.2	9.1	7.2	9.1	9.2	7.2	9.2	9.2	7.2	9.2
Mar	8.7	7.0	8.7	8.7	7.0	8.7	8.7	7.0	8.7	8.7	7.1	8.7	8.7	7.1	8.7	8.7	7.0	8.7	8.7	7.1	8.7	8.7	7.0	8.7
Apr	8.5	7.4	8.5	8.5	7.2	8.5	8.5	7.3	8.5	8.5	7.3	8.5	8.5	7.3	8.5	8.5	7.2	8.5	8.5	7.3	8.5	8.5	7.2	8.5
May	7.8	6.7	7.8	7.8	7.0	7.8	7.8	7.0	7.8	7.8	7.0	7.8	7.8	6.8	7.8	7.8	7.0	7.8	7.8	6.8	7.8	7.8	7.0	7.8
Jun	7.5	6.6	7.5	7.5	6.8	7.5	7.5	6.7	7.5	7.5	6.7	7.5	7.5	6.6	7.5	7.5	6.8	7.5	7.5	6.6	7.5	7.5	6.8	7.5
Jul	7.4	6.5	7.4	7.4	6.5	7.4	7.4	6.5	7.4	7.4	6.5	7.4	7.4	6.5	7.4	7.4	6.5	7.4	7.4	6.5	7.4	7.4	6.5	7.4
Aug	7.3	6.6	7.3	7.3	6.6	7.3	7.3	6.6	7.3	7.3	6.6	7.3	7.3	6.6	7.3	7.3	6.6	7.3	7.3	6.6	7.3	7.3	6.6	7.3
Sep	7.6	7.3	7.6	7.6	7.3	7.6	7.6	7.3	7.6	7.6	7.3	7.6	7.6	7.3	7.6	7.6	7.3	7.6	7.6	7.3	7.6	7.6	7.3	7.6
Russian River above the Laguna																								
Oct	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1	9.1	9.0	9.0	9.2	9.1	9.1	9.2	9.1	9.1
Nov	9.4	9.6	9.6	9.4	9.6	9.6	9.4	9.6	9.6	9.4	9.6	9.6	9.4	9.6	9.6	9.2	9.4	9.4	9.4	9.6	9.6	9.4	9.6	9.6
Dec	10.6	10.4	10.6	10.6	10.4	10.6	10.6	10.4	10.6	10.6	10.4	10.6	10.6	10.4	10.6	10.5	10.2	10.6	10.6	10.4	10.6	10.6	10.4	10.6
Jan	10.8	11.1	10.8	10.8	11.1	10.8	10.8	11.1	10.8	10.8	11.1	10.8	10.8	11.1	10.8	10.7	10.7	10.8	10.8	11.1	10.8	10.8	11.1	10.8
Feb	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.4	10.7	10.8	10.7	10.7	10.8	10.7	10.7

Table 4-3A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Design Discharge (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			No Project			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Mar	10.6	9.9	10.3	10.6	9.9	10.3	10.6	9.9	10.3	10.6	9.9	10.3	10.6	9.9	10.3	10.5	9.7	10.3	10.6	9.9	10.3	10.6	9.9	10.3
Apr	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8	9.6	8.9	9.8	9.6	9.0	9.8	9.6	9.0	9.8
May	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8
Jun	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6
Jul	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5
Aug	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4
Sep	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5
Russian River below the Laguna																								
Oct	8.9	8.8	8.8	8.9	8.8	8.8	8.9	8.8	8.8	8.9	8.8	8.8	8.6	8.7	8.7	8.9	8.9	8.9	8.7	8.7	8.8	8.9	8.8	8.8
Nov	9.1	9.3	9.0	9.1	9.3	9.1	9.1	9.3	9.1	9.1	9.3	9.1	8.8	9.0	9.0	8.9	9.1	9.2	8.8	9.1	9.0	9.1	9.2	9.1
Dec	9.7	9.9	10.2	9.7	10.0	10.2	9.7	10.0	10.2	9.7	10.0	10.2	9.7	9.9	10.2	9.8	10.1	10.3	9.7	10.0	10.2	9.7	10.0	10.2
Jan	10.1	10.8	10.3	10.1	10.8	10.3	10.1	10.8	10.3	10.1	10.8	10.3	10.1	10.7	10.3	10.3	10.6	10.5	10.1	10.7	10.3	10.1	10.8	10.3
Feb	10.2	10.0	10.1	10.2	10.1	10.1	10.2	10.1	10.1	10.2	10.1	10.1	10.2	10.1	10.1	10.4	10.2	10.3	10.2	10.1	10.1	10.2	10.1	10.1
Mar	10.1	9.3	9.6	10.1	9.3	9.7	10.1	9.3	9.6	10.1	9.3	9.6	10.1	9.2	9.6	10.3	9.4	9.9	10.1	9.3	9.6	10.1	9.3	9.7
Apr	9.3	8.6	9.4	9.4	8.5	9.4	9.4	8.6	9.4	9.4	8.6	9.4	9.3	8.6	9.4	9.4	8.6	9.5	9.4	8.6	9.4	9.4	8.5	9.4
May	8.1	7.6	8.5	8.1	7.6	8.5	8.1	7.6	8.5	8.1	7.6	8.5	8.1	7.5	8.5	8.3	7.9	8.7	8.1	7.5	8.5	8.1	7.6	8.5

Table 4-3A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Design Discharge (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			No Project			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Jun	7.9	7.7	8.0	7.9	7.8	8.0	7.9	7.8	8.0	7.9	7.8	8.0	7.9	7.7	8.0	8.2	8.2	8.5	7.9	7.7	8.0	7.9	7.8	8.0
Jul	8.3	8.2	8.0	8.3	8.2	8.0	8.3	8.2	8.0	8.3	8.2	8.0	8.3	8.2	8.0	8.7	8.7	8.6	8.3	8.2	8.0	8.3	8.2	8.0
Aug	8.1	8.1	7.9	8.1	8.1	7.9	8.1	8.1	7.9	8.1	8.1	7.9	8.1	8.1	7.9	8.5	8.6	8.4	8.1	8.1	7.9	8.1	8.1	7.9
Sep	8.3	8.3	8.2	8.3	8.3	8.2	8.3	8.3	8.2	8.3	8.3	8.2	8.3	8.3	8.2	8.6	8.6	8.5	8.3	8.3	8.2	8.3	8.3	8.2
Lower Russian River																								
Oct	8.7	8.9	8.9	8.7	8.9	8.9	8.7	8.9	8.9	8.7	8.9	8.9	8.3	8.6	8.6	8.8	8.9	8.9	8.5	8.7	8.7	8.7	8.9	8.9
Nov	8.9	9.1	9.1	8.9	9.1	9.1	8.9	9.1	9.1	8.9	9.1	9.1	8.4	8.7	9.0	8.8	9.0	9.2	8.6	8.9	9.0	8.9	9.1	9.1
Dec	9.6	9.8	10.1	9.6	9.8	10.1	9.6	9.8	10.1	9.6	9.8	10.1	9.6	9.7	10.1	9.7	9.9	10.3	9.6	9.7	10.1	9.6	9.8	10.1
Jan	10.1	10.7	10.3	10.1	10.7	10.3	10.1	10.7	10.3	10.1	10.6	10.3	10.1	10.5	10.3	10.3	10.6	10.4	10.1	10.6	10.3	10.1	10.7	10.3
Feb	10.2	9.8	10.1	10.2	10.0	10.1	10.2	10.0	10.1	10.2	9.9	10.1	10.2	9.9	10.1	10.4	10.1	10.3	10.2	9.9	10.1	10.2	10.0	10.1
Mar	10.1	9.3	9.7	10.1	9.3	9.7	10.1	9.3	9.7	10.1	9.3	9.7	10.1	9.2	9.7	10.3	9.3	9.9	10.1	9.2	9.7	10.1	9.3	9.7
Apr	9.3	8.6	9.3	9.4	8.7	9.3	9.4	8.6	9.3	9.3	8.6	9.3	9.3	8.6	9.3	9.3	8.8	9.4	9.3	8.6	9.3	9.3	8.7	9.3
May	8.4	7.4	8.8	8.4	7.6	8.8	8.4	7.5	8.8	8.4	7.5	8.8	8.4	7.4	8.8	8.5	8.0	8.8	8.4	7.4	8.8	8.4	7.6	8.8
Jun	7.9	7.3	7.9	7.9	7.3	7.9	7.9	7.3	7.9	7.9	7.3	7.9	7.8	7.3	7.9	8.3	8.2	8.7	7.8	7.3	7.9	7.9	7.3	7.9
Jul	8.0	7.9	7.9	8.0	7.9	7.9	8.0	7.9	7.9	8.0	7.9	7.9	8.0	7.9	7.9	8.7	8.8	8.8	8.0	7.9	7.9	8.0	7.9	7.9
Aug	7.8	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.7	8.5	8.6	8.5	7.8	7.9	7.7	7.8	7.9	7.7

Table 4-3A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Design Discharge (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			No Project			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Sep	8.1	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.1	8.1	7.9	8.1	8.5	8.5	8.5	8.1	7.9	8.1	8.1	8.0	8.1

[a] Dissolved oxygen minima are based on hourly estimates.

Page 125, Appendix I-16. Table 4-20 is revised as follows:

Table 4-20

Significant Adverse and Beneficial Impacts of Each Design Discharge Component[a]

Constituent	Santa Rosa Creek	Laguna	Russian River Below Laguna	Russian River Above Laguna
Benthic Algae				
Adverse	1%, 5%, 10%, 20%, 20% River, NP, G	1%, 20%, 20% River, NP, G	20%, 20% River, NP	20% River
Beneficial	1%, 5%, 10%, 20% River, G	1%, 5%, 10%, 20% River, G	1%, 5%, 10%. 20% River, G	
Planktonic Algae				
Adverse	20%, NP	1%, 5%, 10%, 20% River	20%	20% River
Beneficial		20%, NP	20% River	
Turbidity				
Adverse				20% River
Beneficial	20%	20%	20% River	
Average Dissolved Oxygen		20%		
Conductivity				20% River
Cyanide	10%, 20%, NP	20%, NP		
Toxicity	20%, NP	20%, NP		
Waste Red. Strat.			Criterion applies only to Laguna system	
Adverse				
Total Nitrogen	10%, 20%, NP			
Ammonia	20%, NP			
Beneficial				
Total Nitrogen	1%, 5%, 20% River, G			
Ammonia	1%, 5%, 10%, 20% River, G			

[a] 1% = 1% design discharge component
20% = 20% design discharge component to Laguna
20% River = 20% design discharge component to River
NP = No Project discharge component
G = Geysers discharge component

Page 134, Appendix I-16. The last sentence of the first paragraph in the Discharge Management Strategy section is revised as follows:

> The mitigation operations strategy would not eliminate the single occurrence of an average dissolved oxygen significant impact.

