

**COMMENT LETTER 85 - RUSSIAN RIVER WATERSHED PROTECTION COMMITTEE,
BRENDA ADELMAN (OCTOBER 7, 1986), RECEIVED OCTOBER 7, 1986**

Response to Comment 85-1a

Comment Summary: The comment states that the submitted comments in conjunction with the comments of Marion Moses, MD and John Rosenblum, PhD. comprise the comments of the Russian River Watershed Protection Committee. Comments written for the Public Hearing Held on September 24, 1996 have also been included.

Comments submitted by Marion Moses are responded to in Responses to Comments 85-512 through 85-525. Comments submitted by John Rosenblum, PhD. are responded to in Responses to Comments 118-1 to 118-215. Comments from the September 24, 1996 Public Hearing are responded to in Responses to Comments 85-467 through 85-510.

Response to Comment 85-1b

Comment Summary: The comment expresses general concern that the issue of cost may have already prejudiced decision makers, referring to newspaper articles that have emphasized the issue of cost. The comment also makes a general assertion that the process has produced an unfair cost disadvantage to the river option, and makes a specific assertion that unfair comparisons have shown irrigation and reuse options to be more expensive by sizing reservoirs to hold one billion gallons or more.

The Draft EIR/EIS addresses much more than the cost of the Project, and only one of the evaluation criteria used to determine environmental impacts is cost based. The editorial judgment of the news media is beyond the control of the authors of the EIR/EIS and therefore no further response can be made to this part of the comment.

With respect to the one specific allegation of unfair cost comparison cited in the comment, the decision not to include reservoirs smaller than one billion gallons was based upon factors other than just cost, as described in Appendix D-6 (Documentation in Support of Elimination of Alternatives), of the Draft EIR/EIS including logistical factors such as physical constraints and manageability of the system. Because an additional 4,400 million gallons of storage is necessary to meet future system requirements, using reservoirs of less than 1,000 million gallons in size would require at least five new reservoir sites. As explained in Appendix D-6, to avoid developing an unnecessarily complex system, and considering that the City already has three major storage facilities, the decision was made to eliminate reservoirs of less than 1,000 million gallons capacity from further consideration.

The assumption implicit in the comment that a system of multiple small storage reservoirs would be less costly than the alternatives using one or two larger reservoirs has not been proven, and as indicated by Table 1 on page 27 of Appendix D-6 of the Draft EIR/EIS, smaller reservoirs do not have an inherent cost advantage. For nearly 40 sites of

less than 1,000 million gallons evaluated in Appendix D-6, the estimated basic construction cost for potential reservoirs ranged from less than \$2,000 to more than \$54,000 per acre/foot of storage, in comparison to a basic construction cost for larger reservoir sites of \$1,100 to \$3,700 per acre/foot of storage. In addition, a system of multiple storage reservoirs would be likely to have higher operating costs due to the need to move water between reservoirs to maintain the appropriate overall storage volumes.

Response to Comment 85-2

Comment Summary: The comment states that many probable future costs for river discharge, such as compliance with more stringent standards, have not been considered and thereby have avoided cost analysis.

The Draft EIR/EIS considered all existing and proposed standards, including those promulgated by the U.S. Environmental Protection Agency, California Department of Toxic Substances Control and The North Coast Regional Water Quality Control Board, relevant to discharge in the analysis of the impacts for Alternative 5 (Discharge). To consider possible future requirements for which specific standards have not been proposed would be highly speculative and inappropriate. The actual cost to the City of Santa Rosa for implementation of any component of any alternative is subject to uncertainty about costs resulting from future regulations. The comment does not delineate any other instances of probable future costs, and therefore a more specific response can not be made to this comment.

Response to Comment 85-3

Comment Summary: The comment challenges the City Council and Board of Public Utilities to read the entire document and all the comments and replies before they make a decision. The comment also asks "who of them would be willing to sign an affidavit assuring that they have read the entire set of documents." The comment also states that reading the first three volumes gives a very limited view of the problems of this work; that it asks the reader to take on faith that the analysis of impacts is correct and that the meat of the document is in the studies.

The Board of Public Utilities and City Council have been provided documentation for this project. Extensive backup information for analyses is provided in the appendices of the Draft EIR/EIS to allow the reader to verify the conclusions that are presented in Volumes I through III. Refer to Master Response 1, located in Section 6.2 of this document, regarding document organization. Refer to Response to Comment 65-64 for a further response regarding Board members involvement in the process. At the time of certification, the City Council and the Board of Public Utilities will be required to exercise their independent judgment and make their own independent determination whether the EIR is adequate and satisfies the requirements of the law.

Response to Comment 85-4

Comment Summary: The comment states that the EIR/EIS virtually ignores impacts to the Russian River business and the tourist industries.

Refer to Master Response 7, located in Section 6.2 of this document, regarding impacts to the tourist economy.

Response to Comment 85-5

Comment Summary: The comment states that the Draft EIR/EIS does not address potential impacts to the Russian River fishing industry.

Analysis of impacts to aquatic biota is presented in Section 4.9 of the Draft EIR/EIS. Impacts to Russian River fisheries are not predicted to be significant. Refer to Master Response 7, located in Section 6.2 of this document, regarding tourism and recreational impacts.

Response to Comment 85-6

Comment Summary: The comment states that there have been no studies of how tourism will be affected, in light of the fact that people regularly ask River businesses if the River is safe.

Refer to Master Response 7, located in Section 6.2 of this document, regarding impacts to the tourist economy.

Response to Comment 85-7

Comment Summary: The comment contends that impacts on swimmers were not evaluated.

Naturally occurring organisms that can cause health effects in swimmers are common to surface water bodies, and the Draft EIR/EIS has not attempted to evaluate these effects. The document has, however, evaluated potential effects of Project discharges on swimmers. Refer to page 4.7-32 of the Draft EIR/EIS which discusses exposure pathways, including swimming. The conclusions of the human health risk assessment are presented on page 4.7-61 of the Draft EIR/EIS. The conclusion is that discharge does not pose a risk.

Response to Comment 85-8

Comment Summary: The comment states that increased discharges will exacerbate the situation where tourists tell friends that they got sick from swimming in the river. The comment also states that the Draft EIR/EIS has ignored this fact.

Refer to Master Response 7, located in Section 6.2 of this document, regarding impacts to the tourist economy.

Response to Comment 85-9

Comment Summary: The comment states that the document was presented in a disjointed and repetitive manner. The comment states that the first three volumes are organized by impact rather than project, making it impossible to track a single project.

Refer to Master Response 1, located in Section 6.2 of this document, concerning document organization.

Response to Comment 85-10

Comment Summary: The comment states there is repetition, graphs are repeated numerous times and information appears again and again in similar and slightly different forms.

Refer to Master Response 1, regarding document organization, located in Section 6.2 of this document. If the intent of this comment is to suggest that there are inconsistencies in the presentation of data, there are no specifics given and the EIR/EIS authors, therefore, are not able to respond more specifically.

Response to Comment 85-11

Comment Summary: The comment states that much of the water quality data was replicated in many different sections.

The same water quality data were provided in different sections throughout the Draft EIR/EIS when the data were necessary for an understanding of the existing conditions or expected impacts of the Project.

Response to Comment 85-12

Comment Summary: The comment states that the fish migration study for 1995 has a great deal of material copied word for word from the 1994 study.

The fish migration study is an ongoing study where each new year's data build upon the data from the studies that were conducted in previous years. Therefore, the report for the 1995 study should merely add the new data and any new conclusions from the 1995 study season to the report that was prepared for the 1991-1994 study seasons. In such a case it would be appropriate to copy, word for word, text from one report to the next. The 1994 document was published in order to provide a preliminary stage report for the public to review.

Response to Comment 85-13

Comment Summary: The comment states that the maps are of poor quality and are difficult to read.

The comment does not provide sufficient information to determine which maps the comment refers to. Additionally, the comment does not describe what aspects (e.g., accuracy, scale, etc.) of the maps are of poor quality and how these affect the analysis provided in the Draft EIR/EIS. Therefore, no further response can be provided.

Response to Comment 85-14

Comment Summary: The comment states that sixty days was not enough time to review the document and the lack of good organization made the process more difficult and time consuming.

Refer to Master Response 4 which addresses time for review of the EIR/EIS and Master Response 1 which addresses document organization. Both Master Responses are located in Section 6.2 of this document.

Response to Comment 85-15

Comment Summary: The comment states that the CD ROM was difficult to utilize and the cost of the document was “prohibitive.”

Refer to Master Response 3 which addresses availability and cost of the document and Master Response 1 which addresses document organization. Both Master Responses are located in Section 6.2 of this document.

Response to Comment 85-16

Comment Summary: The comment requests a list of who received free copies of the document.

Approximately 700 Draft EIR/EIS Summaries were distributed free of charge. Refer to Master Response 3 located in Section 6.2 of this document for a list of those who received the Draft EIR/EIS.

Response to Comment 85-17

Comment Summary: The comment states that the Sonoma County Water Agency produced a six volume EIR at a total of \$93 and provided 85 days for review.

As stated in CEQA Guidelines 15045(b), “Public agencies may charge and collect a reasonable fee for a copy of an environmental document, not to exceed the actual cost of reproducing a copy.” The Santa Rosa Subregional Long-Term Wastewater Project Draft EIR/EIS was provided to the public at a cost of reproducing a copy. Also, as stated in

CEQA 15087(c), “In order to provide sufficient time for public review, review periods for the draft EIRs should not be less than 30 days nor longer than 90 days.” The Santa Rosa Subregional Long-Term Wastewater Project Draft EIR/EIS was circulated for 65 days. Also, refer to Master Responses 3 and 4, located in Section 6.2 of this document, which respectively address the cost and availability, and time for review of the document.

Response to Comment 85-18

Comment Summary: The comment states that estrogenic effects are disregarded in the human health risk assessment and that the Draft EIR/EIS ignores evidence presented by Dr. Theo Colborn in her book, Our Stolen Future, and comments made by Dr. Marion Moses.

The study of “estrogenic chemicals” or endocrine disrupters is a new area of investigation and there is still much debate in the scientific community about the nature of endocrine disrupters and the concentrations at which they might act. No scientific consensus has been reached on effective dosages that may be used in risk assessment equations. The lack of information makes it inappropriate to assign quantitative values for use in risk equations; actual risk values may be higher or lower. Therefore, this issue is identified as an area of uncertainty in the risk assessment in Appendix J-3 (Human Health Risks From Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

The release of Dr. Colborn’s book occurred as the Draft EIR/EIS was in final preparation and it was not available for review prior to release of the Draft EIR/EIS. However, the EIR/EIS authors are aware of, and based their analysis in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS on, much of the scientific literature upon which she drew to write the book. Dr. Marion Moses’ comments are addressed in Responses to Comments 85-512 through 85-525. Refer also to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-19

Comment Summary: This comment states that most of the data presented in the EIR/EIS are presented in the form of averages “but life doesn’t present itself in averages and it is the extremes that are filled with danger”.

Averages are presented to provide the reader with a summary of information, but data are presented in the appendices to the Draft EIR/EIS, and analyses consider the variation in data. Refer to Response to Comment 12-10. Because the comment does not address a specific concern regarding use of averages, a more specific response is not possible.

Response to Comment 85-20

Comment Summary: The comment states concern that the real risks are not being considered in the Draft EIR/EIS. The comment then quotes Our Stolen Future which states that the effects of chemicals may have different effects on different life stages, the effect are most often manifested in offspring, the timing of exposure is critical, and exposure during early development may manifest later.

The assessment of risks to human health in Appendix J-3 (Human Health Risks From Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS was conducted using the best available methods that are generally accepted by the scientific community. Refer also to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-21

Comment Summary: The comment expresses a concern about the validity of water quality data.

The laboratory has a Quality Assurance/Quality Control plan to assure accurate reporting of data. Refer to Response to Comment 85-107 for additional discussion of Quality Assurance procedures.

Response to Comment 85-22

Comment Summary: The comment states that the Draft EIR/EIS fails to consider impacts of chemical exposure to fetuses, the immune-compromised, the elderly, and other sensitive subpopulations. It also notes that differences (in chemical absorption and processing) between men and women are not addressed and that the relationship between bioaccumulation and prostate and breast cancer are not discussed.

The EIR/EIS authors recognize that exposure of sensitive subpopulations is an important consideration in the risk assessment process. Experimental toxicity data have been adjusted to account for sensitive populations as described on pages B-1 through B-17 of Appendix J-3 (Human Health Risks From Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Chemical toxicity information is based on fetal toxicity where such information is available (e.g., the toxicity reference dose for carbon disulfide is based on the occurrence of birth defects) and is often derived from studies that included both male and female animals (methylene chloride, diethylhexylphthalate, heptachlor, etc.). Because both male and female animals were used in the studies, the data are expected to adequately characterize toxicity to both sexes. The link between human cancers and bioaccumulative chemicals, such as the endocrine disrupter DDT and its metabolites, is discussed in Section 3 of Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS.

Response to Comment 85-23

Comment Summary: The comment questions whether the 1980, 1985, and 1990 population numbers used for the final demographic data reflect the exact same sphere of influence as the 1995 data. The comment also questions the calculation of the persons per household numbers used for Rohnert Park and Cotati.

The final demographic data are based on the Association of Bay Area Governments (ABAG) *Projections '94*. The sphere of influence boundaries for individual cities, and the resulting demographic statistics, may not be the same for all years because the sphere of influence boundaries change over time as local General Plans are updated.

The same methodology was used to calculate the persons per household for all cities including Rohnert Park and Cotati. To calculate the persons per household, total household population was divided by total households. While the basis for the demographic data used for the analysis is ABAG data, each city in the study reviewed and confirmed the data.

Response to Comment 85-24

Comment Summary: The comment asks if the 21 mgd capacity average dry weather flow carries throughout the document.

The 21 million gallons per day (mgd) capacity is the average dry weather flow design capacity required to provide for buildout of the General Plans (in effect as of April 1994) of the member entities of the Subregional System. In this context, the 21 mgd capacity carries through the document.

Response to Comment 85-25

Comment Summary: The comment asks how much influence do ABAG numbers have in determining capacity.

As stated in Section 4.18 of the Draft EIR/EIS (page 4.18-1), the total projected growth determined by buildout of the General Plans of the member entities of the Subregional System was used as the basis for determining the required capacity of the system. Also as stated in Section 4.18, in order to provide an indicator of the time frame for buildout, ABAG projections for the years 2000 and 2010 were used to apportion the total growth for each of the two benchmark years.

Response to Comment 85-26

Comment Summary: The comment asks why the ABAG numbers are so close for some communities (such as Sebastopol and Santa Rosa) and so different for others (such as Cotati and Rohnert Park).

The ABAG projections and the General Plans may use significantly different ratios, such as the number of persons per household, in projecting growth. Page 2 in Appendix D-2 (Memorandum on Comparison of ABAG Year 2010 Projections and General Plan Buildout Estimates) of the Draft EIR/EIS notes that the difference in persons per household used by ABAG and the General Plan affected the projections for Cotati. Page 2 in Appendix D-1 (Memorandum on Final Demographic Data to be used for the Santa Rosa Long-Term Wastewater EIR/EIS) of the Draft EIR/EIS indicates that the lower numbers used for Rohnert Park resulted from the City predicting slower growth than was previously indicated by ABAG.

Response to Comment 85-27

Comment Summary: The comment indicates that Appendix D-2 (Memorandum on Comparison of ABAG Year 2010 Projections and General Plan Buildout Estimates) states that growth is far less for the project, than for the county, but the numbers cited do not make sense and are in conflict with Appendix D-4 (Wastewater Flow Projections).

The numbers cited in Appendix D-2 of the Draft EIR/EIS (which are also given in Section 5 of the Draft EIR/EIS) represent the maximum growth induced by any of the project alternatives based upon the input-output model used for analysis of economic impacts. The cited population increase of 5,790 is based upon the creation by the Project of jobs either directly (as through construction employment) or indirectly (as in increases in retail employment resulting from the increased income due to construction employment). As explained in both Appendix D-1 (Memorandum on Final Demographic Data to be used for the Santa Rosa Long-Term Wastewater EIR/EIS) and Section 5 of the Draft EIR/EIS, total growth in Sonoma County is influenced more significantly by other factors than the Project. The numbers in Appendix D-4 of the Draft EIR/EIS are for the portion of this total growth in the service area of the Subregional System, and do not represent growth induced by the Project.