Pages 134 and 135, Appendix I-16. The second paragraph in the Discharge Management Strategy is revised as follows:

> The potential water quality impacts, except for minimum dissolved oxygen, of the mitigation operating strategy for biostimulatory substances are compared in Figures 4-36 through 4-39 to the potential impact of Project operations. Therefore, not all constituents are graphed for all discharge components. The predicted minimum dissolved oxygen concentrations for the discharge alternatives with the mitigation operating strategy for biostimulatory substances are shown in Table 25A. Tables 4-26 and 4-27 show the number of adverse or beneficial impacts for benthic algae, planktonic algae, turbidity, and average dissolved oxygen potentially caused by each discharge component expressed as a percentage of the number of analyses. … Table 4-28 describes the locations of significant adverse and beneficial impacts. Tables 4-26, 4-27, and 4-28 do not include minimum dissolved oxygen since no significant impacts are predicted to occur with design discharge or with the mitigation operations strategy for biostimulatory substances.

Page 135, Appendix I-16. The following Table is inserted following the last paragraph:

Table 4-25A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Mitigation Operations for Biostimulatory Substances (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Santa Rosa Creek																					
Oct	7.5	7.9	7.7	7.5	7.9	8.0	7.5	7.9	8.0	7.5	7.9	8.0	7.5	7.9	8.0	7.5	7.9	8.0	7.5	7.9	8.0
Nov	7.6	8.3	8.2	7.6	8.3	8.4	7.6	8.3	8.4	7.6	8.3	8.4	7.6	7.0	6.8	7.6	8.2	8.4	7.6	8.3	8.4
Dec	8.6	8.3	8.6	8.7	9.2	8.7	8.7	8.9	8.6	8.6	7.2	8.6	8.3	8.4	8.7	8.4	8.9	8.7	8.7	9.2	8.8
Jan	8.9	8.9	8.8	8.8	9.6	8.5	8.8	8.9	8.5	8.6	8.6	8.5	8.3	8.4	8.5	7.2	8.6	8.4	8.9	9.9	9.0
Feb	8.8	8.4	8.5	8.8	8.9	8.7	8.9	8.6	8.7	8.9	8.4	8.7	8.8	8.3	8.5	8.9	8.1	8.6	8.9	9.0	8.9
Mar	8.7	8.3	8.6	8.7	8.3	8.7	8.7	8.3	8.7	8.7	8.3	8.7	8.1	6.1	8.7	8.7	8.3	8.7	8.7	8.3	8.7
Apr	8.3	8.0	8.5	8.4	7.9	8.7	8.4	7.9	8.7	8.4	7.9	8.7	8.3	7.8	8.7	8.4	7.9	8.7	8.4	7.9	8.7
May	7.1	5.7	8.0	7.1	5.9	8.0	7.1	5.9	8.0	7.1	5.9	8.0	7.1	5.9	8.0	7.1	5.9	8.0	7.1	5.9	8.0
Jun	6.2	6.1	7.6	6.2	6.3	7.6	6.2	6.3	7.6	6.2	6.3	7.6	6.2	6.3	7.6	6.2	6.3	7.6	6.2	6.3	7.6
Jul	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5	6.4	6.0	7.5
Aug	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4	6.3	5.9	7.4
Sep	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9	6.7	6.8	7.9
Laguna de Santa Rosa																					
Oct	7.9	8.2	8.2	7.9	8.2	8.2	7.9	8.2	8.2	7.9	8.2	8.2	7.9	8.2	8.2	7.9	8.2	8.2	7.9	8.2	8.2

Table 4-25A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Mitigation Operations for Biostimulatory Substances (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Nov	8.0	8.8	8.2	8.0	8.8	8.2	8.0	8.8	8.2	8.0	8.8	8.2	8.0	8.8	8.2	8.0	8.8	8.2	8.0	8.8	8.2
Dec	8.0	8.1	9.0	8.0	8.1	9.0	8.0	8.1	9.0	8.0	8.1	9.0	8.0	8.1	9.0	8.0	8.1	9.0	8.0	8.1	9.0
Jan	8.8	10.1	9.2	8.8	10.2	9.1	8.8	10.1	9.1	8.8	9.9	9.1	8.8	9.6	9.1	8.8	9.9	9.1	8.8	10.2	9.2
Feb	8.9	7.2	9.1	8.9	7.2	9.1	9.0	7.2	9.2	9.0	7.3	9.2	8.9	7.3	9.1	8.9	7.2	9.1	8.9	7.2	9.2
Mar	8.9	7.0	8.7	8.9	7.1	8.7	8.9	7.1	8.7	8.9	7.3	8.7	8.8	7.1	8.7	8.9	7.0	8.7	8.9	7.0	8.7
Apr	8.5	7.4	8.5	8.7	7.2	8.5	8.7	7.2	8.5	8.7	7.3	8.5	8.7	7.2	8.5	8.7	7.2	8.5	8.7	7.2	8.5
May	7.4	6.7	7.8	7.4	7.0	7.8	7.4	7.0	7.8	7.4	7.0	7.8	7.4	7.0	7.8	7.4	7.0	7.8	7.4	7.0	7.8
Jun	7.0	6.6	7.5	7.0	6.8	7.5	7.0	6.8	7.5	7.0	6.8	7.5	7.0	6.8	7.5	7.0	6.8	7.5	7.0	6.8	7.5
Jul	6.9	6.5	7.4	6.9	6.5	7.4	6.9	6.5	7.4	6.9	6.5	7.4	6.9	6.5	7.4	6.9	6.5	7.4	6.9	6.5	7.4
Aug	6.8	6.6	7.3	6.8	6.6	7.3	6.8	6.6	7.3	6.8	6.6	7.3	6.8	6.6	7.3	6.8	6.6	7.3	6.8	6.6	7.3
Sep	7.3	7.3	7.6	7.3	7.3	7.6	7.3	7.3	7.6	7.3	7.3	7.6	7.3	7.3	7.6	7.3	7.3	7.6	7.3	7.3	7.6
Russian River above the Laguna																					
Oct	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1	9.2	9.1	9.1
Nov	9.4	9.6	9.6	9.4	9.6	9.6	9.4	9.6	9.6	9.4	9.6	9.6	9.4	9.6	9.6	9.4	9.6	9.5	9.4	9.6	9.6
Dec	10.6	10.4	10.6	10.6	10.4	10.6	10.6	10.4	10.6	10.6	10.4	10.6	10.6	10.4	10.6	10.6	10.2	10.6	10.6	10.4	10.6

Table 4-25A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Mitigation Operations for Biostimulatory Substances (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Jan	10.8	11.1	10.8	10.8	11.1	10.8	10.8	11.1	10.8	10.8	11.1	10.8	10.8	11.1	10.8	10.7	10.6	10.8	10.8	11.1	10.8
Feb	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.7	10.7	10.8	10.4	10.7	10.8	10.7	10.7
Mar	10.6	9.9	10.3	10.6	9.9	10.3	10.6	9.9	10.3	10.6	9.9	10.3	10.6	9.9	10.3	10.5	9.5	10.3	10.6	9.9	10.3
Apr	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8	9.6	9.0	9.8
May	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.4	8.8	8.6	8.5	8.8	8.6	8.4	8.8
Jun	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.5	8.6	8.6	8.4	8.5	8.6
Jul	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5
Aug	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4	8.5	8.6	8.4
Sep	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5	8.6	8.7	8.5
Russian River below the Laguna																					
Oct	8.9	8.8	8.8	8.9	8.8	8.8	8.9	8.8	8.8	8.9	8.8	8.8	8.9	8.8	8.8	9.1	9.0	9.0	8.9	8.8	8.8
Nov	9.1	9.3	9.0	9.1	9.3	9.1	9.1	9.3	9.1	9.1	9.3	9.1	9.1	9.3	9.0	9.3	9.4	9.3	9.1	9.3	9.1
Dec	9.7	9.9	10.2	9.7	10.0	10.2	9.7	10.0	10.2	9.7	10.0	10.2	9.7	9.9	10.1	9.8	10.1	10.3	9.7	10.0	10.2
Jan	10.1	10.8	10.3	10.1	10.8	10.3	10.1	10.8	10.3	10.0	10.8	10.3	10.1	10.7	10.3	10.3	10.6	10.4	10.1	10.8	10.3
Feb	10.2	10.0	10.1	10.2	10.1	10.1	10.2	10.0	10.1	10.2	10.0	10.1	10.2	10.1	10.1	10.4	10.2	10.3	10.2	10.1	10.1

Table 4-25A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Mitigation Operations for Biostimulatory Substances (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
Mar	10.1	9.3	9.6	10.1	9.3	9.7	10.1	9.3	9.6	10.1	9.3	9.6	10.1	9.3	9.6	10.3	9.3	9.9	10.1	9.3	9.7
Apr	9.3	8.6	9.4	9.4	8.5	9.4	9.4	8.5	9.4	9.4	8.5	9.4	9.4	8.5	9.4	9.4	8.7	9.5	9.4	8.5	9.4
May	8.1	7.6	8.5	8.1	7.6	8.5	8.1	7.6	8.5	8.1	7.6	8.5	8.1	7.6	8.5	8.3	8.0	8.7	8.1	7.6	8.5
Jun	7.9	7.7	8.0	7.9	7.8	8.0	7.9	7.8	8.0	7.9	7.8	8.0	7.9	7.8	8.0	8.2	8.3	8.5	7.9	7.8	8.0
Jul	8.3	8.2	8.0	8.3	8.2	8.0	8.3	8.2	8.0	8.3	8.2	8.0	8.3	8.2	8.0	8.7	8.7	8.6	8.3	8.2	8.0
Aug	8.1	8.1	7.9	8.1	8.1	7.9	8.1	8.1	7.9	8.1	8.1	7.9	8.1	8.1	7.9	8.5	8.6	8.4	8.1	8.1	7.9
Sep	8.3	8.3	8.2	8.3	8.3	8.2	8.3	8.3	8.2	8.3	8.3	8.2	8.3	8.3	8.2	8.6	8.6	8.5	8.3	8.3	8.2
Lower Russian River																					
Oct	8.7	8.9	8.9	8.7	8.9	8.9	8.7	8.9	8.9	8.7	8.9	8.9	8.7	8.9	8.9	9.0	9.0	9.0	8.7	8.9	8.9
Nov	8.9	9.1	9.1	8.9	9.1	9.1	8.9	9.1	9.1	8.9	9.1	9.1	8.9	9.1	9.1	9.1	9.3	9.3	8.9	9.1	9.1
Dec	9.6	9.8	10.1	9.6	9.8	10.1	9.6	9.8	10.1	9.6	9.8	10.1	9.6	9.8	10.1	9.7	9.9	10.3	9.6	9.8	10.1
Jan	10.1	10.7	10.3	10.1	10.7	10.3	10.1	10.7	10.2	10.0	10.6	10.2	10.1	10.5	10.2	10.3	10.6	10.4	10.1	10.7	10.3
Feb	10.2	9.8	10.1	10.2	9.9	10.1	10.2	9.8	10.1	10.2	9.9	10.1	10.2	9.9	10.1	10.4	10.1	10.3	10.2	10.0	10.1
Mar	10.1	9.3	9.7	10.1	9.3	9.7	10.1	9.3	9.7	10.1	9.3	9.7	10.1	9.2	9.7	10.3	9.3	9.9	10.1	9.3	9.7
Apr	9.3	8.6	9.3	9.3	8.7	9.3	9.3	8.7	9.3	9.3	8.7	9.3	9.4	8.7	9.3	9.4	8.9	9.4	9.3	8.7	9.3

Table 4-25A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Mitigation Operations for Biostimulatory Substances (in mg/L)

	Existing Conditions			1 Percent			5 Percent			10 Percent			20 Percent to the Laguna			20 Percent to the Russian River			Geysers		
	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year	Normal Year	Dry Year	Wet Year
May	8.4	7.4	8.8	8.4	7.6	8.8	8.4	7.6	8.8	8.4	7.6	8.8	8.4	7.6	8.8	8.5	8.1	8.8	8.4	7.6	8.8
Jun	7.9	7.3	7.9	7.9	7.3	7.9	7.9	7.3	7.9	7.9	7.3	7.9	7.9	7.3	7.9	8.3	8.2	8.7	7.9	7.3	7.9
Jul	8.0	7.9	7.9	8.0	7.9	7.9	8.0	7.9	7.9	8.0	7.9	7.9	8.0	7.9	7.9	8.7	8.8	8.8	8.0	7.9	7.9
Aug	7.8	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.7	8.5	8.6	8.5	7.8	7.9	7.7
Sep	8.1	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.1	8.5	8.5	8.5	8.1	8.0	8.1

[a] Dissolved oxygen minima are based on hourly estimates

Page 136, Appendix I-16. Table 4-26 is revised as follows:

Table 4-26

Number of Significant Adverse Impacts of Project and Mitigation Operations
(percent of the total number of analyses)

Discharge Component	No. Analyses[a]	Benthic Algae		Planktonic Algae		Turbidity		Average Dissolved Oxygen	
		Project	Mitig	Project	Mitig	Project	Mitig	Project	Mitig
1%	108	4%	6%[b]	1%	1%	0%	0%	0%	0%
5%	108	1%	1%	1%	1%	0%	0%	0%	0%
10%	108	1%	1%	1%	1%	0%	0%	0%	0%
20%	108	46%	11%	1%	0%	0%	0%	1%	2%[c]
20% River	144	24%	11%	2%	1%	1%	0%	0%	0%
Geysers	108	9%	4%	0%	0%	0%	0%	0%	0%
No Project[d]	108	45%	0%	0%	0%	0%	0%	0%	11% [b]

[a] This column shows the maximum number of significant impacts that could be identified using the evaluation approach described in this report (108 = 3 stream segments *x* 3 types of years *x* 12 months/year, 144 = 4 stream segments x 3 types of years x 12 months/year).

[b] Increases in benthic algae with mitigation probably a result of increased reclaimed water concentrations in one month (March).

c Decreases in average dissolved oxygen concentration with mitigation as a result of decreases in oxygen-producing benthic algae.

[d] For No Project, shown are number of significant adverse impacts of Project and measures for the City's consideration.

Page 138, Appendix I-16. Table 4-28 is revised as follows:

Table 4-28

Significant Adverse and Beneficial Impacts of Each Design Discharge Component[a] After Mitigation[b]

Constituent	Santa Rosa Creek	Laguna	Russian River Below Laguna	Russian River Above Laguna
Benthic Algae				
Adverse	1%, 20%, 20% River, G	1%, 20% 20% River, G	20%, 20% River	20% River
Beneficial	1%, 20%, 20% River, G, NP	1%, 20%, 20% River, G, NP	1%,20%, 20% River, G, NP	
Planktonic Algae				
Adverse		1%, 20% River	20%	20% River
Beneficial	20%	20%, NP	20% River	
Average Dissolved Oxygen	20%, NP	20%, NP		
Turbidity				
Adverse				
Beneficial				
Conductivity				20% River
Cyanide				
Toxicity				
Waste Red. Strat.			Criterion applies only to Laguna system	
Adverse				
Total nitrogen				
Ammonia				
Beneficial				
Total nitrogen	1%, 20% River, G			
Ammonia	1%, 20% River, G			

[a] 1% = 1% design discharge component
20% = 20% design discharge component to Laguna
20% River = 20% design discharge component to River
NP = No Project discharge component
G = Geysers discharge component
Since impacts were evaluated for all months and three hydrologic years, both beneficial and adverse impacts can result for some parameters at different times from the same component.

[b] Mitigation of benthic algae, planktonic algae, and average dissolved oxygen involves revising discharge operations to minimize discharge during fall and spring. Mitigation for cyanide involves a source identification and control program. Mitigation for waste reduction strategy (total nitrogen load and ammonia load) is to reduce nitrogen load to the Laguna at appropriate sources. No mitigation for conductivity impacts is identified.

Page 139, Appendix I-16. Table 4-29 is revised as follows:

Table 4-29.

Number of Significant Adverse Impacts of Mitigation Operations and Mitigation Operations With Nitrogen Removal (percent of the maximum)

Discharge Component	Max. No.[a]	Benthic Algae		Planktonic Algae		Average Dissolved Oxygen	
		Mitig.	Mitig-N	Mitig.	Mitig-N	Mitig.	Mitig-N
1%	108	6%	4%	1%	0	0	0
5%	108	1%	1%	1%	0	0	0
10%	108	1%	1%	1%	0	0	0
20%	108	11%	6%	0	0	2	2%
20% River	144	11%	8%	1%	1	0	0
Geysers	108	4%	3%	0	0	0	0
No Project[b]	108	0	0	0	0	12	11%

[a] This column shows the maximum number of significant impacts that could be identified using the evaluation approach described in this report (108 = 3 stream segments x 3 types of years x 12 months/year), 144 = 4 stream segments x 3 types of years x 12 months/year).

b For No Project shown are number of significant adverse impacts of measures for the City's consideration.

Page 141, Appendix I-16. The third bulleted item under Impact Evaluation Approach is revised as follows:

- The potential impacts of contingency discharge on benthic algae, planktonic algae, average and minimum dissolved oxygen, ammonia, and temperature in the Laguna de Santa Rosa and the Russian River were evaluated using a hydraulic and water quality model as described in Section 4.1.4 Impact Evaluation Approach - Constituents Affected by Biological Activity.

Page 141, Appendix I-16. The first two sentences in the first paragraph in the Impact Evaluation Results section are revised as follows:

The evaluation of contingency discharge impacts is focused on eight constituents: benthic algae, planktonic algae, average and minimum dissolved oxygen, ammonia, temperature, conductivity, cyanide and toxicity. Benthic algae, planktonic algae, average and minimum dissolved oxygen, ammonia and toxicity were selected because they reflect biological properties of the receiving water, and showed significant impacts in the previous simulation of design discharge impacts.

Page 142, Appendix I-16. The second paragraph in the Algae, Dissolved Oxygen, Temperature and Ammonia section is revised as follows:

> The results of the water quality impact evaluation for benthic and planktonic algae, average dissolved oxygen, ammonia, and temperature are shown in Figures 4-44 through 4-58 for the 10 percent, 20 percent, and 20 percent River components. Water quality impacts of design discharge alone and design plus contingency discharge are shown. The effects of design plus contingency discharge under mitigation operations is also shown. The predicted minimum dissolved oxygen with design plus contingency discharge are given in Table 4-30A. For all parameters in Figures 4-44 through 4-58 and Table 30A, aAll months in the simulated year (1977) are shown, but contingency discharge would only occur in January and February under the 10 percent component, and only in January, February, and April under the 20 percent and 20 percent River discharge components.

Page 142, Appendix I-16. The following table is inserted after the second paragraph in the Algae, Dissolved Oxygen, Temperature and Ammonia section.

Table 4-30A

Predicted Minimum[a] Dissolved Oxygen Concentrations of Contingency Discharge and Contingency Discharge with Mitigation Operations for Biostimulatory Substances[b] (in mg/L)

		Contingency Discharge			Contingency Discharge with Mitigation Operations for Biostimulatory Substances		
	Existing Conditions	10 Percent	20 Percent to the Laguna	20 Percent to the River	10 Percent	20 Percent to the Laguna	20 Percent to the River
Santa Rosa Creek							
Oct	7.6	6.8	7.7	6.8	6.8	6.8	6.8
Nov	7.0	7.2	8.0	7.2	7.2	7.2	7.2
Dec	6.9	7.5	8.2	8.7	7.8	8.3	6.7
Jan[c]	8.5	8.5	8.4	8.3	8.5	8.3	6.7
Feb[c]	8.4	8.5	8.4	8.2	8.5	8.3	8.1
Mar	8.2	8.2	8.2	8.2	8.2	6.3	6.2
Apr[c]	5.7	7.9	8.0	7.4	7.4	7.4	7.4
May	5.4	5.4	5.3	5.4	5.4	5.4	5.4

Table 4-30A

Predicted Minimum[a] Dissolved Oxygen Concentrations of Contingency Discharge and Contingency Discharge with Mitigation Operations for Biostimulatory Substances[b] (in mg/L)

		Contingency Discharge			Contingency Discharge with Mitigation Operations for Biostimulatory Substances		
	Existing Conditions	10 Percent	20 Percent to the Laguna	20 Percent to the River	10 Percent	20 Percent to the Laguna	20 Percent to the River
Jun	5.2	5.1	5.0	5.1	5.1	5.1	5.1
Jul	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Aug	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Sep	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Laguna de Santa Rosa							
Oct	7.4	7.3	7.5	7.3	7.3	7.3	7.3
Nov	8.0	7.9	8.2	7.9	7.9	7.9	7.9
Dec	8.3	8.3	8.4	8.2	8.3	8.3	7.9
Jan[c]	7.6	7.9	7.8	7.1	7.9	8.2	8.1
Feb[c]	9.3	9.3	9.3	9.1	9.2	9.2	9.2
Mar	5.4	4.9	5.3	4.3	5.9	6.5	5.2
Apr[c]	7.9	7.6	7.9	**6.8**	**6.9**	**6.9**	**6.8**
May	6.5	6.4	6.3	6.3	6.4	6.4	6.3
Jun	5.6	5.5	5.4	5.5	5.6	5.6	5.5
Jul	5.7	5.6	5.7	5.6	5.6	5.7	5.6
Aug	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Sep	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Russian River above the Laguna							
Oct	8.8	8.8	8.8	8.7	8.8	8.8	8.8
Nov	8.9	8.9	8.9	8.7	8.9	8.9	8.9
Dec	10.2	10.2	10.2	9.9	10.2	10.2	10.0
Jan[c]	10.7	10.7	10.7	10.3	10.7	10.7	10.2
Feb[c]	10.4	10.4	10.4	10.2	10.4	10.4	10.1
Mar	9.8	9.8	9.8	9.6	9.8	9.8	9.5
Apr[c]	8.9	8.9	8.9	8.7	8.9	8.9	8.9

Table 4-30A

Predicted Minimum[a] Dissolved Oxygen Concentrations of Contingency Discharge and Contingency Discharge with Mitigation Operations for Biostimulatory Substances[b] (in mg/L)