Response to Comment 85-28

Comment Summary: The comment indicates that the discussion of growth inducement in Appendix D-2 (Memorandum on Comparison of ABAG Year 2010 Projections and General Plan Buildout Estimates) does not seem to flow clearly from the general discussion of the use of ABAG projections.

Growth inducement is a separate topic discussed in Section 5.3 of the Draft EIR/EIS and is not intended to rely on the use of ABAG projections. Also, an additional page was mistakenly inserted into Appendix D-2 in the Draft EIR/EIS. Refer to the correct Appendix D-2 in Section 6.4, Replacement Pages.

Response to Comment 85-29

Comment Summary: The comment states that the Draft EIR/EIS does not include an analysis of possible water savings from a tiered system of water charges and asks what the savings in water usage and savings to the rate payer would be if there were a four tier cost basis. The comment also asks for a reanalysis based upon the assumption that the greater the cost of water usage, the more public habits would change and more conservation realized.

A tiered system of water charges was not included in the Draft EIR/EIS because it would not provide for reliable and quantifiable reductions in wastewater generated by buildout of the General Plans of the member entities of the Subregional System. As stated on page 1 in Appendix D-4 (Wastewater Flow Projections) of the Draft EIR/EIS, conservation measures were only selected for evaluation in the Draft EIR/EIS if they would generate sustainable and quantifiable wastewater reductions. Conservation measures which involve sizing or operation of equipment, such as low-flow shower heads or low-flow toilets, meet these criteria. Measures which involve a change in behavior, such as educational programs or tiered pricing systems do not generate sustainable and quantifiable wastewater reductions. Because such measures depend upon changing individual behavior, it is not certain how much water savings per person will result. Studies from other jurisdictions are not considered reliable as predictors due to potential differences in population or socioeconomic conditions. Such measures also may not be sustainable due to changes in attitudes or socioeconomic conditions over time.

Dependence upon measures which are not sustainable in determining Project capacity would create significant reliability risks in future operations, and therefore would not meet the statement of purpose and need for the project. Because a tiered system of water charges would not meet the statement of purpose and need for the Project, such a system was not analyzed.

Response to Comment 85-30

Comment Summary: The comment asks for an analysis of lower system costs for all project alternatives resulting from a tiered system of water charges.

Refer to Response to Comment 85-29.

Response to Comment 85-31

Comment Summary: The comment makes a recommendation concerning use of a fourth tier in water rates.

While not included in the Project description, conservation measures of this sort continue to be evaluated by the Utilities Department. Refer to Response to Comment 85-29.

Response to Comment 85-32

Comment Summary: With respect to Appendix D-4 (Wastewater Flow Projections), the comment indicates that the section repeats much of what is in previous sections, and that it feels disjointed and disconnected from Appendices D-1 (Memorandum on Final Demographic Data to Be Used for the Santa Rosa Long-Term Wastewater EIR/EIS) through D-3 (Water Conservation Element).

Any material from previous sections that is repeated in Appendix D-4 of the Draft EIR/EIS is necessary to understand the subject of that Appendix, which is Wastewater Flow Projections. Neither this Appendix nor Appendices D-1 through D-3 of the Draft EIR/EIS rely upon other appendices; nor are they intended to be read sequentially, as they present different aspects of the Project.

Response to Comment 85-33

Comment Summary: The comment asks for an explanation of the difference between the wastewater generation rates for students and “ordinary citizens” used in Appendix D-4.

As explained on page 4-3 in Appendix D-4 (Wastewater Flow Projections) of the Draft EIR/EIS, the generation rate for students at Sonoma State University is based upon a full-time equivalent student population of 5,800. This population would include students who do not reside on the campus, as well as the minority of the total student population who do reside on campus. Therefore, the overall wastewater generation rate for the University would reflect a high percentage of students who are contributing to wastewater flow for only a portion of the day. In addition, page 4-3 of Appendix D-4 indicates that the University is already practicing extensive conservation, which would also contribute to their lower per capita wastewater generation. The comment inaccurately calculates a 1994 household wastewater generation rate by dividing the 1994 Santa Rosa wastewater flow per household of 192.3 gpd by 2.39 persons per household (which is clearly shown in Table 4.3-4 on page 4-14 of Appendix D-4 of the Draft EIR/EIS as the projected Santa Rosa household size at buildout). A more accurate estimate of the 1994 Santa Rosa household generation rate is obtained by dividing the 1994 waterflow per household by the 1994 persons per household for Santa Rosa by 2.49 (as shown in Table 4.3-4), resulting in a wastewater flow of 77.2 gpd per capita.

Response to Comment 85-34

Comment Summary: The comment quotes from a 1995 Report of Waste Discharge and asks for an explanation of discrepancies in existing and projected household wastewater flow rates between that document and the Draft EIR/EIS.

There is no valid comparison that can be made between the projected household wastewater flow rates from the 1995 Report and the Draft EIR/EIS. The quotation in the comment from the 1995 Report indicates use of “typical” wastewater generation rates and household size, as well as assumed reductions in wastewater generation rates due to

conservation. The projected flow rates in the Draft EIR/EIS are based upon a detailed, multi-step calculation specific to each of the member entities of the Subregional System and with specific calculations for wastewater flow reductions from each conservation measure. This process is fully described in Exhibit A of Appendix D-4 (Wastewater Flow Projections) of the Draft EIR/EIS. The reference in the comment to a 7.5 gpd per capita difference in pre-conservation flow rates between the 1995 report and the Draft EIR/EIS is based upon an incorrect calculation. The correct calculation gives a difference of 2.2 gpd per capita. (Refer to Response to Comment 85-33 for a discussion of the correct calculation.)

Response to Comment 85-35

Comment Summary: Regarding Appendix D-4 (Wastewater Flow Projections) of the Draft EIR/EIS, the comment asks what is Santa Rosa's commodity rate structure. The comment also asks why there is no description of the rate structure in the Draft EIR/EIS and further asks that cost savings with that structure over a single rate system be analyzed.

A commodity rate structure, as used in Appendix D-4 of the Draft EIR/EIS, is defined under the Best Management Practices (BMPs) adopted by signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and monitored by the California Urban Water Conservation Council. The BMPs define commodity pricing as pricing by volume of use (as opposed to flat rates). The City of Santa Rosa water rate is \$1.58 per 1,000 gallons for customers inside the City and \$2.85 per 1,000 gallons for customers outside the City. The actual rates were not identified in Appendix D-4 of the Draft EIR/EIS because they are not relevant to the subject of Appendix D-4, which is projected water conservation and wastewater flow.

Refer to the Response to Comment 85-29 for a discussion of rate structures and water conservation. Analysis of multiple variations of rate structures is beyond the scope of the EIR/EIS.

Response to Comment 85-36

Comment Summary: The comment ask for a comparison of a four-tiered rate structure in terms of savings to the consumer as well as cost savings of irrigation and reuse alternatives.

Refer to Response to Comment 85-29.

Response to Comment 85-37

Comment Summary: The comment asks if the Sonoma County Water Agency (SCWA) conservation program were successful, why would they need to develop a plan to increase their diversions.

As part of the description of the existing Subregional System, the Draft EIR/EIS, on page 3.2-3, notes that the SCWA has provided water conservation information and education to its customers. The Draft EIR/EIS does not state that these measures are “successful”, nor does the Draft EIR/EIS characterize the success of the program in any way. Plans by the SCWA to increase water diversions are not the subject of this Draft EIR/EIS, and it is beyond the scope of this Draft EIR/EIS to analyze the need for future water diversions by the SCWA.

Response to Comment 85-38

Comment Summary: The comment asks if there are any statistics to quantify the success of SCWA conservation programs.

The EIR/EIS authors are unaware of any such statistics. Refer to Response to Comment 85-37.

Response to Comment 85-39

Comment Summary: The comment asserts that the residential flow generation without conservation in the Draft EIR/EIS is inconsistent with the estimate prepared around 1986 by CH2M Hill in conjunction with a previous EIR, and asks how the number in the Draft EIR/EIS was calculated and what assumptions were included. The comment also asks if actual flow was the basis for the residential flow generation numbers, and if so, how inflow and infiltration were calculated.

The Draft EIR/EIS, in Exhibit A of Appendix D-4 (Wastewater Flow Projections), provides a step-by-step description of the calculation of all wastewater flows. This Exhibit also includes an example calculation spreadsheet and tables showing the line by line calculation of residential wastewater flows for each of the member entities of the Subregional System. As stated in Exhibit A, the actual flows are measured average dry weather flows (ADWF), and would not include any inflow and infiltration. Therefore all of the wastewater flow projections that provide the basis for design of the Project are ADWF. Refer also to Response to Comment 85-34 for a discussion of the comparison of wastewater flow rates from the Draft EIR/EIS and those prepared by CH2M Hill.

Response to Comment 85-40

Comment Summary: The comment asks for a comparison of winter water bills to summer influent generation to determine how much inflow and infiltration is occurring.

Inflow and infiltration (I/I) can be estimated directly by comparing actual plant inflow to average dry weather flow (ADWF). Since both ADWF and I/I can be measured, this is a more direct approach to measuring I/I than reviewing winter water bills. ADWF was estimated as described in Appendix D-4 (Wastewater Flow Projections) of the Draft EIR/EIS. I/I was estimated as described in Appendix D-9 (Analysis of Results From Daily and Monthly Water Balance Model). Sizing of Project facilities considered both

the estimates of ADWF and I/I. However, because flows in the Russian River are ample to provide opportunities for discharge during wet weather when I/I is significant, ADWF is the controlling factor in sizing of Project facilities related to irrigation.

Response to Comment 85-41

Comment Summary: The comment asks how inflow and infiltration repairs can decrease flows significantly and allow for cost savings and downsizing of the system.

Although the City of Santa Rosa has an ongoing program of inflow and infiltration repairs, these actions would not result in any substantial downsizing of the system for the Project and therefore no sizable cost saving for the Project would result from inflow and infiltration repairs. Reduction in inflow and infiltration (I/I) does not affect storage or irrigation requirements, because flows in the Russian River are ample to provide opportunities for discharge during wet weather when I/I is significant. Reduction in I/I could result in a reduction in the size of the pipeline required to convey reclaimed water to the proposed discharge point on the Russian River under Alternative 5A. However the reduction in pipeline size would not result in a major change in the cost estimates as the only cost reduction would be in the cost of the pipeline material.

Response to Comment 85-42

Comment Summary: The comment asks whether winter water bills of consumers, representing actual household usage, are comparable with actual summer flow which eliminates inflow and infiltration.

As noted in Response to Comment 85-40, this comparison is not an accurate method of determining inflow and infiltration. Refer also to Responses to Comments 85-40 and 85-41 concerning inflow and infiltration in relation to the project.

Response to Comment 85-43

Comment Summary: In reference to Table 4.3-12 of Appendix D-4 (Wastewater Flow Projections) of the Draft EIR/EIS, the comment asks what is meant by conservation pricing. Also, with respect to what it characterizes as Santa Rosa's "limited program", the comment asks how the program qualifies as being in full compliance with Best Management Practices.

Conservation pricing, as used in Appendix D-4 of the Draft EIR/EIS is defined under the Best Management Practices (BMPs) adopted by signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and monitored by the California Urban Water Conservation Council. According to the BMPs such pricing includes:

- a. Rates designed to recover the cost of providing service; and
- b. Billing for water and sewer service based on metered water use."

According to the BMPs, conservation pricing is also characterized by one or more of the following components:

- “c. Rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates)
- d. Seasonal rates or excess-use surcharges to reduce peak demands during summer months;
- e. Rates based upon the long-run marginal cost or the cost of adding the next unit of capacity to the system;
- f. Lifeline rates.”

Santa Rosa complies with items a., b. and c. in the above definition, and therefore qualifies as having conservation pricing under the BMPs.

Response to Comment 85-44

Comment Summary: The comment asks for an explanation of how potential beneficial impacts of discharge were evaluated, specifically which riparian areas could be enhanced by discharges to the Russian River and Laguna de Santa Rosa.

Effects of alternative discharge rates are discussed in Appendix L-7 (Aquatic Biological Resources Impact Analysis Report) of the Draft EIR/EIS. Refer to the section starting on page 28 of Appendix L-7. Riparian areas downstream of discharge points in the Laguna de Santa Rosa and Russian River could be affected. However, riparian areas in the Russian River will be much less affected because reclaimed water makes a much smaller percentage contribution to the river, and because of its hydraulic characteristics (slope of bottom and banks). Thus the primary area affected will be the Laguna de Santa Rosa downstream of the discharge at Delta Pond. Effects of alternative discharge rates are also discussed in Appendix L-7.

Response to Comment 85-45

Comment Summary: The comment requests a definition of Laguna flows.

Laguna flows are flows of water in the Laguna de Santa Rosa. Hydrology of the Laguna de Santa Rosa is described in the Draft EIR/EIS in Section 4.4, Surface Water Hydrology, beginning on page 4.4-11. Table 4.4-3 on page 4.4-12 of the Draft EIR/EIS shows estimated and measured flows in the Laguna de Santa Rosa system.

Response to Comment 85-46

Comment Summary: The comment asks what is meant by low flow.

The Draft EIR/EIS has not established a cut-off point below which flows in the Laguna de Santa Rosa are considered "low". However, a review of Table 4.4-3 on page 4.4-12 of the Draft EIR/EIS shows that average flows in the Laguna de Santa Rosa at Guerneville Road fluctuate from 4 to 657 cubic feet per second. Average flows from May to October are from 4 to 32 cfs, all of which could be considered "low" as compared to the peaks in the winter months. However, flows in this low range can also extend into the winter months during dry years.

Response to Comment 85-47

Comment Summary: The comment asks if a summer discharge is proposed.

As described on page 3.1-12 of the Draft EIR/EIS, the Project is based on a discharge season from 1 October through 14 May each year. The Project does not include summer discharge.

Response to Comment 85-48

Comment Summary: The comment asks if discharge during October and November would have a negative effect on riparian plants rather than benefiting riparian areas.

The Draft EIR/EIS did not project any benefits to riparian plants. As stated on page 4.10-55 of the Draft EIR/EIS, "The discharge itself will increase the amount of water in the Laguna, but this increase will be negligible, except in very dry years. In those dry years, the effect of discharge will be to dampen the annual fluctuations: the hydrologic regime with discharge will be more closely approximate a slightly wetter year. This will not have a significant effect on wetlands." Thus, beneficial or negative effects on riparian vegetation are not expected. The benefit will be an increase of aquatic habitat, as described in Appendix L-7 (Aquatic Biological Resources Impact Analysis Report) of the Draft EIR/EIS. Increased discharge will increase the amount of Warmwater-A habitat available in the Laguna during the discharge period.

Response to Comment 85-49

Comment Summary: The comment objects to the fact that Alternative 2M was not carried forward for analysis in the Draft EIR/EIS.

Virtually none of the alternatives reviewed during screening was carried forward exactly as it was proposed. Components of various alternatives evaluated during screening were combined to develop the set of alternatives that is addressed in the Draft EIR/EIS. Alternative 2M included the following elements: maximum conservation, Russian River discharge at 1 percent, urban irrigation, South County agricultural irrigation, and the Adobe Road reservoir site. Many of these elements are included in Alternative 2B, South County Agricultural Irrigation using the Adobe Road reservoir site. This option includes 1 percent Russian River discharge, urban irrigation, South County agricultural irrigation, and the Adobe Road reservoir. The only element that was not carried forward is

maximum conservation. Refer to Master Response 17, located in Section 6.2 of this document, for a discussion of water conservation.

Response to Comment 85-50

Comment Summary: The comment contends that the City stopped having meetings of the Technical Review Group when the environmental member began asking too many questions.