		Contingency Discharge			Contingency Discharge with Mitigation Operations for Biostimulatory Substances		
	Existing Conditions	10 Percent	20 Percent to the Laguna	20 Percent to the River	10 Percent	20 Percent to the Laguna	20 Percent to the River
May	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Jun	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Jul	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Aug	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Sep	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Russian River below the Laguna							
Oct	8.1	8.3	8.1	8.2	8.3	8.3	8.3
Nov	8.3	8.5	8.3	8.3	8.5	8.5	8.5
Dec	8.9	8.8	8.9	8.8	8.8	8.9	8.8
Jan[c]	8.8	8.7	8.8	8.7	8.7	8.8	8.8
Feb[c]	9.8	9.8	9.8	9.7	9.8	9.8	9.7
Mar	6.6	6.6	6.8	6.8	6.6	6.9	6.8
Apr[c]	8.4	8.6	8.5	8.3	8.3	8.3	8.3
May	7.4	7.4	7.4	7.4	7.4	7.5	7.4
Jun	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Jul	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Aug	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Sep	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Lower Russian River							
Oct	8.0	8.2	7.9	8.1	8.2	8.2	8.2
Nov	8.0	8.3	7.9	8.1	8.3	8.3	8.3
Dec	9.1	9.1	8.9	9.0	9.1	9.0	9.0
Jan[c]	7.4	7.4	7.4	7.4	7.4	7.5	7.5
Feb[c]	9.4	9.4	9.4	9.4	9.4	9.4	9.5
Mar	4.2	4.2	4.5	4.6	4.3	4.6	4.6

Table 4-30A

Predicted Minimum[a] Dissolved Oxygen Concentrations of Contingency Discharge and Contingency Discharge with Mitigation Operations for Biostimulatory Substances[b] (in mg/L)

		Contingency Discharge			Contingency Discharge with Mitigation Operations for Biostimulatory Substances		
	Existing Conditions	10 Percent	20 Percent to the Laguna	20 Percent to the River	10 Percent	20 Percent to the Laguna	20 Percent to the River
Apr[c]	9.1	9.2	9.1	9.1	8.9	8.9	8.9
May	7.1	7.1	7.0	7.0	7.1	7.1	7.1
Jun	6.6	6.6	6.6	6.6	6.7	6.7	6.7
Jul	6.8	6.8	6.8	6.8	6.9	6.9	6.9
Aug	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Sep	7.4	7.4	7.4	7.4	7.4	7.4	7.4

[a] Dissolved oxygen minima are based on hourly estimates.
[b] Minimum dissolved oxygen concentrations which are more than 0.5 mg/L below the estimated existing concentration and below the point of significance (6.0 mg/L for Santa Rosa Creek and 7.0 mg/L for the Laguna and Russian River) are shown in bold for months in which contingency discharge will occur.
[c] Contingency discharge would only occur in January and February under the 10 percent component and only in January, February, and April under the 20 percent and 20 percent River discharge components.

Page 142, Appendix I-16. The fourth paragraph in the Algae, Dissolved Oxygen, Temperature and Ammonia section is revised as follows:

> Contingency discharges would not significantly affect average dissolved oxygen concentrations or temperature in any of the stream zones. With 20 percent contingency discharge to the Russian River, predicted minimum dissolved oxygen in the Laguna de Santa Rosa was 6.8 mg/L in April (Table 4-30A), which is below the point of significance for minimum dissolved oxygen in the Laguna, Therefore, a significant impact on dissolved oxygen in the Laguna is predicted to occur with 20 percent contingency discharge to the Laguna. The predicted minimum dissolved oxygen in the Laguna in April 1977 with 20 percent discharge to the River and no contingency discharge is also 6.8 mg/L. Therefore, the effect on minimum dissolved oxygen is the same for design discharge and design plus contingency discharge. Since no discharge is entering the Laguna with a 20 percent design plus contingency discharge to the River, the effect on dissolved oxygen is not directly due to discharge but to the removal of discharge. A likely

explanation is that the reduced flow in the Laguna relative to existing conditions, which include Laguna discharge, reduces the flushing effect of increased flow. This increases phytoplankton density which leads to increased dissolved oxygen fluctuations and, thus, a lower minimum dissolved oxygen concentration. Because reduced flows in the Laguna appear to cause the significant decrease in minimum dissolved oxygen concentrations, the decrease in dissolved oxygen can be avoided by discharging to the Laguna during a very dry year such as 1977.

Page 143, Appendix I-16. Table 4-31 is revised as follows:

Table 4-31

Significant Adverse and Beneficial Impacts of Contingency Discharge[a]

Constituent	Santa Rosa Creek	Laguna de Santa Rosa	Russian River below Laguna	Russian River above Laguna
Benthic Algae Adverse Beneficial	20% River			20% River
Planktonic Algae Adverse Beneficial		10%, 20%, 20%River		20% River
Average Dissolved Oxygen Adverse				
Minimum Dissolved Oxygen Adverse		20% River		
Ammonia				
Cyanide	10%, 20%	10%, 20%		
Conductivity				20%River
Toxicity	20%	20%		

[a] 10% = 10 percent design discharge scenario component 20% = 20 percent design discharge scenario component to Laguna 20% River = 20 percent design discharge scenario component to River. Since impacts were evaluated for all months and three hydrologic years, both beneficial and adverse impacts can result at different times from the same component.

Page 144, Appendix I-16. Table 4-32 is revised as follows:

Table 4-32

Number of Significant Adverse Impacts of Contingency Discharge Under Project and Mitigation Operations

Discharge Component	Max. No.[a]	Benthic Algae		Planktonic Algae		Average Dissolved Oxygen		Minimum Dissolved Oxygen		Ammonia		Temp-erature	
		Proj	Mit	Proj	Mit	Proj	Mit	Proj	Mit	Proj	Mit	Proj	Mit
10%	6[b]	0	0	2	2	0	0	0	0	0	0	0	0
20%	9[c]	3	3	2	2	0	0	0	0	0	1	0	0
20%R	12[d]	0	0	4	3	0	0	1	3	0	0	0	0

a This column show the maximum number of significant impacts that could be identified using this evaluation approach.

[b] 6 = 3 stream segments x 1 type of year x 2 months/year that include contingency discharges.

[c] 9 = 3 stream segments x 1 type of year x 3 months/year that include contingency discharges.

[d] 12 = 4 stream segments x 1 type of year x 3 months/year that include contingency discharges.

Page 144, Appendix I-16. The following sentence is added at the end of the first paragraph:

Biostimulatory substances mitigation operations with contingency discharge is predicted to cause significant decreases in minimum dissolved oxygen concentrations with all three discharge alternatives (10 percent contingency discharge, 20 percent contingency discharge to the Laguna, and 20 percent contingency discharge to the River).

Page 145, Appendix I-16. Table 4-33 is revised as follows:

Table 4-33

Significant Adverse and Beneficial Impacts of Contingency Discharge After Biostimulatory Substances Mitigation[a]

Constituent	Santa Rosa Creek	Laguna de Santa Rosa	Russian River below Laguna	Russian River above Laguna
Benthic Algae Adverse Beneficial	**10%**, 20% River			20% River
Planktonic Algae Adverse Beneficial		10%, 20%, 20%R	**20% River**	~~20% River~~
Average Dissolved Oxygen Adverse				
Minimum Dissolved Oxygen Adverse		20% River		
Ammonia			**20%**	
Cyanide				
Conductivity				20% River
Toxicity				

[a] Design components shown in ~~strikethrough~~ indicate Project impacts removed by mitigation operations; **Boldface** indicate that Project impacts are caused by mitigation operations; others remain under mitigation operations.

Page 167, Appendix I-16. The first sentence of the third bulleted item is revised as follows:

- The potential impacts of cumulative discharge on benthic algae, planktonic algae, average and minimum dissolved oxygen, and ammonia in Santa Rosa Creek, the Laguna de Santa Rosa, and the Russian River were evaluated as for design discharge.

Page 168, Appendix I-16. The first paragraph is revised as follows:

Tables 4-42 ~~and~~ through 4-44 do not include conductivity, cyanide, toxicity because only one opportunity for exceedence is possible~~, except for ammonia in the Russian River~~. No significant cumulative projects impacts of ammonia

occurred in the Russian River and no significant cumulative projects impacts of minimum dissolved oxygen occurred in Santa Rosa Creek, the Laguna or the Russian River, so these constituents are not included in Tables 4-42 through 4-44.

Page 169, Appendix I-16. Table 4-42 is revised as follows:

Table 4-42.

Frequency of Significant Adverse Impacts of the Cumulative Projects and Mitigation Operations (percent of the total number of analyses)

Discharge Component	No. Analyses[a]	Benthic Algae		Planktonic Algae		Turbidity		Average Dissolved Oxygen	
		Project	Mitig	Project	Mitig	Project	Mitig	Project	Mitig
No Project	36	55%	-	0%	-	0%	-	0%	-
1%	36	3%	6%	0%	0%	0%	0%	0%	0%
5%	36	3%	0%	0%	0%	0%	0%	0%	0%
10%	36	0%	0%	0%	0%	0%	0%	0%	0%
20%	36	58%	0%	3%	0%	0%	0%	3%	0%
20% River	48	27%	15%	0%	0%	0%	0%	0%	0%
Geysers	36	3%	3%	0%	0%	0%	0%	0%	0%

[a] This column shows the maximum number of significant impacts that could be identified using the evaluation approach described in this report (36 = 3 stream segments *x* 12 months/year, 48 = 4 stream segments x 12 months/year).

Page 172, Appendix I-16. Table 4-45 is revised as follows:

Table 4-45

Significant Adverse and Beneficial Impacts of the Cumulative Projects for Each Discharge Component[a]

Constituent	Santa Rosa Creek	Laguna	Russian River Below Laguna	Russian River Above Laguna
Benthic Algae				
Adverse	**1%,** ~~20%~~, **20% River,** NP	1%, ~~5%~~, ~~20%~~, 20% River, NP, G	~~20%~~ , ~~20% River,~~ NP	20% River
Beneficial	1%, 5%, **10%, 20%,** ~~20% River~~, **G**	**10%, 20%**	1%, 5%, **10%, 20%, 20% River,** G	
Planktonic Algae				
Adverse			~~20%~~	
Beneficial	~~20%,~~ NP	~~20%,~~ NP		
Turbidity				
Adverse				
Beneficial	~~20%,~~ NP	~~20%,~~ NP		
Average Dissolved Oxygen		~~20%~~		
Minimum Dissolved Oxygen				
Ammonia				
Conductivity				*20% River*

[a] Components causing a significant adverse or beneficial impact are shown. Cumulative projects impacts were evaluated for a normal hydrologic year. Since impacts were evaluated for all months, both beneficial and adverse impacts can result for some parameters at different times from the same component. Overstriking indicates impact avoided with mitigation or measures that need to be considered by the city for the No Project component, italics indicates no mitigation proposed, bold indicates impacts that are significant after mitigation that are not significant before mitigation. Impacts of mitigation on the No Project component were not analyzed.
Components are identified as follows:
1% = 1% design discharge component
20% = 20% design discharge component to Laguna
20% River = 20% design discharge component to River
G = Geysers discharge component

Page 173, Appendix I-16. The Dissolved Oxygen section is revised as follows:

> The impact of the cumulative projects on average dissolved oxygen during a normal hydrological year is estimated to be similar to that of the Subregional System design discharge Project (see Figure 4-61). The cumulative projects is estimated to cause exceedence of the point of significance (> 0.5 mg/L decrease) just once (3 percent of the total possible impacts), and this would occur in the Laguna as a result of the 20 percent Laguna design discharge. This significant adverse impact of the cumulative projects is reduced by mitigation for biostimulatory substances to below significance (Table 4-42). The predicted minimum dissolved oxygen concentrations for cumulative projects are shown in Table 4-45A. No predicted minimum dissolved oxygen concentrations for Project alternatives are more than 0.5 mg/L below the existing conditions and less than the points of significance (6.0 mg/L for Santa Rosa Creek and 7.0 mg/L for the Laguna and Russian River). Therefore, no significant decreases in dissolved oxygen are predicted to occur with cumulative projects.

Page 173, Appendix I-16. The following table is inserted at the end of the Dissolved Oxygen section:

Table 4-45A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Cumulative Projects (in mg/L)

		1 Percent		5 Percent		10 Percent		20 Percent to the Laguna		20 Percent to the Russian River		Geysers		No Project
	Existing Conditions	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	
Santa Rosa Creek														
Oct	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.9	7.5	7.5	7.5	7.5	7.5	7.6
Nov	7.6	7.6	7.6	7.6	7.6	7.6	7.6	8.0	7.6	7.6	7.6	7.6	7.6	7.9
Dec	8.6	8.7	8.7	8.7	8.7	8.6	8.6	8.7	8.4	8.7	8.4	8.7	8.7	8.7
Jan	8.9	8.9	8.9	8.9	8.8	8.9	8.6	8.9	8.3	8.9	7.6	8.9	8.9	8.9
Feb	8.8	8.9	8.9	8.9	8.9	8.9	8.9	8.8	8.8	8.9	8.9	8.9	8.9	8.8
Mar	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.1	8.7	8.7	8.7	8.7	8.7
Apr	8.3	8.4	8.4	8.1	8.4	7.8	8.4	8.3	8.4	8.4	8.4	8.4	8.4	8.3
May	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Jun	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.2	6.2	6.2	6.2	6.2	6.1
Jul	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4

Table 4-45A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Cumulative Projects (in mg/L)

		1 Percent		5 Percent		10 Percent		20 Percent to the Laguna		20 Percent to the Russian River		Geysers		No Project
	Existing Conditions	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	
Aug	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Sep	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Laguna de Santa Rosa														
Oct	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.8	7.9	7.9	7.9	7.9	7.9	7.7
Nov	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Dec	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Jan	8.8	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Feb	8.9	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Mar	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	9.0	8.9
Apr	8.5	8.7	8.7	8.6	8.7	8.6	8.7	8.6	8.7	8.7	8.7	8.7	8.7	8.6
May	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.3	7.4	7.4	7.4	7.4	7.4	7.3
Jun	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Jul	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Aug	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Sep	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Russian River above the Laguna														
Oct	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.1	9.2	9.2	9.2	9.2
Nov	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.2	9.4	9.4	9.4	9.4
Dec	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.5	10.6	10.6	10.6	10.6
Jan	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.7	10.7	10.8	10.8	10.8
Feb	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Mar	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.5	10.5	10.6	10.6	10.6
Apr	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
May	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
Jun	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Jul	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
Aug	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5

Table 4-45A

Predicted Minimum[a] Dissolved Oxygen Concentrations with Cumulative Projects (in mg/L)

		1 Percent		5 Percent		10 Percent		20 Percent to the Laguna		20 Percent to the Russian River		Geysers		No Project
	Existing Conditions	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	Proj.	Mitig.	
Sep	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
Russian River below the Laguna														
Oct	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.6	8.9	8.7	8.9	8.9	8.9	8.8
Nov	9.1	9.1	9.1	9.1	9.1	9.1	9.1	8.8	9.1	8.8	9.1	9.1	9.1	8.9
Dec	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Jan	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
Feb	10.2	10.2	10.2	10.2	10.2	10.2	10.3	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Mar	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
Apr	9.3	9.4	9.4	9.4	9.4	9.4	9.4	9.3	9.4	9.3	9.4	9.4	9.4	9.3
May	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Jun	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
Jul	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Aug	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Sep	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Lower Russian River														
Oct	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.4	8.7	8.5	8.7	8.7	8.7	8.6
Nov	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.4	8.9	8.6	8.9	8.9	8.9	8.7
Dec	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
Jan	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.1	10.1	10.1	10.1	10.1	10.1
Feb	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Mar	10.1	10.2	10.2	10.2	10.2	10.2	10.2	10.1	10.1	10.1	10.1	10.2	10.2	10.2
Apr	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
May	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Jun	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.8	7.9	7.8	7.9	7.9	7.9	7.8
Jul	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Aug	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Sep	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1

Page 4.6-68. The last sentence of the first paragraph in the Constituents Affected by Biological Activity section is revised as follows:

> The model simulates reclaimed water dilution, uptake of nutrients by planktonic and benthic algae, growth of planktonic and benthic algae, average and minimum dissolved oxygen, ammonia, and temperature with different discharge scenarios.

Page 4.6-72. The following paragraph is inserted after the first paragraph:

> Model estimates of the minimum dissolved oxygen (based on hourly estimates) were also evaluated for impacts. These minimum hourly concentrations for each month were evaluated for the same hydraulic years and locations as the monthly average dissolved oxygen. If any predicted minimum monthly dissolved oxygen concentration for the Project alternatives was 1) 0.5 mg/L below the estimated existing monthly dissolved oxygen minimum and 2) below the point of significance for minimum dissolved oxygen, the impact was considered significant.

Page 4.6-92. Table 4.6-33 is revised as follows

Table 4.6-33

Significant Adverse and Beneficial Impacts of Each Alternative[1]
Before and After Mitigation[2]

Constituent	Santa Rosa Creek	Laguna	Russian River Below Laguna	Russian River Above Laguna
Conductivity				*5A*
Cyanide	*1*, ~~5B~~	*1*, ~~5B~~		
Average Dissolved Oxygen	*5B*	*5B*		
Benthic Algae • Adverse	*1*, 2&3, 4, 5A, 5B	*1*, 2&3, 4, 5A, 5B	*1*, 5A, 5B	5A
• Beneficial	*1*, 2&3, 4, 5A, **5B**	*1*, 2&3, 4, 5A, **5B**	*1*, 2&3, 4, 5A, **5B**	
Planktonic Algae • Adverse		2&3, 5A	5B	5A
• Beneficial	*1*, 5B	*1*, 5B	5A	
Turbidity • Adverse				~~5A~~
• Beneficial	*1*, ~~5B~~	*1*, ~~5B~~	5A	

Table 4.6-33

Significant Adverse and Beneficial Impacts of Each Alternative[1]
Before and After Mitigation[2]

Constituent	Santa Rosa Creek	Laguna	Russian River Below Laguna	Russian River Above Laguna
Waste Reduction Strategy				
• Total Nitrogen				
♦ Adverse	*1*, ~~5B~~			
♦ Beneficial	2&3, 4, 5A			
• Ammonia N				
♦ Adverse	*1*, ~~5B~~		Criterion applies only to Laguna system	
♦ Beneficial	2&3, 4, 5A			
Toxicity	*1*, ~~5B~~			

Source: Section 4, *Water Quality Impacts Analysis*, Merritt Smith Consulting 1996r

1. Components causing a significant adverse or beneficial impact are shown. Overstriking indicates impact avoided with mitigation, italics indicates no mitigation proposed, bold indicates impacts that are significant after mitigation that are not significant before mitigation. Components are identified as follows:
   1 = (Alt 1) - No Action discharge scenario
   2&3 = (Alts 2&3) - 1% design discharge scenario
   4 = (Alt 4) - Geysers discharge scenario
   5A = (Alt 5A) - 20% design discharge scenario to River
   5B = (Alt 5B) - 20% design discharge scenario to Laguna
2. Mitigation of benthic algae, planktonic algae, and average dissolved oxygen involves revising discharge operations to minimize discharge during fall and spring. Mitigation for waste reduction strategy (total nitrogen load and ammonia load) is to reduce nitrogen load to the Laguna at appropriate sources. Mitigation for the No Action discharge scenario (Alt 1) is not considered in this DRAFT EIR/EIS.

Pages 4.6-96 through 4.6-97. Table 4.6-34 is revised as follows:

Table 4.6-34

Surface Water Quality Impacts by Component - Discharge

		Russian River			Laguna de Santa Rosa and Santa Rosa Creek		
Evaluation Criteria	**Point of Significance[1]**	**Impact**	**Type of Impact[2]**	**Level of Significance[3]**	**Impact**	**Type of Impact[2]**	**Level of Significance[3]**
6.9.1. Will the discharge component cause numeric-based criteria to be exceeded?							
Average Dissolved Oxygen	~~> 7 mg/L minimum and~~ 10 mg/L 50th percentile monthly average or any decrease if receiving water not in compliance						
• Alt 1 - No Action discharge	Upper row shows the lowest ~~minimum~~ monthly	8.8 mg/L, 9.5 mg/L <0.5 mg/L decrease	O&M	❍	7.0 mg/L, 8.2 mg/L <0.5 mg/L decrease	O&M	❍
• Alt 2 and 3 - 1% design discharge	average and lowest median ~~monthly average~~	8.6 mg/L, 9.6 mg/L <0.5 mg/L decrease	O&M	❍	7.0 mg/L, 8.3 mg/L <0.5 mg/L decrease	O&M	❍
• Alt 4 - Geysers discharge	value of the 3 hydrologic years. Lower row shows	8.9 mg/L, 9.6 mg/L <0.5 mg/L decrease	O&M	❍	7.0 mg/L, 8.3 mg/L <0.5 mg/L decrease	O&M	❍
• Alt 5A - 20% design discharge to the Russian River	change from existing conditions.	9.0 mg/L, 9.5 mg/L <0.5 mg/L decrease	O&M	❍	7.0 mg/L, 8.3 mg/L <0.5 mg/L decrease	O&M	❍

Table 4.6-34

Surface Water Quality Impacts by Component - Discharge

		Russian River			Laguna de Santa Rosa and Santa Rosa Creek		
Evaluation Criteria	Point of Significance[1]	Impact	Type of Impact[2]	Level of Significance[3]	Impact	Type of Impact[2]	Level of Significance[3]
		<0.5 mg/L decrease	O&M-CP	❍	<0.5 mg/L decrease	O&M-CP	❍
• Alt 5B - 20% design discharge to the Laguna	Less than 0.5 mg/L change not considered significant.	8.8 mg/L, 9.5 mg/L <0.5 mg/L decrease	O&M	❍	7.0 mg/L, 8.2 mg/L 0.5 mg/L decrease	O&M	●
		<0.5 mg/L decrease	O&M-CP	❍	<0.5 mg/L decrease	O&M-CP	❍
Minimum Dissolved Oxygen	< 7.0 mg/L minimum and > 0.5 mg/L change. Less than 0.5 mg/L change not considered significant.				< 6.0 and < 7.0 mg/L minimum (Santa Rosa Creek and Laguna, respectively) and > 0.5 mg/L change. Less than 0.5 mg/L change not considered significant.		
• Alt 1 - No Action discharge	Upper row shows the lowest hourly	7.3 mg/L <0.5 mg/L decrease	O&M	❍	5.7 mg/L <0.5 mg/L decrease	O&M	❍
• Alt 2 and 3 - 1%	minimum value of the 3	7.3 mg/L	O&M	❍	5.9 mg/L	O&M	❍