Technical Review Group meetings were held when specific information was to be presented to the group. Meetings were held relatively frequently (approximately monthly) during the process of alternatives screening and development of the scope of work. Regular meetings were suspended when the scope of work was finalized and studies were in progress, but had not progressed far enough to report results. At that point there was not enough information to be distributed each month to make monthly meetings valuable. From then on, meetings were called at specific milestones to report results to the group. Meetings were not stopped because any one of the members asked too many questions.

Response to Comment 85-51

Comment Summary: The comment asks for consideration of a multiple tiered fee system for water charges.

Refer to Response to Comment 85-29 regarding tiered fee systems. Appendix D-3 (Water Conservation Element) of the Draft EIR/EIS provides documentation regarding conservation measures. Because the comment provides no detail regarding the basis for disagreement regarding alternative technologies a more specific response is not possible.

Response to Comment 85-52

Comment Summary: The comment asks why double plumbing and manufacturing reuse are not analyzed.

The City of Santa Rosa has an existing urban reclamation program. Although specific industrial and commercial users have not been identified, the City is pursuing new industrial users on an ongoing basis, and can add such users either to the existing system or to pipelines included in Project alternatives. Other than pipeline construction, which is discussed in the Draft EIR/EIS, industrial and commercial use does not have environmental impacts because reclaimed water would be used entirely within existing facilities. Double plumbing of new commercial facilities could not be addressed on a project level, because it would require identification of specific use areas, which is not feasible at this time. Double plumbing can be incorporated in new areas, and evaluated as part of the environmental documents for specific projects.

Response to Comment 85-53

Comment Summary: The comment states that page 16 was missing from Appendix D-6 (Documentation in Support of the Elimination of Alternatives), so the analysis of Lake Sonoma Discharge was not available.

It appears that page 16 of Appendix D-6 was omitted from the printed copies of Appendix D-6, Documentation in Support of the Elimination of Alternatives, of the Draft EIR/EIS but it is contained in the CD ROM version. The missing page is reproduced here, and included in Section 6.4, Replacement Pages:

discharge would be different. Reclaimed water would mix in the reservoir and would therefore be released from the dam year-round.

Purpose and Need

This project does provide wastewater disposal and provides for beneficial reuse of reclaimed water by returning water to the Russian River.

Cost

Cost of constructing a project to pipe wastewater to Lake Sonoma would be about \$70 million. Because of pumping costs, annual operations and maintenance costs for this options would be relatively high, at about \$5 million per year. These costs are considerably higher than a 20% discharge direct to the Russian River, which has a \$6 million capital cost and a relatively small operational cost of about \$100,000 per year.

Technology

The technology for pipelines and pump stations is readily available.

Logistics

A pipeline and pump station could feasibly be located; however, this option would require long-term management of 26 miles of pipeline with 675 feet of lift. A closer discharge location would certainly be logistically preferable.

Summary

Lake Sonoma discharge is not being considered further because it is essentially equivalent to direct discharge to the Russian River, but costs are significantly higher. Two subalternatives for direct discharge to the Russian River are being evaluated: continued discharge through the Laguna, and a new pipeline direct to the river. Although other discharge locations such as Lake Sonoma might be possible, it is not feasible to evaluate every potential discharge point along the

entire length of the river. Given the extreme difference in costs and logistics, this is not a reasonable alternative.

Community Separator Wetlands

This component was proposed during public workshops as a method for storing reclaimed water while providing a separation between Santa Rosa and surrounding communities. Although wetlands would not provide significant amounts of storage, it was agreed to evaluate this component in one of the project alternatives because wetlands consume wastewater, provide a land use benefit, and may also be used for polishing of wastewater.

Response to Comment 85-54

Comment Summary: The comment suggests that rapid infiltration was eliminated because SCWA, North Marin Water Agency, and several water experts were opposed to it.

The comment is not correct; the component was dropped because logistics were no longer feasible. Rapid infiltration sites are no longer available. Refer to page 18 in Appendix D-6 (Documentation in Support of Elimination of Alternatives) of the Draft EIR/EIS for a discussion of why rapid infiltration was dropped from consideration.

Response to Comment 85-55

Comment Summary: The comment asks why rapid infiltration was logistically feasible in 1988, but not in 1996.

In 1988, there was sufficient open land available along the Russian River that could be used for rapid infiltration basins. Since then, much of this land has been acquired and put into agricultural production, primarily for vineyard use. The component was deemed to be infeasible because it was no longer possible to construct the rapid infiltration areas without eliminating large tracts of existing agricultural uses.

Response to Comment 85-56

Comment Summary: The comment asks why 4 billion gallons of storage are needed to accommodate 3 million gallons per day of additional treatment capacity.

To understand requirements for storage, two important distinctions must be made: 1) treatment capacity is described in terms of daily average dry weather flow (ADWF), and these figures cannot be used directly to calculate total disposal requirement; and 2) the existing system does not have adequate storage, and about 52 percent of a 1 percent discharge project would be constructed to provide capacity for existing users. The allocation of project capacity (and cost) between existing and future users is described on page 4.18-23 of the Socioeconomics section of the Draft EIR/EIS. The existing system can reliably dispose of only about 3,800 million gallons (MG) per year. Current annual

volume is about 7,000 MG, and future annual volume is expected to be about 8,220 MG. Thus, there is a projected shortfall of about 4,420 MG of disposal capacity. Because the existing system reclaims all of the water produced during the summer and drains the existing reservoirs, increase in reclamation is directly tied to increase in storage. Required disposal capacity and required storage are closely related when keeping discharge to the Russian River at a 1 percent level. The actual size of required storage was determined using the Monthly Water Balance Model, which is described in Appendix D-8 (Water Balance Model - Summary and Results) of the Draft EIR/EIS.

Response to Comment 85-57

Comment Summary: The comment asks if cost figures for on-farm storage ponds incorporate loans and grants available to farmers for financing.

None of the cost figures for any alternatives or components evaluated cost savings that might be available through low-cost loans or grants.

Response to Comment 85-58

Comment Summary: The comment asks if cost savings for a phased project are included.

Phasing has not been incorporated in costs. Refer to Master Response 14, located in Section 6.2 of this document.

Response to Comment 85-59

Comment Summary: The comment suggests that ASR would have fewer impacts than groundwater recharge, and should not have been dropped because it is unproved technology.

The comment is correct that aquifer storage and recovery (ASR), if it can be successfully implemented, would theoretically have fewer impacts than groundwater recharge. Recharge projects put reclaimed water into the aquifer with the express purpose of augmenting groundwater resources. The intent is that reclaimed water move through the ground, where it is further filtered, and is removed at a location some distance from the recharge well. The intent of ASR is to only use the aquifer as a temporary storage facility, and to remove the reclaimed water before it can move any appreciable distance away from the well. The water is injected and removed at the same well site, and the intent is to have as little mixing with the surrounding groundwater as possible. There is a fair amount of experience to show that groundwater recharge can work, but not very much experience to show that ASR can be implemented without affecting surrounding groundwater. ASR was also dropped from consideration as part of the Long-Term Project because studies showed that the aquifer did not have the required capacity to meet the storage needs of the Long-Term Project.

Response to Comment 85-60

Comment Summary: The comment suggests that with regard to the elimination of ASR the Regional Water Quality Control Board's mandated schedule for project implementation is not a good reason for selecting a 20 percent discharge project.

Page 22 in Appendix D-6 (Documentation in Support of Elimination of Alternatives) of the Draft EIR/EIS discusses logistics problems with the extensive time frame required for ASR feasibility studies, in light of the Regional Board's mandated schedule. There is no suggestion that this is a reason for selecting a 20 percent discharge to the Russian River.

Response to Comment 85-61

Comment Summary: The comment suggests that phasing in of smaller ponds should have been evaluated, and cites the size of Delta Pond at 650 million gallons.

Refer to Master Response 14, located in Section 6.2 of this document, regarding phased project and small reservoirs.

Response to Comment 85-62

Comment Summary: The comment asks why the 50 sites identified in the Koretsky King report of 1980 were not evaluated.

Previous studies that identified reservoir sites were used in the initial screening of reservoirs. The 1980 Koretsky King report was reviewed and used as a source of information regarding potential reservoir sites. The Koretsky King report concluded that of the 50 sites that were evaluated, 20 were worthy of further consideration, and after further screening reduced the candidates sites to 9. However, most of these sites did not meet the criteria developed for the Long-Term Project. These criteria are discussed starting on page 23 in Appendix D-6 (Documentation in Support of Elimination of Alternatives). Two reservoir sites from the Koretsky King report were carried forward for evaluation in the Draft EIR/EIS: Tolay and Adobe Road.

Response to Comment 85-63

Comment Summary: The comment questions whether multiple smaller reservoirs are cost prohibitive, and asks if savings from project phasing were considered.

Refer to Master Response 14, of the Draft EIR/EIS, concerning phased projects and small reservoirs.

Response to Comment 85-64

Comment Summary: The comment requests that the EIR/EIS be modified to state that “the manner for determining river discharge rates has never been incorporated into the NPDES permit, has never been subjected to a public hearing, and is currently the subject of a lawsuit.”

The method for determining compliance with permitted discharge rates is, in part, set forth in the NPDES permit and in part determined by the executive officer of the RWQCB. A method for determining compliance with the discharge rate restriction was included in a draft NPDES permit and considered by the Regional Board in a public hearing. The point of measurement of river flow and allowable percentage is set forth in the permit. The Regional Board Executive Office ordered that discharge operations be based on peak flow from the previous day, and that compliance be determined using a seven-day averaging period. This approach has been upheld by the U.S. District Court in the judgment on the subject lawsuit (the commentor has appealed this decision). Details on how the Regional Board determines compliance are not considered a necessary part of the EIR/EIS and are not included. The EIR/EIS authors concur that information about how the system is currently operated provides useful information about the existing system.

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

Page 3.2-2. The last paragraph is revised as follows:

Ordinarily, discharge is limited to a maximum of 1% of river flow. Discharge is increased to 5% of river flow when required (with the permission of the North Coast Regional Water Quality Control Board) between October 1st and May 14th. The quantity of reclaimed water that is discharged each day is based on peak Russian River flow from the previous day.~~However, d~~Due to limited storage and a combination of weather conditions that may occur during this period the discharge season (October 1st through May 14), the Subregional System currently has the potential to exceed the legal maximum discharge to the Russian River.

Response to Comment 85-65

Comment Summary: The comment asks for the distinction between “allowable” and “actual” discharge, as these terms are used in Appendix D-8 (Water Balance Model - Summary and Results).

Allowable discharge is defined on page 3 in Appendix D-8 of the Draft EIR/EIS as the monthly River flow times the design discharge rate, and thus represents the maximum quantity of water that could be discharged in a month. Actual discharge is also defined on page 3 in Appendix D-8 as the water balance estimate of the reclaimed water volume that would be discharged given the amount of reclaimed water in storage, the target storage volume and reclaimed water flow from the treatment plant for the month.

Response to Comment 85-66

Comment Summary: The comment asks for the definition of “1%, 5%, 10% etc.” and asks how these discharges are determined.

Design discharge rates are defined on page 3.1-9 of the Draft EIR/EIS. The calculation of the discharge that would occur each month is described on page 3 in Appendix D-8 (Water Balance Model - Summary and Results) of the Draft EIR/EIS and in the Response to Comment 85-65. The model calculates flows and discharge percentages based on historic River flow at the Hacienda Bridge.

Response to Comment 85-67

Comment Summary: The comment asks how existing discharges are accounted for in the monthly water balance model.

The calculation of monthly discharge volume is based on the simulated amount of reclaimed water in storage, the target storage volume and the simulated reclaimed water flow from the treatment plant for the month. If the result of this calculation exceeds the allowable discharge volume, as defined on page 3 in Appendix D-8 (Water Balance Model - Summary and Results) of the Draft EIR/EIS, the excess volume is accounted for in the model as a contingency volume. The allowable discharge is based on historic River flow at Hacienda Bridge, as modified by the Sonoma County Water Agency to account for future diversions. Historic reclaimed water discharges have been excluded from the Hacienda gauge data and thus the monthly water balance model is not affected by historic reclaimed water operations.

Response to Comment 85-68

Comment Summary: The comment states that the monthly model is designed to allow greater flexibility of reclaimed water discharge operations. The comment also asks for the actual daily reclaimed water concentrations.

This comment appears to refer to a statement on page 6 of Appendix D-8 (Water Balance Model - Summary and Results) which states that the assumed volume of existing storage is 1,200 MG, instead of the actual 1,500 MG capacity, to “allow for some flexibility in the management of the existing system.” The appropriate interpretation of this quote from page 6 is that the monthly water balance model is designed to account for existing storage in a conservative fashion. The model is not designed for greater flexibility of reclaimed water discharge operations.

The monthly water balance model estimates the average discharge rate each month, not the daily discharge rate. The monthly model was used in the first stages of project development to size facilities. After completion of this phase, which defined the project description, a daily water balance model was developed as part of the water quality model to allow assessment of impacts. Daily water balance model output is compared to

monthly output in Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models) of the Draft EIR/EIS. The discharge impact analysis in the Draft EIR/EIS was based on the daily water balance.

Response to Comment 85-69

Comment Summary: The comment states that storage needs can increase depending on the method of discharge.

Discharge will occur by a combination of pumping and gravity flow using existing facilities for Alternatives 1, 2, 3, 4 and 5B. An additional outfall location and pumps would be added to existing facilities for Alternative 5A. Monthly storage targets do not vary by discharge method. The monthly storage targets are described on page 3 in Appendix D-8 (Water Balance Model - Summary and Results) of the Draft EIR/EIS, and specified numerically in Table 4.2 on page 34 in Appendix I-8 (Russian River Water Quality Model) of the Draft EIR/EIS.

Response to Comment 85-70

Comment Summary: The comment asks if the EIR/EIS authors are familiar with “the real Russian River.”

As indicated in Appendix B (List of Preparers) of the Draft EIR/EIS, the preparation of this Draft EIR/EIS involved many people, some collecting data, others conducting research, and many writing sections of the report. Some EIR/EIS authors have been involved in this project for many years and are well acquainted with the Russian River area. The collection of field data documented in Appendices L-1 through L-7 of the EIR/EIS attests to the numerous visits to the River for scientific purposes.

Response to Comment 85-71

Comment Summary: The comment refers to Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models) and asks why monthly averages are considered. The comment also states that the monthly average discharge rate masks the large intra-month variation.

Appendix D-9 of the Draft EIR/EIS is a comparison of the monthly and daily water balance models. Monthly average discharge percentages are considered in Appendix D-9 because average monthly discharge rate is a common value in which the output of the two models can be compared. Daily concentrations cannot be compared because the monthly water balance model does not simulate discharge on a daily time step. It is correct that monthly figures mask daily variation; it is for this reason that all impact analysis was conducted using the daily water balance model. The daily water balance model output for the 70-year simulation period is depicted in Figures 1 through 8 of Appendix D-9.

Response to Comment 85-72

Comment Summary: The comment asks whether impact analysis considered the fact that the method for flow measurement, which bases discharge on the previous day's river flow, may result in a discharge exceeding the design discharge rate.

Operations of the discharge were simulated based on the previous day's River flow, as described on page 34 of Appendix I-8 (Russian River Water Quality Model) of the Draft EIR/EIS. Under conditions of rapidly declining River flow, discharge based on the previous day's River flow would be prone to result in reclaimed water concentrations that exceed the design discharge rate. However, the reclaimed water concentration that resulted from the simulated discharge was calculated based on the model representation of Laguna and Russian River hydraulic conditions and reclaimed water discharge that would result in exceedence of the design discharge condition were not allowed to occur in the discharge simulation. This is consistent with the manner in which the existing system is operated in that system operators are aware of and account for declining flow conditions in their decision about how much reclaimed water to release.

Response to Comment 85-73

Comment Summary: The comment states that Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models) appears to show that the distribution of monthly average discharge rates is similar to that of the daily water balance model, and asks if the analysis is an attempt avoid constructing storage facilities.