Table 4.6-34

Surface Water Quality Impacts by Component - Discharge

		Russian River			Laguna de Santa Rosa and Santa Rosa Creek		
Evaluation Criteria	Point of Significance[1]	Impact	Type of Impact[2]	Level of Significance[3]	Impact	Type of Impact[2]	Level of Significance[3]
design discharge	hydrologic years.	<0.5 mg/L decrease			<0.5 mg/L decrease		
• Alt 4 - Geysers discharge	Lower row shows decrease from existing conditions.	7.3 mg/L <0.5 mg/L decrease	O&M	❍	5.9 mg/L <0.5 mg/L decrease	O&M	❍
• Alt 5A - 20% design discharge to the Russian River	For contingency discharge, upper row shows the lowest hourly minimum value for months in which contingency discharge occurs. Lower row shows decrease from existing conditions.	7.9 mg/L <0.5 mg/L decrease	O&M	❍	5.9 mg/L <0.5 mg/L decrease	O&M	❍
		7.4 mg/L <0.5 mg/L decrease	O&M-CP	❍	6.8 mg/L 1.1 mg/L decrease	O&M-CP	⦿
• Alt 5B - 20% design discharge to the Laguna		7.3 mg/L <0.5 mg/L decrease	O&M	❍	5.5 mg/L <0.5 mg/L decrease	O&M	❍
		7.4 mg/L <0.5 mg/L decrease	O&M-CP	❍	7.8 mg/L <0.5 mg/L decrease	O&M-CP	❍

Source: *Water Quality Impacts Analysis* and *Sediment Quality Characterization for the Russian River, Laguna de Santa Rosa , Santa Rosa Creek, and Reclaimed Water Storage Ponds*, Merritt Smith Consulting 1996o, r

1. As described in the *Development of Water Quality Criteria for Potential Water Quality Impacts* Technical Report, (Merritt Smith Consulting 1996f), effects of water quality on aquatic life may be significant even if water quality significance criteria are not exceeded. Water quality effects on aquatic life are described in Chapter 4.9, Aquatic Biological Resources.

2.	Type of Impact:
C	Construction
O&M	Operation and Maintenance
O&M-CP	Operation and Maintenance - Contingency Plan
P	Permanent
--	Not Applicable

3.	Level of Significance:
--	Not Applicable
==	No impact
❍	Less than significant impact; no mitigation proposed
⊙	Significant impact before mitigation; less than significant impact after mitigation
●	Significant impact before and after mitigation, except for the No Action component for which the symbol represents significant impact and no mitigation is proposed
❍/●	Impact less than significant before mitigation but significant after mitigation
❍/+	Impact less than significant before mitigation and beneficial after mitigation
+/❍	Impact beneficial before mitigation and less than significant after mitigation
+	Beneficial impact before and after mitigation

Pages 4.6-109 to 4.6-111. The discussion of Impact 6.9.1 Dissolved Oxygen is revised as follows:

Impact: **6.9.1. Average Dissolved oxygen. Will the discharge component cause numeric-based criteria to be exceeded?**

Analysis: *Operation and Maintenance*

Laguna and Santa Rosa Creek

Significant; Alternative 5B

The Laguna is rarely in attainment of the Basin Plan objectives for dissolved oxygen. Nutrients that derive from reclaimed water and other sources (North Coast Regional Board 1995) stimulate growth of algae (see 6.9.2, Narrative-based Evaluation Criteria section below), and the increase in algae consumes dissolved oxygen at night (when no photosynthesis can occur) more rapidly than oxygen is replenished from the atmosphere. Therefore, a contribution to a reduction of dissolved oxygen on the part of the Project would be considered significant, because it will worsen an existing exceedence of the standards. The 20% discharge scenario will reduce average dissolved oxygen in the Laguna and/or Santa Rosa Creek by up to 0.5 mg/L (a difference of less than 0.5 mg/L was considered insignificant due to insufficient model precision). This reduction in dissolved oxygen will be from 9.61 mg/L to 9.10 mg/L.

Less than Significant; Alternatives 1, 2, 3, 4, and 5A.

The impacts of discharge on average dissolved oxygen in the Laguna and Santa Rosa Creek are less than significant for all discharge scenarios except 20% design discharge to the Laguna (see Table 4.6-36).

Table 4.6-36

Effects of Discharge on Average Dissolved Oxygen in the Laguna and Santa Rosa Creek (mg/L)

Discharge Scenarios	Lowest Monthly Average of 3 Hydrologic Years[1]	Lowest Median Monthly Average Value of 3 Hydrologic Years[2]	Maximum Effects Relative to Existing Conditions Baseline[3]
Alt 1 - No Action discharge	7.0	8.2	<0.5
Alt 2 & 3 - 1% Design discharge	7.0	8.3	<0.5
Alt 4 - Geysers discharge	7.0	8.3	<0.5

Table 4.6-36

Effects of Discharge on Average Dissolved Oxygen in the Laguna and Santa Rosa Creek (mg/L)

Discharge Scenarios	Lowest Monthly Average of 3 Hydrologic Years[1]	Lowest Median Monthly Average Value of 3 Hydrologic Years[2]	Maximum Effects Relative to Existing Conditions Baseline[3]
Alt 5A - 20% Design discharge to the Russian River	7.0	8.3	<0.5
Alt 5 B 20% Design discharge to the Laguna	7.0	8.2	0.5[4]
Existing Conditions	7.0	8.3	-

Source: *Water Quality Impacts Analysis*, Merritt Smith Consulting 1996r

1. Value shown is the lowest model predicted monthly average dissolved oxygen concentration of the three hydrologic years (normal dry, wet) for Santa Rosa Creek and the Laguna. The lowest value was identified from among 72 possible values (12 months x 3 years x 2 location).
2. Value shown is the lowest of the six median monthly average dissolved oxygen concentration (one median of 12 monthly average dissolved oxygen values for each of the hydrologic years for Santa Rosa Creek and the Laguna).
3. Value shown is the largest difference between existing monthly average dissolved oxygen concentrations and predicted monthly average dissolved oxygen for discharge scenario. The largest difference was identified from among 72 possible values (see footnote 1).
4. The maximum difference between existing monthly average dissolved oxygen and predicted monthly average dissolved oxygen with Alternative 5 B occurred in a month that was not the lowest of the three hydrologic years nor the lowest median monthly average.

Russian River

Less than Significant; All Alternatives.

The impacts of discharge on average dissolved oxygen in the Russian River are less than significant because predicted average dissolved oxygen concentrations for all discharge scenarios are not different from existing conditions (<0.5 mg/L difference between predicted average dissolved oxygen and existing average dissolved oxygen).

Operation and Maintenance - Contingency Plan

Laguna and Santa Rosa Creek

Less than Significant; Alternatives 5.

The impacts of contingency discharge on average dissolved oxygen in the Laguna and Santa Rosa Creek are less than significant.

No Impact; Alternatives 1, 2, 3, and 4.

These alternatives are not expected to have a contingency discharge.

Russian River

Less than Significant; Alternative 5.

The impacts of contingency discharge on average dissolved oxygen in the Russian River are less than significant.

No Impact; Alternatives 1, 2, 3, and 4.

These alternatives are not expected to have a contingency discharge.

Mitigation: Alternative 5B. No feasible mitigation has been identified.

Alternatives 1, 2, 3, 4, and 5B. No mitigation is proposed.

Page 4.6-111. The following is added after the discussion of Impact 6.9.1 Dissolved Oxygen:

Impact: 6.9.1. Minimum Dissolved oxygen. Will the discharge component cause numeric-based criteria to be exceeded?

Analysis: ***Operation and Maintenance***

Laguna and Santa Rosa Creek

Less than Significant; Alternatives 1, 2, 3, 4, and 5A.

The impacts of discharge on minimum dissolved oxygen in the Laguna and Santa Rosa Creek are less than significant because predicted minimum dissolved oxygen concentrations for all discharge scenarios were either above the point of significance or were not different from existing conditions (<0.5 mg/L difference and/or between predicted minimum dissolved oxygen and existing minimum dissolved oxygen).

Russian River

Less than Significant; All Alternatives.

The impacts of discharge on minimum dissolved oxygen in the Russian River are less than significant for all discharge scenarios because predicted minimum dissolved oxygen concentrations for all discharge scenarios were above the point of significance and/or were not materially different from existing conditions (<0.5 mg/L difference between predicted minimum dissolved oxygen and existing minimum dissolved oxygen).

Operation and Maintenance - Contingency Plan

Laguna and Santa Rosa Creek

Significant: Alternative 5A

Predicted minimum dissolved oxygen in the Laguna in one month with contingency discharge (April) is predicted to be 6.8 mg/L which is below the point of significance for the Laguna of 7.0 mg/L. This predicted

minimum dissolved oxygen was 1.1 mg/L less than the predicted existing minimum dissolved oxygen for that month.

Less than Significant; Alternatives 5B.

The impacts of contingency discharge on minimum dissolved oxygen in the Laguna and Santa Rosa Creek are less than significant because predicted minimum dissolved oxygen concentrations for all discharge scenarios were above the point of significance and/or were not materially different from existing conditions (<0.5 mg/L difference between predicted minimum dissolved oxygen and existing minimum dissolved oxygen).

No Impact; Alternatives 1, 2, 3, and 4.

These alternatives are not expected to have a contingency discharge.

Russian River

Less than Significant; Alternative 5.

The impacts of contingency discharge on minimum dissolved oxygen in the Russian River are less than significant because predicted minimum dissolved oxygen concentrations for all discharge scenarios were above the point of significance and/or were not materially different from existing conditions (<0.5 mg/L difference between predicted minimum dissolved oxygen and existing minimum dissolved oxygen).

No Impact; Alternatives 1, 2, 3, and 4.

These alternatives are not expected to have a contingency discharge.

Mitigation: *Alternative 5A Contingency Discharge.*

2.5.11. Discharge to the Laguna During Very Dry Years

Alternatives 1, 2, 3, 4, and 5B. No mitigation is proposed.

Page 4.6-117. The first paragraph is revised as follows:

~~No s~~Significant impacts are predicted from ~~contingency discharge~~ mitigation operations for biostimulatory substances (Measure 2.5.4) that ~~are~~ would not also ~~predicted~~ result from design discharge. ~~The only exception is for contingency discharge with mitigation discharge operating scenario.~~ In the case of Alternative 5B, contingency discharge with mitigation operations (Measure 2.5.4) is predicted to cause increases in the maximum ammonia concentration in one month of the year that exceed the point of significance~~.~~. For Alternative 5B, contingency discharge with mitigation operations is also predicted to cause a decrease in the minimum dissolved oxygen concentration in one month of the year that is less than the point of significance.

Page 2-137. The following is inserted following the end of the page:

2.5.11 Discharge to the Laguna During Very Dry Years

Description: The City shall revise contingency discharge to the Russian River under Alternative 5A during very dry years to insure adequate flow to the Laguna. During very dry years such as occurred in 1977, if reclaimed water is discharged to the Russian River, the flow in the Laguna is inadequate to prevent cause of phytoplankton. This results in minimum dissolved oxygen concentrations below the point of significance. Design discharge plus contingency discharge to the Laguna prevents this impact. Therefore, during very dry years, the City shall cease direct discharge to the Russian River (Alternative 5A) and discharge instead to the Laguna de Santa Rosa.

Impacts Mitigated and Mitigation Level

Impacts Mitigated	Level of Significance After Mitigation
6.9.1. Minimum dissolved oxygen. Contingency discharge with design discharge to the River may cause numeric-based criteria to be exceeded.	Alternative 5A - Less than significant

Alternative/Component: Alternative 5A

Lead Agency: City of Santa Rosa

Implementing Agency: City of Santa Rosa

Timing: **Start:** Prior to Project-related reclaimed water discharges during very dry years.

Complete: Ongoing

Monitoring Agency: City of Santa Rosa and Regional Water Quality Control Board

Validation: Compliance with this measure shall be required prior to Project-related reclaimed water discharges during very dry years.

Response to Comment 8-22

Comment Summary: The comment states that incidental runoff occurs at existing irrigation locations and that the Draft EIR/EIS "indicates that urban irrigation with reclaimed water does not result in incidental runoff."

The Draft EIR/EIS does not address urban irrigation management practices or impacts at locations that are currently being irrigated. However, the Draft EIR/EIS addresses potential irrigation impacts at locations that are currently being irrigated with potable water and would be converted to reclaimed water irrigation supply. The specific locations were evaluated for potential surface water impacts in a report cited in the Draft EIR/EIS as Questa Engineering (1996e), and the particular locations were found to prevent runoff from leaving the site. Thus, the EIR/EIS authors concluded that conversion to reclaimed water supply at these locations will not affect surface water quality.

Response to Comment 8-23

Comment Summary: The comment asks that Basin Plan discharge prohibitions related to urban irrigation in the Stemple Creek, Americano Creek and Russian River watersheds be described in the Draft EIR/EIS.

There is no urban irrigation proposed in the Stemple and Americano Creeks watersheds. Regarding discharge to the Russian River or its tributaries, refer to Response to Comment 8-2.

Response to Comment 8-24

Comment Summary: The comment states "please see comment on impact 4.7.5 & 6".

The referenced comment is addressed in Responses to Comments 8-1 and 8-2.

Response to Comment 8-25

Comment Summary: The comment suggests that the 0.08 mg/L copper concentration given on page 4.6-88 is an error.

The EIR/EIS authors appreciate the correction. As shown in Appendix 1 of Appendix H-3 (Reclaimed Water Quality Update), the correct average value is 0.008 mg/L.

The following change is made to the Draft EIR/EIS:

Page 4.6-88. The third paragraph of the After Mitigation section is revised as follows:

> The concentration of copper in reclaimed water since September 1995 is 0.008 mg/L (n=2 samples), indicating a potential long-term reduction in dissolved copper (Merritt Smith Consulting 1996l).

Response to Comment 8-26

Comment Summary: The comment states that the 1,000 cfs discharge limitation is assumed in the simulation of discharge operations, and that removal of this limitation would require Regional Board approval.

The 1,000 cfs limitation is part of the existing discharge permit and prohibits discharge to the Russian River until River flow reaches 1,000 cfs during the discharge season (which commences on October 1). This discharge limitation in the existing permit is residual from a previous Basin Plan. The current Basin Plan (under which discharge permit for the Project would likely be issued) does not include the 1,000 cfs limitation. The EIR/EIS authors agree, however, that any change in the City's permit will require Regional Board approval.

Response to Comment 8-27

Comment Summary: The comment states that conductivity data for the River above the Laguna are available and should be used for analysis of Project impacts.

The analysis of impacts has been re-evaluated using the appropriate data. The results of the analysis did not change as a result, with the exception of the contingency discharge with biostimulatory substances mitigation operations. The impact of contingency discharge with biostimulatory substances mitigation operations on conductivity in the Russian River above the confluence with the Laguna is predicted to be less than significant as a result of the revised analysis.

The following changes are made to the Draft EIR/EIS:

Page 4.6-106. The first sentence in the second paragraph in the Russian River section is revised as follows:

> The 20% design discharge to the Russian River could cause conductivity in the Russian River above the Laguna to increase by as much as about ~~45~~ 48 µmhos/cm.

Page 4.6-106. The second, third, and forth sentences in the second paragraph in the Russian River section are deleted, as follows:

> ~~This estimate is conservative since lack of data in the upper River required the use of conductivity data from the Russian River below the confluence with the Laguna to estimate impacts (Merritt Smith Consulting 1996r). Since the Russian River below the confluence contains reclaimed water, conductivity in the Russian River above the confluence is likely to be lower. In some months during the discharge season that do not currently exceed the 250 µmhos/cm point of significance, this increment is sufficient to cause the average to exceed 250 µmhos/cm.~~

Page 4.6-106. The last sentence of the second paragraph in the Russian River section is revised as follows:

> The average conductivity is predicted to exceed the point of significance in ~~nine~~ eight of the twelve months.

Page 4.6-106. The first sentence of the third paragraph in the Russian River section is revised as follows:

> The 20% design discharge to the Russian River with contingency discharge could cause conductivity in the Russian River above the Laguna to increase by as much as about ~~50~~ 60 µmhos/cm.

Page 33, Appendix I-16. The second and third sentences of the last paragraph are revised as follows:

> Average monthly conductivities in the Russian River at Oddfellows and Wohler Bridge were calculated and used as ambient conductivity. Simulated daily average reclaimed water concentrations, averaged for each month, for the 20 percent design discharge to the River component were used, selecting for each month the year (1961, 1976, 1981) with the highest average discharge concentration.

Page 111, Appendix I-16. The second paragraph of the Conductivity section is revised as follows:

> The average conductivity in the Russian River at ~~Oddfellows~~ Wohler Bridge for each month was ~~also~~ used as input to the dilution model as described above to evaluate conductivity impacts in the River above the Laguna.

Page 111, Appendix I-16. The second and third sentences of the second paragraph of the conductivity section are deleted, as follows:

> ~~There were insufficient conductivity data available for the upper River to calculate monthly averages. However, using the lower River conductivity is conservative in that the conductivity in the upper River is likely to be similar or lower.~~

Page 112, Appendix I-16. Table 4-12 is revised as follows:

Table 4-12

Estimated Conductivity in the Upper and Lower Russian River with 20 Percent Design Discharge to the Laguna and the River

	Lower Russian River (point of significance = 285 µmhos/cm)			Upper Russian River (point of significance = 250 µmhos/cm)	
	Existing Conditions Lower River	20 Percent Design Discharge to the Laguna	20 Percent Design Discharge to the River	Existing Conditions Upper River	20 Percent Design Discharge to the River
October	232	268	252	217	~~255,~~ 240
November	227	273	260	232	~~266,~~ 270
December	267	299	292	246	~~296,~~ 276
January	280	337	319	251	~~325,~~ 299
February	277	321	205	224	~~309,~~ 260
March	233	269	259	240	~~264,~~ 271
April	266	310	294	248	~~301,~~ 285
May	255	269	262	253	~~263,~~ 261
June	266	266	266	263	~~266,~~ 263
July	239	239	239	210	~~239,~~ 210
August	232	232	232	222	~~232,~~ 222
September	238	238	238	224	~~238,~~ 224

Page 145, Appendix I-16. Table 4-33 is revised as follows:

Table 4-33

Significant Adverse and Beneficial Impacts of Contingency Discharge After Biostimulatory Substances Mitigation[a]

Constituent	Santa Rosa Creek	Laguna de Santa Rosa	Russian River below Laguna	Russian River above Laguna
Benthic Algae Adverse Beneficial	**10%**, 20% River			20% River
Planktonic Algae Adverse Beneficial		10%, 20%, 20%R	**20% River**	~~20% River~~
Dissolved Oxygen Adverse				
Ammonia			**20%**	
Cyanide				
Conductivity				~~20% River~~
Toxicity				

[a] Design components shown in ~~strikethrough~~ indicate project impacts removed by mitigation operations; **Boldface** indicate that project impacts are caused by mitigation operations; others remain under mitigation operations.

Pages 147 and 148, Appendix I-16. The last sentence of the last paragraph of the Conductivity is replaced, as follows:

> ~~The results in the River below the confluence are the same for contingency discharge as for contingency discharge with mitigation operations.~~ Predicted conductivity in the River above the confluence for contingency discharge with biostimulatory substances mitigation operations are less than the 50th percentile upper limit point of significance for conductivity in six months. Therefore, the impact of a 20 percent contingency discharge to the River on conductivity in the Russian River above the confluence with the Laguna is considered to be less than significant.

Page 148, Appendix I-16. Table 4-36 is revised as follows:

Table 4-36

Conductivity in the Russian River (in µmhos/cm with Contingency Discharge and Contingency Discharge with Mitigation Operations

	Russian River Below the Confluence with the Laguna						Russian River Above the Confluence with the Laguna		Existing Conditions	
	10% Contingency Discharge		20% Contingency Discharge to Laguna		20%Contingency Discharge to River		20%Contingency Discharge to River			
	Project Oper.	Mitig. Oper.	Project Oper.	Mitig. Oper.	Project Oper.	Mitig. Oper.	Project Oper.	Mitig. Oper.	Lower River	Upper River
Oct	232	232	278	232	251	232	~~256~~ 241	~~232~~ 217	232	217
Nov	227	227	321	240	275	232	~~287~~ 292	~~234~~ 239	227	232
Dec	300	272	357	381	311	326	~~324~~ 306	~~342~~ 324	267	246
Jan	318	313	351	369	318	332	~~330~~ 304	~~338~~ 312	280	251
Feb	322	314	356	388	316	335	~~330~~ 283	~~349~~ 304	277	224
Mar	258	276	288	319	263	285	~~274~~ 280	~~293~~ 299	233	240
Apr	294	268	337	266	298	266	~~309~~ 293	~~266~~ 248	266	248
May	257	255	272	255	263	255	~~264~~ 261	~~255~~ 253	255	253
Jun	266	266	266	266	266	266	~~266~~ 263	~~266~~ 263	266	263
Jul	239	239	239	239	239	239	~~239~~ 210	~~239~~ 210	239	210
Aug	232	232	232	232	232	232	~~232~~ 222	~~232~~ 222	232	222
Sep	238	238	238	238	238	238	~~238~~ 224	~~238~~ 224	238	224

Response to Comment 8-28

Comment Summary: The comment states that analysis of impacts on conductivity should be re-evaluated using the appropriate data.