The purpose of Appendix D-9, as stated in the Purpose section on page 2, is to summarize the differences between the daily and monthly water balance models including assumptions, approaches, and results. The models were used for different purposes, but it was necessary to show that, while somewhat different, the models were consistent with each other. The analysis of reliability and contingency measures is presented in Appendix D-10 (Water Balance Contingency Plan).

Response to Comment 85-74

Comment Summary: The comment states that the representations of the 10 and 20 percent design discharge in Appendix D-9 indicate that the design discharge rate will be exceeded and asks for the probability of "illegal" discharges.

The comment appears to refer to Figures 6 and 8 in Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models) of the Draft EIR/EIS. Should the City select an alternative that includes contingency discharges, the City will request that their discharge permit be structured to allow contingency discharges at the frequency predicted by the water balance model. Under such a permit, the occasional higher levels of discharge would not be considered "illegal". Refer to Response to Comment 118-34 for additional information about contingency discharges.

Response to Comment 85-75

Comment Summary: The comment states that “maximum conservation” would help avoid the need for contingency discharge.

Conservation that can be relied upon for a long-term project is included in the Project description, as described in Section 3 of the Draft EIR/EIS. Additional or emergency conservation (that which can be sustained for only a short period) is included in the contingency program to reduce the contingency discharge volume (also described in Section 3). While conservation can reduce contingency volumes, analysis of emergency conservation in Appendix D-10 (Water Balance Contingency Plan) of the Draft EIR/EIS showed that it would not be possible to totally eliminate contingency volumes solely using conservation. Refer to Table 5 on page 9 of Appendix D-10.

Response to Comment 85-76

Comment Summary: The comment states that the contingency program analysis in Appendix D-10 (Water Balance Contingency Plan) relies on “averages over a 70 year period” and that variability about the averages results in “major irreversible impacts.”

Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models) of the Draft EIR/EIS provides a description of the contingency discharges that were simulated using the daily water balance model, which are not subject to the averaging problem that is the subject of the comment. Contingency discharge impacts are evaluated in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS, and the impact analysis is based on the daily water balance.

Response to Comment 85-77

Comment Summary: The comment asks for a description of the emergency conservation element of the contingency program.

Emergency conservation is assumed to consist of voluntary reduction in water use through reductions in clothes washer and dishwasher use (wash full loads only), shorter showers, and reduced toilet flushing. Measures would be effected by implementing an aggressive public education campaign requesting that the public conserve until weather conditions are more favorable for discharge (i.e. until river flow increases through significant rainfall). It is assumed that these measures could achieve a 5 percent reduction in flows, or about 1 million gallons per day. The specifics of the public relations effort have not been determined, but could include newspaper articles and public service announcements on local radio and television.

Response to Comment 85-78

Comment Summary: The comment asks if contingency discharge is illegal.

Contingency discharge is, by definition, a discharge in excess of the design discharge rate, which does not mean that such a discharge is illegal. The Regional Board will be asked for a permit to implement design and contingency discharges. Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models) of the Draft EIR/EIS describes the frequency of contingency discharges based on the daily water balance.

Response to Comment 85-79

Comment Summary: The comment asks if Appendix D-10 (Water Balance Contingency Plan) evaluates the impacts of fall contingency discharges.

Appendix D-10 of the Draft EIR/EIS describes the contingency program, and contingency discharge impacts are evaluated in Appendix I-16 (Water Quality Impacts Analysis Report Volume 1 - Text) of the Draft EIR/EIS. Contingency discharge does not occur in the fall under the monthly storage targets upon which the project is based because the targets are based on the 70-year River flow record that shows fall River flows are usually very low. Refer to Response to Comment 85-69. Low flow in winter, when storage is full according to the storage targets, is a relatively infrequent occurrence, but can result in contingency discharges. A statement on the top of page 13 in Appendix D-10 suggests that a different storage curve could be developed to emphasize contingency discharge in fall, but this is not part of the project description, and based on subsequent water quality analysis, this approach is not recommended. Mitigation Measure 2.5.4: Discharge Operations on page 2-127, recommends that fall discharge be avoided. Refer also to Response to Comment 118-41.

Response to Comment 85-80

Comment Summary: The comment asks for an evaluation of impacts of contingency discharge on a daily basis.

The Draft EIR/EIS evaluates contingency discharges based on the daily water balance in Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models). All impacts of contingency discharge are evaluated based on daily volumes. Refer to Response to Comment 85-79.

Response to Comment 85-81

Comment Summary: The comment asks for the amount of runoff caused by future development in the Subregional System service area.

Identification and disclosure of the incremental flow due to development that is in fulfillment of general plans occurs through the CEQA documentation associated with each general plan and individual project. Flow effects of general plan-related

development are not a result of the reclaimed water management alternatives and are therefore not evaluated as project impacts in the Draft EIR/EIS. However, general plan-related development is addressed in the cumulative impacts analysis in Section 4.4 of the Draft EIR/EIS because such development could affect existing conditions. This cumulative impacts analysis resulted in the finding of a significant impact as indicated in Impact 4.4C on page 4.4-35 of the Draft EIR/EIS.

Response to Comment 85-82

Comment Summary: The comment states that Appendix G-1 (Potential Flood Impacts in the Laguna de Santa Rosa Floodplain and Russian River Floodplain) does not address cumulative flooding impacts and that only flooding at peak flow is evaluated.

Cumulative flooding impacts are evaluated in Section 4.4, and Impact 4.4C on page 4.4-35 of the Draft EIR/EIS is identified as a significant impact for Alternative 5A. Appendix G-1 (Potential Flood Impacts in the Laguna de Santa Rosa Floodplain and Russian River Floodplain) does not address flooding at peak flow per se; rather the effect of reclaimed water discharges on water surface elevation at flood stage is evaluated. Project impacts on flooding under non-flood conditions in the Russian River are not evaluated in Appendix G-1 because the Project would not affect flooding. The analysis in Response to Comment 17-6 shows that maximum reclaimed water discharge (in cfs or mgd) for all alternatives except Alternative 5A is achieved when River flow reaches approximately 6,200 cfs, and no flood damage is expected at or below this flow.

Response to Comment 85-83

Comment Summary: The comment asks for the impact of flooding in the Laguna on discharge from Meadowlane Pond. The comment also asks for the impact of Russian River backwater on reclaimed water flow through the Laguna.

The Draft EIR/EIS, on Page 2 of Appendix G-1 (Potential Flood Impacts in the Laguna de Santa Rosa Floodplain and Russian River Floodplain), describes Meadowlane discharge facilities as including a gravity discharge facility that can discharge up to 49 cfs during a 100-year flood, and an additional pumping capacity during a 100-year flood of 46 cfs.

The effect of backwater conditions in the Laguna is addressed on page 3 of Appendix G-1, as follows:

“Flood levels in the Laguna typically are high for 3 or 4 days during large floods and at peak levels for up to 2 days. Assuming no outflow from the backwater area for 2 days, the increase in flood levels due to wastewater discharge at a rate of 134 cfs (85 cfs from Delta Pond and 49 cfs by gravity from Meadow Lane Ponds) would be 0.11 feet. In reality there will be some flow through the ponded area which will tend to decrease the effect on flood levels. Therefore it is assumed that the increase in flood levels will be less than 0.10 feet.”

Response to Comment 85-84

Comment Summary: The comment questions the propriety of the 0.1-foot point of significance.

The finding of significance would be unchanged if a different point of significance had been used, because, as explained on page 4.4-31 of the Draft EIR/EIS, the Project (except for Alternative 5A) has no impact on flooding. In the case of Alternative 5A, mitigation was identified so that the Project would not affect flooding.

Response to Comment 85-85

Comment Summary: The comment states that cumulative impacts are not considered.

Refer to Response to Comment 85-82.

Response to Comment 85-86

Comment Summary: The comment asks for the effect of the existing irrigation system on surface water flows.

The existing irrigation system is not part of the Project, and therefore the impacts of the existing systems were not evaluated in the Draft EIR/EIS.

Response to Comment 85-87

Comment Summary: The comment asks why the effect of the proposed discharge on streambank erosion over a long period was not evaluated.

The evaluation criteria for streambank erosion are described in Table 4.4-8 on page 4.4-18 of the Draft EIR/EIS. The criteria establish velocity thresholds of 3 and 4 feet per second for the Laguna and Russian River, respectively. The thresholds represent the velocity above which streambed and bank erosion can occur. The point of significance is a 2 percent increase in stream power (which is an index of erosive energy) when velocity is greater than the applicable threshold. Two percent is considered by the EIR/EIS authors to be a very small change relative to power changes that occur due to existing watershed conditions, and the project was found to have less than a 2 percent effect on stream power. Long-term effects of reclaimed water discharge on streambank erosion were not evaluated because the contribution of reclaimed water discharge to overall erosion is considered to be immaterial over any time frame.

Response to Comment 85-88

Comment Summary: The comment asks for the effect of suspended sediment on sediment transport capacity.

As suspended sediment increases, the ability of the stream to entrain and transport additional sediment decreases.

Response to Comment 85-89

Comment Summary: The comment asks if sediment-laden water is more erosive.

Refer to Response to Comment 85-88.

Response to Comment 85-90

Comment Summary: The comment asks how “volume and velocity interact to cause more dramatic erosion.”

Erosion potential was estimated using power, and the components of stream power and their relationship are described on page 1 in Appendix G-2 (Potential Streambank Erosion-Laguna de Santa Rosa and Russian River) of the Draft EIR/EIS as follows:

The formula for stream power is:

$$w = (\gamma v d s)$$

where w = stream power

γ = unit weight of water

v = flow velocity

d = flow depth

s = stream slope

Response to Comment 85-91

Comment Summary: The comment asks if antecedent moisture of streambed and banks affects erosion.

Appendix G-2 (Potential Streambank Erosion-Laguna de Santa Rosa and Russian River) of the Draft EIR/EIS presents an evaluation of the effect of streamflow on erosion of streambeds and banks, and cites ASCE (1995) as the basis for the velocity thresholds of 3 and 4 fps for the Laguna and Russian River, respectively. ASCE (1995) is based on an assumption of saturated conditions. Thus, erosion without prior saturation in this analysis is not possible.

Response to Comment 85-92

Comment Summary: The comment asks if the cause of streambank saturation due to irrigation affects erosion.

Streambanks are naturally saturated, and irrigation does not affect these conditions. Refer to Response to Comment 85-91.

Response to Comment 85-93

Comment Summary: The comment asks if the factors in Comments 85-88 through 85-92 have been included in the analysis.

Reclaimed water was determined not to accelerate erosion. Refer to Responses to Comments 85-88 through 85-92.

Response to Comment 85-94

Comment Summary: The comment asks for a definition of streambank erosion.

The analysis of project impacts on streambank erosion was an evaluation of the potential for the incremental flow to suspend and transport underwater sediment due to reclaimed water discharge.

Response to Comment 85-95

Comment Summary: The comment asks if the definition of erosion includes the “entire upper and lower banks.”

Erosion of the entire stream bank, upper and lower, is considered. Refer to Response to Comment 85-94.

Response to Comment 85-96

Comment Summary: The comment asks why sediment samples were collected only from the stream bottom.

The sediment samples described on page 3 in Appendix G-2 (Potential Streambank Erosion-Laguna de Santa Rosa and Russian River) of the Draft EIR/EIS are considered representative of bed and banks. The “bottom” is used on page 3 to describe the sampling locations and is not accurate.

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

Page 3, Appendix G-2. The first sentence in the second paragraph is revised as follows:

Merritt Smith Consulting obtained 14 sediment samples from the ~~bottom~~ bed and banks of the Laguna and 6 samples from the Russian River.

Response to Comment 85-97

Comment Summary: The comment asks if the effect of velocity on the stream banks is the same as that on the stream bed.

Streamflow does not affect stream banks and stream beds in the same way; water depth is a factor, as noted on page 1 in Appendix G-2 (Potential Streambank Erosion-Laguna de

Santa Rosa and Russian River) of the Draft EIR/EIS. Greater water depth produces greater stream power.

Response to Comment 85-98

Comment Summary: The comment asks how close 1982 high flows were to a 100-year flood.

Stream power calculations were done for a dry year, a normal year, and a wet year using flow data for 1976, 1961 and 1982, respectively. The EIR/EIS authors do not know if a 100-year flood occurred in 1982, or how close flows might have been to a 100-year event, and do not consider such an occurrence relevant to the evaluation of erosion. The three years were selected to provide a representative distribution of velocity and power values by which to evaluate project impacts, and 1982 is considered representative of conditions that occur in a wet year. No attempt was made to evaluate for erosion impacts during a particular flood event. Such an analysis would have produced a “no impact” finding because, during flood conditions, the discharge from the project does not result in a change from existing conditions, as explained on page 4.4-31 of the Draft EIR/EIS.

Response to Comment 85-99

Comment Summary: The comment asks for the definition of the upper and lower Laguna.

The upper Laguna is the region upstream of the confluence with Santa Rosa Creek. The Draft EIR/EIS is changed to reflect this.

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

Page 3, Appendix G-2 (Potential Stream Bank Erosion - Laguna de Santa Rosa and Russian River). The last paragraph is revised as follows:

...sediment particle size distribution from Table 1 and typical scour velocities (ASCE, 1995 and Goldman et al., 1986) were used to develop a table of threshold velocities for each reach in the upper and lower Laguna and Russian River. The upper Laguna is defined here as those reaches located upstream of Santa Rosa Creek, and the lower Laguna is located downstream of Santa Rosa Creek. Table 2 on page 4 summarizes the estimated erosion ~~...threshold velocities. At velocities less than these values, the stream channel material is assumed to be stable and therefore the increase in the velocity due to the discharge of reclaimed water would not be expected to cause streambank erosion.~~

Response to Comment 85-100

Comment Summary: The comment asks if banks and bottoms have the same particle size distribution.

Stream banks and bottoms do not have the same particle size distribution. The particle size distribution is a function of the power of the flow, and power decreases with decreasing depth. Refer to Response to Comment 85-96.

Response to Comment 85-101

Comment Summary: The comment asks why no actual flow data exist for the Laguna.

A flow gauge exists in the Laguna at Trenton-Healdsburg Road. Flow data were provided to the commentor prior to issuance of the Draft EIR/EIS and are also provided in Appendices L-1 (Anadromous Fish Migration Study Program, 1991-1994) and L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS.

Response to Comment 85-102

Comment Summary: The comment asks if riparian vegetation controls erosion.

Riparian vegetation affects erosion, with less erosion in well-vegetated areas. Also refer to Response to Comment 85-103.

Response to Comment 85-103

Comment Summary: The comment asks why no description of riparian vegetation is given in Appendix G-2.

Appendix G-2 (Potential Streambank Erosion-Laguna de Santa Rosa and Russian River) of the Draft EIR/EIS presents an evaluation of the effect of streamflow on the erosion of streambeds and banks based on the measured particle size characteristics of the bed and bank. Riparian vegetation tends to anchor sediment and retard erosion, and this effect was not considered in the erosion evaluation. In this sense, the evaluation was conservative because consideration of riparian vegetation would have mitigated any findings of significant erosion.

Response to Comment 85-104

Comment Summary: The comment states that the Appendix G-2 (Potential Stream Bank Erosion - Laguna de Santa Rosa and Russian River) analysis is based on average values and asks for the entire range of impacts. The comment also asks how many special circumstances will occur when erosion will increase.

The evaluation considered the range of sediment characteristics in the Laguna and Russian River, and the range of flow conditions within and between hydrologic years. Impacts at the very highest flows were not considered. Such an analysis would have produced a “no impact” finding because, during flood conditions, the discharge from the Project does not result in a change from existing conditions, as explained on page 4.4-31 of the Draft EIR/EIS. The very lowest flow conditions were not considered because the velocity conditions at very low flows do not create erosion. The EIR/EIS authors

consider the evaluation to be inclusive of a broad range of conditions under which reclaimed water discharge could occur.

The EIR/EIS authors are not aware of any special circumstances when erosion will increase.

Response to Comment 85-105

Comment Summary: The comment asks how erosion will affect salmonid migration.

The analysis did not identify any impacts of the project on erosion. Because the project would not increase erosion, the effect of erosion on salmonids was not evaluated.

Response to Comment 85-106

Comment Summary: The comment states that for the last two or three years, the river has been exhibiting much greater turbidity for much longer periods after storm events, and that erosion conditions since 1982, and specifically in 1995, need to be analyzed.

The EIR/EIS authors are aware of no evidence supporting the increased turbidity claim, and the comment provides no evidence. Erosion was evaluated in a dry (1976), a normal (1961) and a wet year (1982). These years were selected because they are representative of the range of conditions that can occur as further described in Response to Comment 118-173. 1995 was not evaluated because water quality studies were already underway at that time as described on page 19 in Appendix I-18 (Russian River Water Quality Model) of the Draft EIR/EIS.

Response to Comment 85-107

Comment Summary: The comment asks if all reclaimed water quality test results were from Santa Rosa's lab. The comment also asks if any of the results were cross verified with other independent labs or Regional Board tests.

Water quality data used in Draft EIR/EIS are supplied by different laboratories, including the Subregional System's lab, contractors to the Subregional System, contractors to the Regional Board, and contractors to the EIR/EIS authors.

Each laboratory has a Quality Assurance/Quality Control plan to prevent reporting of invalid data. These Quality Assurance/Quality Control plans provide for split samples. Results are cross verified with the Regional Board when the Regional Board requests splits to be sent the Regional Board's laboratory.

Response to Comment 85-108

Comment Summary: The comment asks how long a psychologist was retained to assist with emotional problems among Treatment Plant laboratory workers. The comment also asks how we can be assured that these difficulties did not affect the quality of testing in the lab.

The laboratory has a Quality Assurance/Quality Control plan to prevent reporting of invalid data. Refer also to Responses to Comments 85-21 and 85-107.

Response to Comment 85-109

Comment Summary: The comment asks for the definition of trip/field blanks.

Trip/field blanks are sample bottles that are (generally) filled with distilled, de-ionized water but are treated in the same way as the sample. For example, if a sample is collected using Tygon tubing, the trip/field blank will be filled with the de-ionized water using the same tubing. The purpose of a trip/field blank is to account for contamination through the sampling. Trip and field blanks are used routinely by the EIR/EIS consultant, Subregional System, and the Regional Water Quality Control Board.

Response to Comment 85-110

Comment Summary: The comment states that comments which follow were submitted by Marc Lappe.

Specific concerns were expressed in subsequent comments and these comments are addressed specifically in the Responses to Comments below.

Response to Comment 85-111

Comment Summary: The comment says that the lead levels reported in Appendix H-2 (Reclaimed Water Quality) are high and that more detailed analysis is needed.

The potential for lead to be a human health concern is addressed in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS primarily in a section beginning on page 2-30. No significant impacts of lead were identified.

Response to Comment 85-112

Comment Summary: The comment says that nitrate levels reported in Appendix H-2 (Reclaimed Water Quality) are high, that nitrate shows up in all samples and that nitrate can cause adverse impacts.

Points of significance listed in Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS are those for the protection of aquatic life. In general, points of significance for

protection of aquatic life are lower than those for protection of human health. The human health risk of nitrate is addressed in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS primarily in a section beginning on page 2-28, and was found to be less than significant. The point of significance for human health is the drinking water standard, which is 10 mg/L for nitrate as nitrogen.

Response to Comment 85-113

Comment Summary: The comment states that phthalates are carcinogens and xenoestrogens, and that the concentration should be less than 0.003 to be safe.

The potential risk of phthalates to humans and wildlife is addressed in the Draft EIR/EIS in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water), beginning on page B-13, and in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS, and was found to be less than significant.

Response to Comment 85-114

Comment Summary: The comment states that aldicarb is such a high risk pesticide that more than four samples are needed.

The EIR/EIS authors consider four samples of aldicarb to be adequate for the following reasons:

- The concentrations of aldicarb found in reclaimed water were found not to pose a risk to humans or wildlife. Refer to Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) and Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. The concentration would need to be 8 times greater than was measured to result in a significant impact.
- All aldicarb product use in California is very restricted. It can be used only by certified applicators (pers. comm. Gary Varnado, California Department of Pesticide Regulation to M. Commins, MSC). These certified applicators are trained in proper use and disposal of pesticides. Certified applicators would be aware that disposal of restricted pesticides in a manner that would allow entry into reclaimed water is unlawful and jeopardizes their certification.
- No registered usage of aldicarb occurred in Sonoma County from 1992 through 1995 (pers. comm. Beverly Martin, California Department of Pesticide Regulation to D. Brown, Parsons ES) (information from 1996 to present not available).
- Aldicarb is approved for use on beans, cotton, peanuts, sorghum/milo, soybeans, sudangrass, sugarbeet, sweet potato, potatoes, citrus fruits (grapefruit, lemon, orange, lime), and ornamentals (carnation, chrysanthemum, ivy, ornamental trees and shrubs, herbaceous flowers and foliage). Of these, only ornamentals and sudangrass are likely to be grown in substantial amounts in the Laguna and Russian River watersheds.

Response to Comment 85-115

Comment Summary: The comment states that four samples for Cryptosporidium and Giardia is an insufficient number.

Additional clarifying and amplifying *Cryptosporidium* and *Giardia* data are reported in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS. The issue of *Cryptosporidium* and *Giardia* is addressed in Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-116

Comment Summary: The comment states that heptachlor was detected, is nasty and should be monitored closely.

Heptachlor monitoring is currently required by the Regional Board, and the Regional Board will establish monitoring requirements for the selected Project.

Response to Comment 85-117

Comment Summary: The comment states that the concentration of asbestos is high yet only four samples were collected, and that the concentration of cyanide is too high.

Asbestos in reclaimed water was approximately 100 times lower than in the Russian River above the confluence with the Laguna. With these low numbers relative to the environment, four samples are adequate. Cyanide was identified as having significant impacts on the Laguna and Santa Rosa Creek (Impact 6.9.1 on page 4.6-107 of the Draft EIR/EIS). Refer also to page 110 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS.

Response to Comment 85-118

Comment Summary: The comment states that dissolved silver in reclaimed water is too high and not enough samples had been collected.

The impact of total silver on the receiving waters, human health, and wildlife was evaluated in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text), Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) and Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. The risks to human health and wildlife were found to be less than significant. Dissolved silver is a component of total silver. Thus, an evaluation of effects of total silver will include effects of dissolved silver. The impact of dissolved silver on the receiving waters was evaluated in Appendix I-16 of the Draft EIR/EIS and found to be less than significant. The EIR/EIS authors disagree that an insufficient number of samples has been collected. The combined number of total and dissolved silver samples during the seven-year period of record is 96.

Response to Comment 85-119

Comment Summary: This comment concludes that wastes must be leaching from electroplating, electric, and/or photo processing industries to cause the range of contamination that are showing up (i.e., silver, cyanide, phthalates, asbestos, lead, etc.).

The City of Santa Rosa has an industrial waste pretreatment program, which is described on page 3.2-4 of the Draft EIR/EIS. Information on the source of particular constituents in the Subregional System service area is not necessary for this Draft EIR/EIS.

Response to Comment 85-120

Comment Summary: The comment asks if any samples were left out of Appendix H-2 (Reclaimed Water Quality).

Constituents which have been analyzed for but never found in detectable quantities were omitted from Table 1 on page 7 in Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS, but none were omitted from the appendix of Appendix H-2. As described in Appendix H-2, values below detection where the reporting limit was greater than 4 times the maximum detectable value were omitted from averages. An unequal number of samples were collected because samples were collected and analyzed in response to different objectives and requirements. In cases where the existing data were considered inadequate, additional samples were collected and analyzed specifically to support the Draft EIR/EIS analysis. These samples were collected in fall 1994, as described on page 2-1 in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

Response to Comment 85-121

Comment Summary: The comment indicates that the concentration of arsenic and aluminum is too high, and the EIR/EIS authors understand that the benchmark for the commentor's concern is human health impacts.

The impact of both metals on human health was evaluated in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS, and no significant impacts were identified. Total arsenic concentrations in Santa Rosa Creek above the discharge and in the Russian River above the confluence with the Laguna were below detection with a reporting limit of 0.005 mg/L (reclaimed water concentration of total arsenic was 0.0024 mg/L). Total aluminum concentration in the Russian River above the confluence with the Laguna (no Santa Rosa Creek or Laguna data) was 0.15 mg/L (reclaimed water concentration of total aluminum was 0.032 mg/L).

Response to Comment 85-122

Comment Summary: The comment quotes from a published article in which the author opines that the safety of drinking water can no longer be taken for granted and that

threats of pathogens in reclaimed water need more study. The comment asks how Santa Rosa can “assure people that their wastewater is safe in light of these issues.”

“These issues” are not described in the comment in any way that relates to the adequacy of the Draft EIR/EIS, nor are “these issues” described in a way that allows a more specific response. The Draft EIR/EIS includes an assessment of project impacts on drinking water quality. Reclaimed water meets appropriate regulatory requirements, and the EIR/EIS authors have concluded that none of the alternatives would have a significant impact on drinking water quality relative to existing conditions. Refer to Master Response 8, located in Section 6.2 of this document, for additional discussion of pathogens.

Response to Comment 85-123

Comment Summary: The comment asks if dairy waste is finding its way into the Laguna as a result of over-irrigation and transporting Cryptosporidium with it. The comment also asks if over-irrigation spreads “these pathogens around and speed its movement to the lower river.”

The Draft EIR/EIS does not address impacts of the existing irrigation system because the existing system is not part of the Project. Dairy waste is, according to the Regional Board’s 1990 Water Quality Assessment, finding its way into the Laguna exclusive of the existing irrigation system. Dairy calves are common sources of *Cryptosporidium*, and thus Laguna dairies are likely a source of *Cryptosporidium*. Refer to *Initial Study and Negative Declaration for Conversion to Ultra-Violet Disinfection*, (February, 1997).

Response to Comment 85-124

Comment Summary: The comment asks “how can we be sure that cryptosporidium will not enter the drinking water supply or affect swimmers.”

Reclaimed water discharge will not cause the density of *Cryptosporidium* in the River to increase. Refer to Master Response 8, located in Section 6.2 of this document, and *Initial Study and Negative Declaration for Conversion to Ultra-Violet Disinfection* (February, 1997). Drinking water suppliers are subject to regulations designed to assure *Cryptosporidium* removal from raw water prior to delivery to customers. Swimmers may be subject to *Cryptosporidium* infection if they are susceptible to doses as low as one oocyst. However, any such infection would not be the result of the Project, since the Project will not cause the density of *Cryptosporidium* in the River to increase.

Response to Comment 85-125

Comment Summary: The comment asks for the fate of cryptosporidium in sediments.

Master Response 8, located in Section 6.2 of this document, describes the Project impact on *Cryptosporidium* and human health. *Cryptosporidium* oocysts can settle into sediments. Oocysts die off in sediments, and die off occurs at a faster rate at warm

temperatures that are associated with recreational use of the River. Oocysts survive from five to 24 days at 21 degrees centigrade, and less than four days at 37 degrees centigrade (Lewis-Jones, R., Winkler, M. 1991. Protozoan Parasites. Ellis Harwood Publishers).

Response to Comment 85-126

Comment Summary: The comment suggests that the copper value reported on Appendix H-3 page 5 is inconsistent with that reported in Appendix H-3 Table 2.

The analysis on page 5 of Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS is referring to dissolved copper. The increase in copper from 0.012 to 0.013 mg/L to which the comment refers is for total copper. The average total copper values were rounded and are actually only 0.0005 mg/L different. The EIR/EIS authors do not consider this to be indicative of any trend.

Response to Comment 85-127

Comment Summary: The comment asks to explain the lack of 1995 data (as indicated in Table 1 of Appendix H-3 Reclaimed Water Quality Update) for constituents previously found at detectable levels and what the future plans are in this regard.

Water quality constituents have been analyzed and data were evaluated in the Draft EIR/EIS because: 1) the Regional Board requires the constituent be monitored; or 2) the constituent was a necessary part of the Draft EIR/EIS evaluation and was not among the constituents required by the Regional Board. For Regional Board-required constituents, a long record of data was available and considered. For EIR/EIS-related constituents, a series of samples was collected in late 1994. The constituents in Table 1 on page 4 of Appendix H-3 (Reclaimed Water Quality Update) are among those EIR/EIS-related constituents. No additional samples were collected and analyzed for Table 1 constituents because sufficient data were available on which to base the Draft EIR/EIS analysis of impacts. Also refer to Master Response 5, located in Section 6.2 of this document.

Response to Comment 85-128

Comment Summary: The comment states that in Appendix H-3 (Reclaimed Water Quality Update) data for one year (1995-1996) are compared to eight years worth of data and asks what the statistical validity is of doing that. The comment also states "Further, it is suspect that you do not do this for all constituents. Is something being hidden?" The comment also asks why not show the range of data samplings as in the previous section rather than just the average.

The purpose of the report is to compare the recent year of data to that collected previously. There is no statistical reason why this comparison cannot be made. However, a statistical analysis was not conducted on the data, so the statistical validity is not of concern.

The comparison between 1995-6 data and data through 1995 was done for all constituents which have been found in detectable concentrations, with the exceptions of those noted in Table 1 on page 4 in Appendix H-3 of the Draft EIR/EIS.

Ranges of data are found in appendices to the Appendix H-3. Refer to Response to Comment 12-10.

Response to Comment 85-129

Comment Summary: The comment asks why some columns in Appendix H-3 (Reclaimed Water Quality Update) are labeled with "Average" and some are labeled with "Mean."

Mean and average are equivalent. Unless otherwise noted, mean refers to an arithmetic mean (versus geometric or other types of means). Average is equivalent to arithmetic mean.

Response to Comment 85-130

Comment Summary: The comment asks why are "values for ND sometimes given and sometimes not given."

"ND" is defined in Table 2 on page 6 in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS as meaning that the compound was not found in detectable concentrations. An average of reporting limits was not calculated nor presented in such cases because an average value consisting solely of reporting limits was not considered by the EIR/EIS authors to be useful information for evaluation of impacts. Thus, ND is shown in the summary tables, which report averages. All reporting limits are shown in the appendices to Appendix H-3, where the individual analyses are reported.

Response to Comment 85-131

Comment Summary: The comment states that filter breakdowns adversely affect effluent quality and asks what assurances can be given that they will not occur again.

Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS shows that reclaimed water quality was reduced when the filter medium depth decreases from normal (about four feet) to three feet in some cells. Negligible filter medium loss results from routine filter operation. Less than three inches of medium loss was detected over five years of operation. Construction activities associated with the upgrade of the Laguna plant coincided with an accelerated filter medium loss. This construction involved plant start-ups and shut-downs and filter testing that are unique to this construction. This occurred for approximately a three month period. The loss of filter medium that occurred in late 1995 was identified, and staff immediately took steps to obtain additional medium to replace that which was lost. Medium replacement was delayed by approximately three months due to the normal purchasing and delivery process, and then was delayed for another three months due to unusually high flows in the Laguna plant. A filter must be

taken off line to add the filter medium, and high flows during early 1996 necessitated keeping all filters on line at all times until early April 1996. The City has instituted a policy to store filter medium on site to avoid delays related to acquiring medium. The policy also requires evaluation and correction of filter medium depth before and after the rainy season when treatment plant flows would further delay problem correction, and at times of non-routine flow conditions. The Laguna Treatment Plant upgrade project has added 6 filters to the 8 filters that existed at the time of medium loss. The additional filters provide flexibility for filter maintenance, even during high flows. Refer also to Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-132

Comment Summary: The comment states that variations in the effluent pathogen data shown in Appendix H-3 (Reclaimed Water Quality Update) may be due to an annual cycle in addition to the filter medium loss problem described in Response to Comment 85-131.

The EIR/EIS authors agree that *Cryptosporidium* oocyst density in reclaimed water may vary as a result of annual cycles of *Cryptosporidium* in infected mammals in the Subregional System service area.

Response to Comment 85-133

Comment Summary: The comment states that dilution used to conduct toxicity testing should be adjusted based on test results.