Refer to Response to Comment 8-27.

Response to Comment 8-29

Comment Summary: The comment states that if the No Project Alternative is implemented and cyanide impacts are identified, the Regional Board will require that the impact be mitigated.

By definition, the No Action (No Project) Alternative does not include any mitigation. Nevertheless, the City of Santa Rosa realizes that the Regional Board will still have jurisdiction over discharge, even if no project is implemented. The EIR/EIS authors consider this comment to be related to Regional Board jurisdiction, not the Draft EIR/EIS.

Response to Comment 8-30

Comment Summary: The comment states that the final Draft EIR/EIS should include a discussion of the minimum concentration of dissolved oxygen predicted and a comparison of these minimum values to the Basin Plan water quality objectives. The comment also states that a more complete discussion of the actual months when dissolved oxygen impacts are predicted to occur for each of the hydrologic years for which the simulations were run should be included in the final EIR/EIS .

Concerning the comparison of dissolved oxygen values with Basin Plan water quality objectives, refer to Response to Comment 8-21.

The actual months when dissolved oxygen impacts are predicted to occur for each of the hydrologic years are shown in the following locations in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS: Table 4-30A (minimum dissolved oxygen, contingency discharge); Figure 4-15 (average dissolved oxygen, design discharge); Figure 4-38 (average dissolved oxygen, mitigation operations); Figure 4-51 (average dissolved oxygen, contingency discharge); and Figure 4-61 (average dissolved oxygen, cumulative impacts).

Response to Comment 8-31

Comment Summary: The comment states that a more complete discussion of the actual months when biostimulatory substances impacts are predicted to occur for each of the hydrologic years for which the simulations were run should be included in the final EIR/EIS.

The actual months when biostimulatory substances impacts are predicted to occur for each of the hydrologic years are shown in the following locations in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS: Figures 4-13 and 4-14 (design discharge); Figures 4-36and 4-37 (mitigation operations); Figures 4-44 through 4-49 (contingency discharge); and Figures 4-59and 4-60 (cumulative impacts).

Response to Comment 8-32

Comment Summary: The comment states that a more complete discussion of the actual months when turbidity impacts are predicted to occur for each of the hydrologic years for which the simulations were run should be included in the final EIR/EIS.

The actual months when turbidity impacts are predicted to occur for each of the hydrologic years are shown in the following locations in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS: Figure 4-14 (design discharge); Figure 4-37 (mitigation operations); Figures 4-47 through 4-49 (contingency discharge); and Figure 4-60 (cumulative impacts). These figures show impacts on planktonic algae, and changes in planktonic algae are used to evaluate changes in turbidity.

Response to Comment 8-33

Comment Summary: The comment states it should be clarified whether the following statement on page 4.6-139 was based on a review of actual data or on model simulations: "For the purposes of this analysis, the incremental (cumulative Project) discharge from other communities was assumed not to lower the baseline conductivity in the Russian River above the Laguna, and will probably cause conductivity to increase".

Alternative 5A will cause conductivity in the Russian River above the Laguna to exceed the point of significance, as described in Impact 6.9.1 on Page 4.6-108 of the Draft EIR/EIS. The analysis of Project impacts on conductivity was based on existing conductivity conditions in the River. The statement referred to in Comment 8-33 was made in the section that evaluated cumulative impacts on conductivity in the Russian River. The assumption made in the cumulative analysis that cumulative projects (i.e., increased discharge from upstream Russian River communities) would not lower the existing condition baseline conductivity was made because of lack of data (reported to the Regional Board) on the conductivity of effluent discharged by such communities. An alternative assumption would have been that the increased discharge from these communities would reduce the conductivity in the River relative to existing conditions. The alternative assumption would have decreased the likelihood of finding a significant cumulative impact on conductivity. Thus, the assumption that discharge from other communities would not lower the baseline conductivity in the Russian River above the Laguna was conservative.

The assumption is validated by qualitative data about the conductivity of wastewater discharges of upstream Russian River communities. The EIR/EIS authors made a written request of the cities of Ukiah, Cloverdale, and Healdsburg to provide information on conductivity and/or TDS in their treated effluent, and, if that information was not available, to provide the source of their water supply and the conductivity and/or TDS of that supply. From these inquiries the EIR/EIS authors learned that Ukiah, Cloverdale, and Healdsburg do not measure conductivity or TDS in their treated effluent. Much of the water supply for these cities comes from the Russian River. The remaining water

comes from wells with conductivity and/or TDS concentrations that were reported to equal or exceed that found in the Russian River. Since water does not decrease in conductivity as it passes through the Ukiah, Cloverdale, or Healdsburg treatment systems, the EIR/EIS authors considered the assumption that the conductivity in the effluent of Ukiah, Cloverdale, and Healdsburg would be equal to or higher than the baseline conductivity in the Russian River above the Laguna to be reasonable.

The following changes are made to the Draft EIR/EIS:

Page 4.6-139 and page 165, Appendix I-16. The Conductivity Evaluation Above The Laguna section is revised as follows:

> For purposes of this analysis, the incremental (cumulative Project) discharge from other communities was assumed not to lower the baseline conductivity in the Russian River above the Laguna, and will probably cause conductivity to increase. This assumption is based on the fact that Ukiah, Cloverdale, and Healdsburg derive much of their water supply from the Russian River. The remaining water comes from wells with conductivity and/or TDS concentrations that equal or exceed that found in the Russian River (pers. comm. Frank Noyd, City of Ukiah; Tony Villa, City of Cloverdale; Dick Pusick, City of Healdsburg). As it passes through the treatment system, water cannot decrease in conductivity without the use of reverse osmosis or similar technology, and none of these communities have such capability. Therefore, although conductivity is not measured in their treated effluent (pers. comm. Frank Noyd, City of Ukiah; Tony Villa, City of Cloverdale; Dick Pusick, City of Healdsburg), the future incremental discharge from Ukiah, Cloverdale, and Healdsburg is expected to result in equal or higher conductivity than the baseline conductivity in the Russian River above the Laguna. Since the 20 percent design discharge to the Russian River above the Laguna is estimated to cause a significant impact on conductivity, this impact of cumulative projects will also be considered significant.

Response to Comment 8-34

Comment Summary: The comment asks that the cumulative impacts analysis be expanded to include dry and wet years.

The analysis of Project impacts in the future when currently planned (but not yet implemented) projects will occur (cumulative analysis) is typically evaluated to a lesser degree of detail in CEQA and NEPA documents because of the uncertainty associated with the assumption that the planned projects will be implemented. The cumulative impacts analysis for Santa Rosa Project alternatives was conducted for the normal hydrologic condition because the EIR/EIS authors consider the compounding assumptions of extreme hydrologic conditions (wet or dry year) and future project implementation to be too speculative to be useful. Nonetheless, the EIR/EIS authors agree with the implication in the comment that some water quality impacts are more likely to occur in a dry year than were evident from the normal year analysis, and this is

acknowledged on page 4.6-142. The actual months in which cumulative impacts in the normal hydrologic year would occur are identified in Figures 4-59 through 4-62 Appendix I-17 (Water Quality Impacts Analysis, Volume II - Figures).

Response to Comment 8-35

Comment Summary: The comment refers to Impact 5.5.1, concerning the potential for storage reservoirs to increase nitrate concentrations in the groundwater.

Refer to Response to Comment 8-3.

Response to Comment 8-36

Comment Summary: The comment refers to Impact 5.5.1, concerning the potential for storage reservoirs to increase nitrate concentrations in the groundwater.

Refer to Response to Comment 8-3.

Response to Comment 8-37

Comment Summary: The comment states that the proposed mitigation regarding California red-legged frog may not be adequate and that the Regional Water Quality Control Board would need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

The EIR/EIS authors agree that the Regional Water Quality Control Board would need assurances from the appropriate resource agencies regarding proposed Project mitigation before adopting a Basin Plan amendment. However, no Basin Plan Amendment is necessary for the proposed Project. Refer to Response to Comment 8-3. Refer to pages 17, 18, 20 and 21 in Appendix D-5 (Permitting Report) of the Draft EIR/EIS for discussion regarding the process for Section 404 permit evaluation and U.S. Fish and Wildlife Service/National Marine Fisheries Service Section 7 consultation.

Response to Comment 8-38

Comment Summary: The comment states that the proposed mitigation regarding Lobb's aquatic buttercup may not be adequate and that the Regional Water Board will need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

A finding of non jeopardy in relation to Lobb's aquatic buttercup would not be required for approval of a Basin Plan Amendment. since it is not a state or federally listed or proposed endangered or threatened species. However, no Basin Plan Amendment is necessary for the proposed project. Refer to Response to Comment 8-3.

Response to Comment 8-39

Comment Summary: The comment states that the proposed mitigation regarding northwestern pond turtle may not be adequate and that the Regional Water Board will need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

A finding of non jeopardy in relation to the northwestern pond turtle would not be required for approval of a Basin Plan Amendment since it is not a federally or state listed or proposed endangered or threatened species. However, no Basin Plan Amendment is necessary for the proposed project. Refer to Response to Comment 8-3.

Response to Comment 8-40

Comment Summary: The comment states that the proposed mitigation regarding sensitive native aquatic plant communities may not be adequate and that the Regional Water Board will need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

A finding of non jeopardy would not be required for sensitive native aquatic plant communities unless it is shown that this habitat supports a federally-listed species. Impacts to federally-listed species are identified under Criterion 9.5.1 on page 4.9-55 of the Draft EIR/EIS.

Under the Federal Endangered Species Act, the Regional Water Board may be asked to consult with the U.S. Fish and Wildlife Service (USFWS) regarding the potential effect of adoption of a Basin Plan amendment on endangered or threatened species. Following consultation, the USFWS would issue their biological opinion on the effect of a Basin plan amendment on endangered species. In order to legally adopt a Basin Plan Amendment, the USFWS would need to determine that the action of the Regional Board would not jeopardize the continued existence of a species. Any action resulting in effects to state-listed species would be subject to similar procedures under the State Endangered Species Act. However, no Basin Plan Amendment is necessary for the proposed project. Refer to Response to Comment 8-3.

Response to Comment 8-41

Comment Summary: The comment states that the proposed mitigation regarding California red-legged frog, in terms of cumulative impacts, may not be adequate and that the Regional Water Board will need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

Refer to Response to Comment 8-37.

Response to Comment 8-42

Comment Summary: The comment states that the proposed mitigation regarding Lobb's aquatic buttercup, in terms of cumulative impacts, may not be adequate and that the Regional Water Board will need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

Refer to Response to Comment 8-38.

Response to Comment 8-43

Comment Summary: The comment states that the proposed mitigation regarding northwestern pond turtle, in terms of cumulative impacts, may not be adequate and that the Regional Water Board would need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

Refer to Response to Comment 8-39.

Response to Comment 8-44

Comment Summary: The comment states that the proposed mitigation regarding sensitive native aquatic plant communities, in terms of cumulative impacts, may not be adequate and that the Regional Water Board would need to obtain a finding of non jeopardy from the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers in order to approve a Basin Plan amendment.

Refer to Response to Comment 8-40.