If an effect is found at the 100 percent concentration (undiluted) but none is found at the 50 percent level, all that can be said is that the toxic threshold is somewhere between 50 and 100 percent. It could be 51 or it could be 99 percent. The EIR/EIS authors agree that results of toxicity testing using 100, 50, 25, 10, and 5 percent concentrations can now be used to refine testing to better characterize reclaimed water which is often present in the Laguna and Santa Rosa Creek in concentrations in the range of 70 to 90 percent. A memorandum has been sent to the City of Santa Rosa recommending that the concentrations used in future toxicity testing include concentrations of 95, 90, and 75 percent in addition to the other 5 concentrations now being tested. Also refer to Responses to Comments 85-162, 85-164 and 85-165.

Response to Comment 85-134

Comment Summary: The comment asks: 1) what an impact is, 2) whether an impact occurs only when there is an enforceable numeric criterion in effect, 3) if only those regulatory requirements in effect at the time of the publication of the Draft EIR/EIS were used to evaluate impacts, 4) what happens if the regulations change before Santa Rosa obtains its increased discharge permit, and 5) what is the long-term prognosis for Santa Rosa's ability to retain usage of the Laguna and Russian River for reclaimed water discharge.

The criteria for evaluating whether or not something is a significant impact are described in the first paragraph of page 2 in Appendix I-12 (Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS. Criteria are based on enforceable and unenforceable EPA and State standards, as described in Appendix I-12. Impacts may occur that were not evaluated for significance because no standards exist by which to evaluate the significance of the impact. Many impacts were identified that were not evaluated for significance because of lack of standards. For example the range of impacts of irrigation on total dissolved solids in West County streams was presented, although the significance of the predicted concentrations of total dissolved solids could not be evaluated. Foreseeable changes in regulations have been considered where possible. For example, the Project has considered the Draft Title 22 Water Reclamation Criteria in developing project criteria, and potential changes to drinking water regulations under the Enhanced Surface Water Treatment Rule are discussed in Master Response 8, located in Section 6.2 of this document. The impact of future unknown regulations on the longevity of any project component was not evaluated in the Draft EIR/EIS for the obvious reason that future unknown regulations are unknown at this time. As noted on page 2-15 of the Draft EIR/EIS the Project will comply with applicable policies and regulations, even those that change before issuance of the City's discharge permit. Refer to Response to Comment 10-5 regarding compliance with future regulations.

Response to Comment 85-135

Comment Summary: The comment states that synergistic effects can occur and asks "what assurances can Santa Rosa make that chemicals in their wastewater will not enter the drinking water supply."

The Regional Board has required sensitive life stage toxicity tests to detect synergistic effects. Refer also to Master Response 9, located in Section 6.2 of this document. The extent to which reclaimed water enters any particular water supply depends on the location of reclaimed water discharge, and the location and type of drinking water intake. The City of Sebastapol, Sonoma County Water Agency and Sweetwater Springs Water District each derive drinking water supplies from wells or other subsurface water extraction devices at locations downstream of the existing or proposed discharge locations. Of these, only the Sonoma County Water Agency supply is considered by the California Department of Health Services to be potentially affected by the quality of the Russian River. The City of Sebastapol and Sweetwater Springs Water District have wells

in aquifers that are considered by the Department of Health Services to be upgradient (i.e., not affected by) the adjacent surface water that would contain reclaimed water (refer to the minutes of 29 October 1996 meeting with Department of Health Services, located in Section 6.5 of this document). The maximum potential concentration of reclaimed water in the Sonoma County Water Agency supply is approximated by the highest monthly average reclaimed water concentration in the Russian River that is associated with each discharge alternative as described on page 3.1-15 of the Draft EIR/EIS. Refer also to Response to Comment 7-4 and 17-3.

Response to Comment 85-136

Comment Summary: The comment asks what harm synergistic effects of the project may cause on aquatic life.

Potential harm to aquatic life was evaluated using established water quality guidelines, toxicity tests, and risk assessments. Refer to Appendices I-16 (Water Quality Impact Analysis Report Volume I - Text) and K-4 (Ecological Risk Assessment), respectively, of the Draft EIR/EIS. Synergistic effects were evaluated to the extent that synergism is incorporated into guidelines and toxicity evaluations.

Response to Comment 85-137

Comment Summary: The comment asks what monitoring will be done at the point of discharge.

The Regional Board will establish monitoring requirements.

Response to Comment 85-138

Comment Summary: The comment asks what monitoring will be done at downstream water intakes

The Regional Board will establish monitoring requirements.

Response to Comment 85-139

Comment Summary: The comment asks what opportunities may occur for infiltration into wells along the Laguna de Santa Rosa?

Groundwater monitoring and project impacts on groundwater were evaluated in Appendix H-4 (Well Installation and Groundwater Monitoring Results), and H-1 (Hydrogeology of Storage/Reuse Areas and Evaluation of Potential Impacts to Groundwater), respectively, of the Draft EIR/EIS. The Project is not expected to affect wells along the Laguna. Refer to Response to Comment 17-3. Future monitoring depends on use of the well supply. Federal and State drinking water regulations mandate collection of water quality information from some wells.

Response to Comment 85-140

The comment asks what monitoring has occurred in wells along the Laguna de Santa Rosa in areas that may be subject to infiltration by reclaimed water.

Laguna wells have been determined not to be under the influence of surface water, and thus not be affected by discharge. There was thus no program of groundwater sampling as part of the Long-Term Project. Monitoring wells were installed in two locations in Sebastopol that are under consideration for irrigation with reclaimed water. Groundwater monitoring is described in Appendix H-4 (Well Installation and Groundwater Monitoring Results) of the Draft EIR/EIS.

Response to Comment 85-141

The comment asks what monitoring is done by water suppliers along the River.

Monitoring by water suppliers is discussed in Section 4.7 of the Draft EIR/EIS, in the discussion of drinking water supplies that begins on page 4.7-2. Quality of local municipal drinking water supplies is summarized in Table 4.7-2 on pages 4.7-4 and 4.7-5.

Response to Comment 85-142

The comment quotes an article, Synergistic Activation of Estrogen Receptor with Combinations of Environmental Chemicals, published in Science Magazine on June 7, 1996.

Refer to Master Response 9, located in Section 6.2 of this document, regarding endocrine disrupters.

Response to Comment 85-143

Comment Summary: The comment refers to the discovery of estrogenic effects and questions how the existing information is sufficient to permit discharge alternatives.

The State and Regional Boards will base their permit on regulations in place at the time of permit issuance. If a basis for regulating synthetic estrogens has been established, then the Regional Board could impose limits to protect beneficial uses. The Subregional System would need to determine how best to comply with any such limit at the time such a limit is imposed (refer to Response to Comment 85-134). Since no benchmark currently exists for evaluating impacts of synthetic estrogens on human or aquatic life, a quantitative analysis was not included in the Draft EIR/EIS. Refer to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-144

Comment Summary: The comment describes regulatory uncertainty and asks for the origin of the standards presented in the Draft EIR/EIS. The comment asks how future changes in regulations are addressed.

As discussed on page 40 in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS, the Regional Board objectives are those currently in place, and the EPA criteria are those that are proposed for the State of California. In cases where more than one existing or proposed aquatic life standard exists for a compound, the lowest of the values was used to evaluate for significant water quality impacts. The basis for the evaluation of health impacts is described in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Page 2-15 of the Draft EIR/EIS has been revised to state that the project will remain in compliance with future regulations (refer to Response to Comment 10-5).

Response to Comment 85-145

Comment Summary: The comment asks why most of the constituents listed in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) Table 1 do not appear in Appendix H-1 (Hydrogeology of Storage/Reuse Areas and Evaluation of Potential Impacts to Groundwater) Table 1. The comment also asks if levels determined by EPA to be safe will be met.

As stated on page 7 in Appendix H-2 (Reclaimed Water Quality), of the Draft EIR/EIS, Table 1 contains only constituents which have been detected in reclaimed water. The results of all analyses (including non-detected constituents) are found in the appendices of Appendix H-2. The “standards” (points of significance) are shown in Table 1 of Appendix H-2 along with Santa Rosa’s reclaimed water monitoring results (detectable compounds). The application of the points of significance (standards, guidelines, etc.) in the evaluation of impacts is described in Sections 2.1 and 2.3, and in Table 6 on page 4 of Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS. Thus, EPA safe levels formed the basis of the evaluation criteria and impacts are considered significant if the EPA safe levels will not be met as a result of the Project.

Response to Comment 85-146

Comment Summary: The comment states that use of mg and µg is confusing and asks that just one of these units be used in tables.

Both mg and µg are used in an effort to reduce the number of digits and minimize column width and thus the size of the document. There are 1,000 µg in 1 mg.

Response to Comment 85-147

Comment Summary: The comment asks “which waters in the lower river have been designated cold and which warm.”

The EIR/EIS authors consider the habitat in all waters located downstream of existing and proposed discharge locations to be warmwater. The Regional Board’s finding of exactly when and where cold and warm water habitat exist is vague (refer to Table 2-1 on page 2-4.00 in *Water Quality Control Plan, North Coast Basin Region 1, 1994*).

Response to Comment 85-148

Comment Summary: The comment asks for the basis of habitat designations of warm and cold.

The warmwater beneficial use is defined based on page 2-2.00 in the *Water Quality Control Plan, North Coast Basin Region 1, 1994*. Refer to Response to Comment 85-147.

Response to Comment 85-149

Comment Summary: The comment asks how the proposed listing of steelhead will affect categories of warm and cold water habitat.

The understanding of the EIR/EIS authors is that the Regional Board’s beneficial use designation was based on preservation of anadromous fish and the designation of waters as warm or cold will not be modified in response to federal action pursuant to the Endangered Species Act.

Response to Comment 85-150

Comment Summary: The comment asks for the meaning of “dampened substantially” as used on Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) page 40.

The variability in concentrations of constituents in reclaimed water is reduced when put in ponds. This is because the detention time in ponds is long relative to the time scale of reclaimed water quality variability. Reclaimed water with a high constituent concentration mixes with a low constituent concentration such that pond effluent reflects average reclaimed water quality. This effect would be similar for all chemical constituents.

Response to Comment 85-151

Comment Summary: The comment asks if “dampened substantially” as used on Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) page 40 means that the City relies on ponds for treatment.

The City does not rely on ponds for treatment. Refer to Response to Comment 85-150.

Response to Comment 85-152

Comment Summary: The comment asks for the “standards and monitoring that will be applied at the point of discharge.”

The standards used to determine potential impacts of discharge of reclaimed water are discussed in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS. Effluent limits, points of compliance and monitoring requirements will be determined by the Regional Board permitting process.

Response to Comment 85-153

Comment Summary: The comment asks for the fate of constituents in the summer.

The potential impacts of long-term project irrigation are described in Sections 4.4, 6.1, 6.2, 7.1, and 7.2 in Appendix I-16 (Water Quality Impact Analysis Report) of the Draft EIR/EIS. Impacts of the existing irrigation system are not considered, except to the extent that existing irrigation contributes to the existing conditions in the Laguna.

Response to Comment 85-154

Comment Summary: The comment states that the effect of peak reclaimed water constituent concentrations over a one hour period was not evaluated and that potential impacts were not documented.

As explained on page 40 in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS, storage eliminates the short-term variation of reclaimed water quality. Thus, routing of reclaimed water through storage eliminates the need to consider the impact of short-term constituent concentration peaks on receiving water quality.

Response to Comment 85-155

Comment Summary: The comment states that some constituents are more toxic than others and asks that the more toxic ones be “tracked.”

The origin of the water quality standards that were used as points of significance in this Draft EIR/EIS is described in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts). The point of significance was established for each constituent based on its toxicity. Thus, the evaluation criteria already account for the variations in toxicity between constituents.

Response to Comment 85-156

Comment Summary: The comment asks for the impact of peak constituent concentrations on aquatic life.

Refer to Response to Comment 85-154.

Response to Comment 85-157

Comment Summary: The comment asks how narrative regulations are enforced and what compliance monitoring occurs.

Narrative objectives are enforced by the Regional Water Quality Control Boards and the State Water Resources Control Board. Monitoring will be determined by the Regional Board. The Regional Board currently requires that attainment of narrative objectives be evaluated each time a water sample is collected.

Response to Comment 85-158

Comment Summary: The comment states that “there are plenty of foul smelling and tasting fish in the Laguna and Russian River” and asks “what is done about that.”

Considerable sampling of fisheries in the project area has been conducted for the EIR/EIS, and the EIR/EIS authors are unaware of any evidence that fish in the project area are foul smelling or foul tasting. The comment makes no specific link between the unsubstantiated assertion of foul smelling and tasting fish and the Project, and therefore no further response can be provided.

Response to Comment 85-159

Comment Summary: The comment repeats concerns about foul sediment odor and asks “what is done about that.” The comment also asks how Regional Board staff enforce odor standards

The EIR/EIS authors are aware of several sediment odors that can occur in the Laguna and the Russian River. Sediment odor is generally related to the presence of organic matter such as algae and leaves. Organically enriched sediments tend to be depleted of oxygen, and produce hydrogen sulfide (which smells like rotten eggs). The effect of the project on algae production and dissolved oxygen was evaluated, as described in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. All monitoring done by Regional Board staff and permittees (such as the Subregional System) includes monitoring and reporting any apparent abnormal odor. Regional Board enforcement of odor violations would be handled according to Regional Board procedure.

Response to Comment 85-160

Comment Summary: The comment states that foam is frequently seen in the Russian River and asks if foam ever occurs at the point of discharge.

Foam is included in the “floating material” evaluation criterion in Table 3-1 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS and evaluated on page 22 in Appendix I-16. Floating material in reclaimed water has been monitored monthly since 1991. Floating material has not been reported in Santa Rosa’s reclaimed water and is, therefore, considered non-detectable. The operations of the treatment plant are not expected to change in such a way that will cause floating matter to occur. Therefore, floating material was removed from consideration of significant impacts.

Response to Comment 85-161

Comment Summary: The comment asks why no reference is made to chlorophyll samples taken by the City, and asks if the consultant has substituted computer estimates for actual data.

Measurements of chlorophyll *a* in the Russian River and Santa Rosa Plain are summarized in the setting section of Section 4.6 of the Draft EIR/EIS beginning on page 4.6-10 and in Appendices I-4 (Laguna de Santa Rosa Water Quality Monitoring Results) and I-6 (Russian River Water Quality Monitoring Results) of the Draft EIR/EIS. The model was used to predict chlorophyll *a* concentrations under different discharge scenarios. As described in Appendix I-8 (Russian River Water Quality Model) of the Draft EIR/EIS, existing chlorophyll *a* concentrations were used as input for the model. The methods for estimating chlorophyll *a* with the model are also described in Appendix I-8.

Response to Comment 85-162

Comment Summary: This comment states that since the concentration of wastewater in Santa Rosa Creek is often in the range of 70 to 90 percent of the streamflow, toxicity testing using effluent concentrations of 100, 50, 25, 10, and 5 percent is inadequate. This comment also asks what is meant by lowest effect; how is effect defined; and what happens when an effect occurs.

Refer to Response to Comment 85-133 regarding concentrations used for toxicity testing. An effect is defined as a test in which the organisms do not survive as well as control organisms. The lowest effect is the lowest dilution at which a significant effect is found. When an effect occurs that results in a violation of the NPDES permit, the City of Santa Rosa is subject to disciplinary action (fine, mitigation, or revocation of permit) by the Regional Water Quality Control Board.

Response to Comment 85-163

Comment Summary: This comment asks if flow data for the Laguna de Santa Rosa are available for areas up- and downstream of the discharge, and aren't such numbers needed to determine the dilution of reclaimed water in the creeks.

Flow data for all parts of the Laguna system are available, and reclaimed water dilutions have been calculated for each part of the Laguna system on a daily basis. These numbers are given in each of the annual migratory fish reports cited in Appendices L-1 (Anadromous Fish Migration Study Program, 1991-1994) and L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS. Refer also to Response to Comment 85-306.

Response to Comment 85-164

Comment Summary: This comment asks if the toxicity testing program assumes that toxic levels are static, and will toxicity be monitored on an ongoing basis.

Toxicity testing on a quarterly basis has been a component of the Santa Rosa NPDES monitoring program since December 1995. See Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS for the results of the first three quarterly toxicity tests.

Response to Comment 85-165

Comment Summary: This comment asks whether toxicity tests will indicate the effects of toxins which accumulate.

Since discharges are made to a flowing system any accumulation of toxins from reclaimed water would necessarily take place in the sediments. No accumulation of toxins attributable to reclaimed water has been found in Laguna system sediments. Refer to Appendix I-13 (Sediment Quality Characterization for the Russian River, Laguna de Santa Rosa, Santa Rosa Creek, and Reclaimed Water Storage Ponds) of the Draft EIR/EIS.

Response to Comment 85-166

Comment Summary: This comment asks whether toxicity testing will be made in conjunction with other discharges and with urban runoff.

Evaluation of cumulative toxicity impacts is discussed on p. 4.6-140 of the Draft EIR/EIS, where it was found not to be significant. Toxicity testing as part of Santa Rosa's NPDES monitoring does not include evaluation of potential toxic effects of other discharges or of urban runoff. These sources are regulated by the Regional Water Quality Control Board.

Response to Comment 85-167

Comment Summary: The comment asks how the Regional Board determined that 159,000-pound per year total nitrogen reduction would attain the oxygen objective in the Laguna. The comment also asks if additional load reduction goals may be imposed if the 159,000 pound per year goal does not attain dissolved oxygen objectives.

The Regional Board's load reduction goals are given in Table 4 of the report cited in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS as NCRWQCB (1995). The derivation of the load reduction goals is also described in NCRWQCB (1995). It is expected that the goals would be changed if the existing goal does not attain dissolved oxygen objectives.

Response to Comment 85-168

Comment Summary: The comment asks how a higher load reduction goal would affect discharge under the 5, 10, 15 and 20 percent design discharge conditions.

With a higher load reduction goal, the higher discharge percentages would have a greater impact on the ability to attain the goal. This would require identifying other sources of nitrogen that could be reduced or eliminated to attain the goal. The load reductions necessary to meet the load reduction goals are defined in Tables 4-22 and 4-24 on pages 130 and 132 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS for total nitrogen and ammonia, respectively. If the Regional Board increased the load reduction goal for the Subregional System, the values in the columns labeled "Total Load That Would Need to Be Eliminated" would increase.

Response to Comment 85-169

Comment Summary: The comment asks how attainment of the dissolved oxygen criterion will be evaluated in the Laguna following attainment of the Regional Board's load reduction goals.

This determination is the responsibility of the Regional Board, which will also determine the appropriate locations for measuring load reduction.

Response to Comment 85-170

Comment Summary: The comment asks for the number of samples that were analyzed for constituents that were screened from further analysis because they were not detected in reclaimed water samples.

Santa Rosa's reclaimed water data, including the number of samples, are presented in the appendices of Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS.

Response to Comment 85-171

Comment Summary: The comment asks precisely where the samples for analysis of chemical constituents in Santa Rosa's reclaimed water were taken and if any were taken at the point of discharge.

The reclaimed water chemical constituents data used in the water quality impacts evaluation were collected at a location in the Laguna Treatment Plant after chlorine contact, as required in the discharge permit. Some samples were also taken in storage ponds, and these are identified as such. Sample collection time and location are described in the appendices of Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS.

Response to Comment 85-172

Comment Summary: The comment refers to Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) and asks for the method and laboratory for water quality data.

Water quality data are not provided in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS, so the EIR/EIS authors assume that the comment refers to reclaimed water and receiving water data used in the analysis of impacts. Many thousands of data have been assembled from sources which are cited in the Draft EIR/EIS, especially Appendices H-2, H-3, H-4, I-3, I-4, I-5, I-6, I-16, and K-4. Data sources include the Regional Board, the City of Santa Rosa, other wastewater treatment agencies, and the Draft EIR/EIS authors. Many different laboratories have been used by each data source. Laboratories that have provided analytical services for the City of Santa Rosa include Brelje and Race in Santa Rosa, Legend Analytical Services in Santa Rosa, Pace Laboratory in Marin County and the Laguna Treatment Plant Lab. Some of these laboratories have also provided analytical services for the Regional Board and the Draft EIR/EIS authors. Analyses have been conducted according to EPA-approved methods that are cited in 40 CFR 136 and in *Standard Methods For The Examination of Water and Wastewater* (various editions published by the American Public Health Association, American Water Works Association and the Water Environment Federation), except for constituents such as attached algae where EPA has not considered and approved methods.

Response to Comment 85-173

Comment Summary: The comment asks what detection limits were, and if the lowest possible detection limit was used.

Detection limits are indicated by an asterisk by the data point in the appendices to Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS. Reporting limits for each method vary. The reporting limits in many cases cannot reflect the lowest possible number that is technologically feasible. The lowest possible number that is technologically feasible can generally only be achieved in extremely pure samples.

Samples from natural environments often have naturally occurring substances that can interfere with the analysis and cause the reporting limit to be higher than is “technologically feasible”.

Response to Comment 85-174

Comment Summary: The comment asks if all the chemical constituents in Table 4 of Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) correspond to the Quarterly Monitored Priority Pollutants.

Since Table 4 on page 10 of Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS consists of footnotes for Table 1 on page 3 in Appendix I-12, the EIR/EIS authors assume the comment refers to Table 1. The EIR/EIS authors also assume that “Quarterly Monitored Priority Pollutants” refers to constituents that are monitored in reclaimed water on a quarterly basis as required by the NPDES discharge permit. As noted in the table caption, Table 1 lists the numeric water quality objectives for the protection of aquatic life. Considerable overlap exists between the constituents in Table 1 and those monitored in reclaimed water on a quarterly basis, but the overlap is not complete. For example, many of the metals listed in Table 1 (silver, cadmium, chromium, etc.) are monitored monthly rather than quarterly. In addition, no numeric water quality objectives exist for some constituents monitored quarterly in reclaimed water (e.g., acetone and many other organic compounds).

Response to Comment 85-175

Comment Summary: The comment asks why sediment samples were collected on only one day.

Unlike water, sediment is relatively static and its quality does not change appreciably from day to day. Therefore, one set of samples is representative of a relatively long time frame.

Response to Comment 85-176

Comment Summary: The comment asks about the use of previously collected sediment samples at Kelly Farm Demonstration Wetland.

Kelly Farm Demonstration Wetland sediment data were used as a basis for comparison. This information is found in the Comparison of Results with Other Data section on page 28 in Appendix I-13 (Sediment Quality Characterization and Impact Assessment) of the Draft EIR/EIS.

Response to Comment 85-177

Comment Summary: The comment asks why samples were collected at Trenton Healdsburg Road, where the samples could be affected by Windsor’s discharge.

Downstream sediment samples were collected in the Laguna at Trenton-Healdsburg because the site is accessible, and to have continuity with water samples. The samples were collected approximately 150 feet upstream of, and are thus not affected by, the Windsor outfall. Since metals and organics do not tend to accumulate in gravel and sand, locations with a higher silt content were selected for sampling. This is, in effect, seeking out sample locations that will show potential elevated levels.

Response to Comment 85-178

Comment Summary: The comment asks if 1.5 µg/g is equivalent to 15 µg/mg.

A value of 1.5 µg/g is equivalent to 0.0015 µg/mg. The unit µg/g (and its equivalent mg/kg) are conventionally used in sediment analyses.

Response to Comment 85-179

Comment Summary: The comment states that “there is almost no writing on [Appendix I-13] page 13 in my copy. Is anything missing?”

Nothing is missing. It is a short page to avoid breaking the following figure between pages.

Response to Comment 85-180

Comment Summary: The comment asks if the detection limits are the best available, and would use of other technologies lower the detection limit.

The reporting limits used in this study were based on the best technology available using EPA-approved methods. Refer to Response 85-173.

Response to Comment 85-181

Comment Summary: The comment states that Appendix I-13 (Sediment Quality Characterization and Impacts Assessment) contains discrepancies and asks for an explanation.

The sediments described in Appendix I-13 (Sediment Quality Characterization and Impacts Assessment) were analyzed by two different methods (WAE and SAE). In Appendix I-13 of the Draft EIR/EIS the results are presented in terms of mg/kg wet weight, mg/kg dry weight (note mg/kg and µg/g are equivalent), µg/g organic carbon, and µg/cm². The reasons for presenting the data in a variety of ways are discussed in Section 3.1 in Appendix I-13. In Section 4.6 of the Draft EIR the data are presented only in terms of mg/kg wet weight.

The authors agree that the sediment data presented in Tables 4.6-16 and 4.6-17 on pages 4.6-25 and 4.6-31 of the Draft EIR/EIS should be described as being mg/kg wet weight rather than just mg/kg.

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

Pages 4.6-29 through 4.6-31. The title of Table 4.6-16 is revised as follows:

Table 4.6-16

Summary of Sediment Quality in the Laguna de Santa Rosa (mg/kg [wet weight](#))

Pages 4.6-31 through 4.6-33. The title of Table 4.6-17 is revised as follows:

Table 4.6-17

Summary of Sediment Quality in Santa Rosa Creek (mg/kg [wet weight](#))

Response to Comment 85-182

Comment Summary: The comment asks why mg and µg units are used.

Both mg and µg are used in an effort to reduce the number digits and thereby increase readability and minimize column width and thus the size of the document.

Response to Comment 85-183

Comment Summary: The comment asks for an explanation of the quote on page 29 Appendix I-13 (Sediment Quality Characterization and Impact Assessment) that “the concentration of copper has not increased in the reclaimed water since routine collections were begun in 1988.”

Copper levels in reclaimed water have remained essentially the same since 1988. Refer to Response to Comment 85-126.

Response to Comment 85-184

Comment Summary: The comment asks why bacteriological samples were collected and mentioned, but not reported.

Bacteriology data were reported in Table 3 on page 27 in Appendix I-13 (Sediment Quality Characterization and Impact Assessment) of the Draft EIR/EIS.

Response to Comment 85-185

Comment Summary: The comment relates to Appendix I-13 (Sediment Quality Characterization and Impact Assessment) and asks if sediment samples were collected in ponds and analyzed for bacteria.

Bacteriology samples were not collected from wastewater pond sediments.

Response to Comment 85-186

Comment Summary: The comment contains the observation that “there has been a significant accumulation of heavy metals in the sediments affected by wastewater. I anticipate an analysis of how this situation affects biotic life.”

The evaluation of the impacts of heavy metals in the sediments on aquatic life is described in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS.

Response to Comment 85-187

Comment Summary: The comment asks for an analysis of how reclaimed water quality will change as flows increase.

Page 158 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS describes the reasons why reclaimed water quality is not expected to degrade as flows increase.

Response to Comment 85-188

Comment Summary: The comment is related to Appendix I-16 and asks “how many nondetects were obtained over how long a period to justify dropping 60 criteria that were dropped.”

No criteria were eliminated. The comment appears to confuse criteria with constituents. Constituents are not the same as criteria. Constituents are any component of a water such as reclaimed water. Criteria are defined in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS as a particular constituent concentration that is the basis for determining impact significance (i.e., if the concentration is exceeded as a result of the Project, the impact would be considered significant). Particular constituents were screened from further analysis in some cases, and the basis for doing so is discussed at the beginning of each section of Appendix I-16 (Water Quality Impact Analysis Volume I - Text) of the Draft EIR/EIS. For example, an explanation for screening constituents is provided in Sections 4.1.1, 4.3.1, 6.1.1 and 6.1.2 of Appendix I-16. The number of non-detects and the time period over which the data were collected can be found in the appendices of Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS.

Response to Comment 85-189

Comment Summary: The comment asks if sediments were analyzed for the 60 screened constituents.

Many constituents were tested for in sediments. Refer to Section 4.0 in Appendix I-13 (Sediment Quality Characterization and Impact Assessment) for information on which constituents were found in detectable concentrations in sediments.

Response to Comment 85-190

Comment Summary: The comment asks of a need to project the future occurrence of the 60 screened constituents in sediment and wastewater in the event of increased discharges.

Page 158 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS describes the reasons why reclaimed water quality is not expected to degrade as flows increase. Constituents that have not been detected previously are not expected to occur in the future. The effect of increased discharges on sediment quality was analyzed and the analysis is presented in Sections 6.1 and 6.2 in Appendix I-13 (Sediment Quality Characterization and Impact Assessment) of the Draft EIR/EIS.

Response to Comment 85-191

Comment Summary: The comment asks if Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 3-1 values represent points of significance for water or sediment quality.

Table 3.1 on page 7 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS includes points of significance for water and sediment. The table is organized into four sections, the last of which addresses sediment quality. Units of mass per volume (e.g., mg/L) refer to water, whereas units of mass per mass (e.g., mg/Kg) refer to sediment.

Response to Comment 85-192

Comment Summary: The comment asks why water and sediment are both addressed in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 3-1 on page 7.

Table 3.1 in Appendix I-16 of the Draft EIR/EIS includes points of significance for water and sediment for the sake of completeness. The points of significance for sediment used in Table 3.1 are discussed in Section 6.1 in Appendix I-13 (Sediment Quality Characterization and Impact Assessment).

Response to Comment 85-193

Comment Summary: The comment asks for a description of the interaction between water and sediment.

The interaction of water and metals in sediment is discussed in Section 6.2.4-1 in Appendix I-13 (Sediment Quality Characterization and Impact Assessment) of the Draft EIR/EIS. The interaction of water and organics in sediments is discussed in Section 6.2.3-4 in Appendix I-13.

Response to Comment 85-194

Comment Summary: The comment asks for how long and how frequently the 60 screened water quality criteria were analyzed.

The number of non-detects and the time period over which the data were collected can be found in the appendices of Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS.

Response to Comment 85-195

Comment Summary: The comment suggests that an impacts analysis is incomplete unless the organism being affected are considered. The comment states that new research has identified many impacts that are not regulated, and asks how “all of the probable uncertainties with present regulations in regard to specific constituents” can be identified.

Impacts on aquatic life are considered in Section 4.9 and Appendices J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) and L-7 (Aquatic Biological Resources Impacts Analysis Report) of the Draft EIR/EIS. It is not possible at this time, and may never be possible, to know every concentration of every substance that will potentially cause harm to every possible organism. Therefore, methods such as toxicity tests, concentration standards, and risk assessments were developed. These are currently recognized by the scientific and regulatory community as the best way to evaluate potential effects on organisms. This was the approach taken in the Draft EIR/EIS.

Response to Comment 85-196

Comment Summary: The comment asks how it can be assumed that heptachlor will not pose a threat, especially when it may be brought in illegally from other countries.

The risk of legal use of heptachlor is addressed in Responses to Comments 85-226 and 85-227. The Draft EIR/EIS cannot account for illegal activities unless a basis for assuming some particular illegal activity is available. The EIR/EIS authors have not presumed that illegal use of heptachlor would occur.

Response to Comment 85-197

Comment Summary: The comment notes that non-detect does not mean that the compound is absent, and asks for the justification for eliminating non-detectable compounds from further consideration.

As explained in the Draft EIR/EIS, at the beginning of Sections 4,6, and 7 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text), a non-detectable substance was eliminated from further consideration only if its reporting limit was less than the applicable point of significance and if there was no reason to believe that the concentration would increase after its entry into the environment (for example through discharge or via irrigation).

Response to Comment 85-198

Comment Summary: The comment asks which of the screened constituents behave as xenoestrogens.

Potential environmental estrogens are discussed starting on page 2-2 of Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS. Refer to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-199

Comment Summary: The comment states that extreme pH conditions are not reflected in the average values that were considered, and impacts of extreme values should be considered.

Impacts associated with pH changes were modeled, and were not based solely on an examination of averages. Refer to Response to Comment 12-54.

Response to Comment 85-200

Comment Summary: The comment asks for documentation of storage pond detention time and an explanation of how storage dampens variation in the quality reclaimed water that is discharged.

The analysis of water quality impacts caused by discharge is based on the average reclaimed water quality values, as described on page 25 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Page 25 states that “the large capacity of Laguna storage relative to discharge volume assures that variations in plant reclaimed water quality will be dampened and the quality of discharge will be much more constant.”

The basis of the assumed dampening effect relates to the volume of storage relative to the planned flow of discharge. The total amount of storage in the Laguna is currently 1,450 MG, as described in the 1995 Report of Waste Discharge. The water balance

calculations, upon which the long-term project is based, assume that 1,200 MG will be usable storage. Laguna storage consists of several large storage reservoirs through which discharge is managed and will be managed under the long-term project (i.e., Meadowlane C Pond, Meadowlane D Pond and Delta Pond). The capacity of these large ponds is approximately 1,208 MG. The remaining storage ponds (capacity 242 MG) are used for irrigation supply and discharge from them occurs only occasionally (i.e., once per year for about one day). The 1,200 MG of Laguna storage upon which the long-term project water balance is based represents the storage capacity of the three large ponds used to manage discharge.

The following table shows the average and maximum monthly discharge volume for each design discharge scenario, and the highest monthly discharge volume in 1976. Values are shown in MG derived by using the monthly water balance model described in Appendix D-8 (Water Balance Model - Summary and Results):

	Volume (MG)			
	20 %	10 %	5 %	1 %
Average Monthly Discharge	381	232	153	56
Maximum Monthly Discharge	967	834	764	687
Max Monthly Value From 1976	800	667	597	0

All of the values in the above table are less than the available storage of 1,200 MG, which means that the detention time of reclaimed water in storage will be greater than one month. The maximum monthly discharge tends to occur when River flows are elevated, since the lowest River flows constrain reclaimed water discharge. As shown in Figure 3.1-2 on page 3.1-11 of the Draft EIR/EIS, annual discharge volume is lowest when discharge rate (as a percent of River flow) is highest. The analysis of water quality impacts in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS shows that discharge impacts are greatest at the highest reclaimed water concentrations, such as that which occurs in a dry year (which is represented by 1976 flows). Using the highest monthly discharge rate for 1976 as given in the above table, the minimum reclaimed water detention time is 1.5 months for the 20 percent design discharge alternative (1,200/800), and 2 months for the 5 percent design discharge alternative (1,200/597).

Appendix 3 of Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS describes the inter-month and intra-month variation of reclaimed water quality. The intra-month variation (represented by the difference between maximum and minimum values for the month) is larger than the inter-month variation (represented by the difference between monthly average values). Thus, the largest variation in reclaimed water quality occurs on a time scale that is shorter than the minimum reclaimed water detention time. Therefore, the EIR/EIS authors concluded that average reclaimed water quality values were the appropriate basis for evaluating water quality impacts of discharge.

Response to Comment 85-201

Comment Summary: The comment asks for a description of the “fate of constituents.” The comment also asks if constituents combine to produce a “larger harmful substance.”

The fate of constituents is addressed in Appendix K-4 (Ecological Risk Assessment) and Appendix I-13 (Sediment Quality Characterization and Impact Assessment) of the Draft EIR/EIS for toxic and bioaccumulatory substances. For all other constituents such as nutrients the fate is evaluated in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Toxicity testing results, summarized in Appendices H-2 (Reclaimed Water Quality) and H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS, evaluate for formation of compounds that may be harmful and not identified in chemical analyses.

Response to Comment 85-202

Comment Summary: The comment identifies potential discrepancies between reported phthalate values, and asks how each were calculated.

Total phthalates was considered to be the sum of all detectable phthalates. The average for 1988-1995 was the sum of the average concentrations of bis-(2-ethylhexyl) phthalate, diethyl phthalate, and di-n-butyl phthalate or 5.58 µg/L. During the 1995-1996 time period, butylbenzyl phthalate was found in detectable concentrations on one occasion. Therefore the average total phthalates for 1995-1996 was the sum of the average concentrations of bis-(2-ethylhexyl)phthalate, diethyl phthalate, di-n-butyl phthalate, and butylbenzyl phthalate or 8.88 µg/L. The overall average for 1988-1996 ($7.6 = 7.64$ with rounding) was the sum of average concentrations of all 4 phthalates for all years. This was obtained by averaging the concentrations of each phthalate measurement (using half the reporting limit for concentrations below detection) taken between 1988-1996. The averages of the 4 phthalates were then summed.

Response to Comment 85-203

Comment Summary: The comment asks for the plan to monitor xenoestrogens.

The monitoring program will be determined by the Regional Board.

Response to Comment 85-204

Comment Summary: The comment expresses concern that dissolved cadmium and dissolved chromium were screened from analysis given that these substances have been found in sediments and are carcinogens.

The document to which this comment refers, Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS, deals with water quality impacts, not sediment quality impacts, not bioaccumulation and not human health impacts. See Appendices I-13 (Sediment Quality Characterization and Impacts Assessment) and L-6

(Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS for discussion of these other impacts. Screening of compounds from the human health risk analysis was based on human health standards, as described in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Any screening of compounds described in Appendix I-16 had no effect on which constituents were evaluated in Appendix J-3.

Response to Comment 85-205

Comment Summary: The comment asks that the impacts of dissolved cadmium and dissolved chromium human and aquatic life be evaluated.

The potential risk from these constituents to humans is addressed in the Draft EIR/EIS in Section 2.6 in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water). The potential risk from these constituents to aquatic organisms is addressed in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS; refer particularly to Section 5 and Section 7.

Response to Comment 85-206

Comment Summary: The comment asks how limit of detection is defined and asks about specific reported effluent quality values. The comment also states that in the Report of Waste Discharge the average effluent concentration “is 0.003 and detection is 0.001-0.005,” then asks if this would be considered below detection.

“Below detection” generally means that the concentration of the substance was below the reporting limit, which is also called the practical quantitation limit (and often just called detection limit). The practical quantitation limit represents a practical and routinely achievable detection limit with a relatively high certainty that any reported value is reliable. For a more complete discussion of detection limits, see Standard Methods for the Examination of Water and Wastewater (APHA, AWWA, WEF 1995) pages 1-10 through 1-11.

The comment is not clear what is meant by “detection is 0.001-0.005,” and this statement could not be found in the Report of Waste Discharge.

Reporting limits can depend on the laboratory but also can be very dependent on the type of sample and the presence of any compounds which may interfere with the analysis.

Response to Comment 85-207

Comment Summary: The comment notes that metals in clams deployed at Kelly Farm “were elevated,” and asks if information in the City’s 1995 Report of Waste Discharge was taken into account.

The potential for bioaccumulation of metals is discussed in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water for Santa Rosa's Subregional System) of the Draft EIR/EIS; refer particularly to Sections 5.1 and 7.2. This is also discussed in Appendix K-4 (Ecological Risk Assessment); refer particularly to Section 4.2). The information upon which the 1995 Report of Waste Discharge was based was also used as a basis for the Draft EIR/EIS.

Response to Comment 85-208

Comment Summary: The comment asks "where is the data for dissolved lead?"

The analysis of potential impacts of direct discharge on water quality and aquatic life (not necessarily human health) was limited to substances found in detectable concentrations in reclaimed water. As indicated in Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS, dissolved lead was never found in detectable concentrations in reclaimed water.

Response to Comment 85-209

Comment Summary: The comment asks for an explanation of a "lack of consistency in the presentation of test results throughout this document and in comparison to other documents."

The lack of consistency to which the comment refers is not identified in the comment and thus no response is possible. As discussed in the response to previous comments, data are reported in a manner consistent with the subject and purpose of each technical memorandum.

Response to Comment 85-210

Comment Summary: The comment asks for "the range of detections for the chemicals dropped and monitoring dates."

A list of organic chemicals that were detectable in reclaimed water and their reporting limits and range of concentrations can be found in Table 1 on page 7 of Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS. All the data collected are presented in the appendices of Appendix H-2, so the dates on which each constituent was analyzed can be found there.

Response to Comment 85-211

Comment Summary: The comment asks what changes in the Subregional System service area could cause the concentration of organic chemicals (which have been screened from further consideration on Appendix I-16 page 24) to increase.

The potential for increased concentrations is evaluated on page 156 of Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Federal regulations require publicly-owned treatment works to prevent commercial/industrial

development from adversely affecting reclaimed water quality. Reclaimed water quality is thus controlled by residential inputs, and no change in residential sewage effluent quality is expected due to future growth.

Response to Comment 85-212

Comment Summary: The comment asks why monthly discharge averages are used on Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) pages 24 and 25 to define design discharge alternatives.

Design discharge alternatives are defined based on the distribution of monthly average discharge rate, as described on page 3.1-9 in the Draft EIR/EIS. The impact of the discharge is evaluated using a daily simulation of reclaimed water discharge, as described in Appendices I-8 (Russian River Water Quality Model) and I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS.

Response to Comment 85-213

Comment Summary: The comment asks if contingency discharge is illegal.

Refer to Response to Comment 85-78.

Response to Comment 85-214

Comment Summary: The comment asks if “a 15 percent alternative is eliminated” and states “it is not being studied.”

Appendix A (Range of Discharge Evaluation) of the Draft EIR/EIS addresses the range of discharges. A 15 percent alternative is within the range addressed in Appendix A.

Response to Comment 85-215

Comment Summary: The comment asks how storage dampens variation in the quality reclaimed water that is discharged.

Refer to Responses to Comments 85-154 and 85-200.

Response to Comment 85-216

Comment Summary: The comment asks for the benefits of dampened reclaimed water quality variation.

As explained in the Responses to Comments 85-154 and 85-200, the quality of reclaimed water that is discharged varies much less than the quality of treatment plant effluent. This fact was accounted for in the Draft EIR/EIS by using long-term average reclaimed water quality data as the basis for impacts evaluation.

Response to Comment 85-217

Comment Summary: The comment asks for the justification that effluent quality is the same at “higher influent flows.”

Reclaimed water quality has not been correlated with influent quality, and the Draft EIR/EIS evaluation was not based on any assumption about short-term variation of reclaimed water quality as a result of influent flow changes. If plant effluent quality degrades with short-term increases in influent flow (i.e., during a storm), the results of the Draft EIR/EIS impacts analysis will be unchanged for two reasons:

- Storage dampens such variation (as explained in the Responses to Comments 85-154 and 85-200).
- Significant receiving water impacts occur during low receiving water flow, not the high receiving water flows that would be contemporaneous with high plant influent flows.

Refer also to Response to Comment 85-187 and 85-211.

Response to Comment 85-218

Comment Summary: The comment asserts that the document neglects to analyze impacts from conditions caused by previous discharges and that the evaluation of impacts is based only on existing conditions.

Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS presents an evaluation of project impacts using two baseline conditions. One baseline is the existing condition, and this is the basis for evaluating the significance of impacts. The other baseline is called the “No Discharge” baseline in Appendix I-16, and compares the effect of each design discharge to the simulated water quality conditions assuming no existing reclaimed water discharge. Refer also to Responses to Comments 85-187 and 85-211.

Response to Comment 85-219

Comment Summary: The comment asks for an evaluation of “a 30 day average that would allow a much higher discharge.”

As described in Appendices I-8 (Russian River Water Quality Model) and I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS, the impacts assessment was based on a daily simulation of discharge operations assuming particular discharge constraints that are part of the Project. Page 31 in Appendix I-8 of the Draft EIR/EIS describes that discharge on any particular day was based on the flow from the previous day. A 30-day averaging period for determining allowable discharge is not proposed as part of the Project.

Response to Comment 85-220

Comment Summary: The comment asks if impacts of existing constituent concentrations plus increased loading was considered in the cumulative impacts analysis.

All of the water quality analyses evaluated the total concentration of constituents resulting from adding constituents from discharge to the existing concentration of constituents in receiving waters. As described on page 157 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS, higher constituent concentrations resulting from other cumulative projects were also considered. Also refer to Responses to Comments 85-187 and 85-211.

Response to Comment 85-221

Comment Summary: The comment asks if compounds that were screened from analysis in the cumulative water quality impacts analysis could cause synergistic effects.

Synergistic effects can be detected through the use of sensitive life stage bioassays, which will be conducted pursuant to Mitigation Measure 2.5.7: Toxicity Control Program on page 2-133 in the Draft EIR/EIS.

Response to Comment 85-222

Comment Summary: The comment states that the treatment plant processes “break down” frequently and asks if water quality impacts have been assessed under breakdown scenarios.

Water quality impacts were assessed using existing reclaimed water quality, and no data within the specified reporting period were excluded from the report for any reason, including suspected plant break downs. Therefore, the impact analyses have incorporated break down scenarios. In addition, Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS shows *Cryptosporidium* and *Giardia* data reflecting a break down scenario. The issue of the effect of plant operations on *Cryptosporidium* and *Giardia* is addressed in Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-223

*Comment Summary: The comment asks if the *Cryptosporidium* “outbreaks” that occurred in January and March 1995 would occur again.*

The term “outbreaks” is used by public health professionals to describe occurrence of disease, and the EIR/EIS authors are aware of no cryptosporidiosis outbreaks in Sonoma County. *Cryptosporidium* oocyst counts in reclaimed water were elevated in early 1996, as reported in Appendix H-3 (Reclaimed Water Quality) of the Draft EIR/EIS. The potential for this to occur again is evaluated in Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-224

Comment Summary: The comment asks for a description of impacts under conditions of substandard filter performance.

Filters are used at the Laguna plant to remove particulate substances that hinder disinfection. Filtration is recognized as a necessary step for disinfection of reclaimed water that is to be used in the least restricted way, according to Title 22. An episode of substandard filter performance occurred in early 1996. The reason for the substandard filter performance, the effect on reclaimed water quality, and measures taken to prevent recurrence are described in Master Response 8, located in Section 6.2 of this document. Problems with filtration would not affect the levels of dissolved substances, which are not removed by filters.

Response to Comment 85-225

Comment Summary: The comment states that no comments are provided on the model because John Rosenblum will address such issues.

Refer to Responses to Comments 118-1 through 118-215.

Response to Comment 85-226

Comment Summary: This comment asks when heptachlor was banned from the USA and states that if it was banned before 1991, when it was detected in Santa Rosa's wastewater, then assuming it will not appear again because it is banned is not a rational argument.

The sale, distribution, and shipment of existing stocks of heptachlor was prohibited in the U.S. as of April 15, 1988. Commercial use of existing stocks is prohibited in California but use of existing stocks of heptachlor in the possession of homeowners as a termiticide is permitted. The appearance of heptachlor in reclaimed water in 1991 was presumably due to the legal use of existing stocks of heptachlor. Since existing stocks can only decrease, the assumption that its use will decrease and, therefore, it will not appear again is valid.

Response to Comment 85-227

Comment Summary: This comment asks what the impacts of heptachlor are on human health and aquatic life.

Potential project impacts of heptachlor on human health were evaluated in Chapter 2 of Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Potential project impacts of heptachlor on aquatic life are evaluated in Section 4.1.5 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Heptachlor is also considered in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. It was concluded in

these documents that Project alternatives pose no risk to humans or wildlife from heptachlor in reclaimed water.

Response to Comment 85-228

Comment Summary: The comment states that Table 4-5 fails to estimate the ultimate impacts of all toxic loadings, and asks that an explanation be provided for how the 50th and 95th percentiles can be identical or nearly identical for most constituents.

Table 4-5 on page 68 of Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS refers to the 1 percent design discharge to the Laguna scenario. In this case, the predicted concentrations for the 50th and 95th percentiles (the concentrations of reclaimed water will be less than these values 50 percent of the time and 95 percent of the time, respectively) are very similar because there is so little reclaimed water discharged that there is not much difference in amount of reclaimed water discharged between the 50th and 95th percentiles. The table is not intended to estimate all impacts, but rather to provide a compilation of the potential concentrations of constituents with a 1 percent design discharge.

Response to Comment 85-229

Comment Summary: The comment refers to Appendix I-16 (Water Quality Impact Analysis Report Vol. I - Text) Table 4-5 on page 68 and asks how “extreme loadings” are addressed.

Impacts for extreme loadings were addressed by examining the 95th percentiles for each discharge scenario. The “95th percentile concentration” is the daily reclaimed water concentration that is estimated to be greater than 95 percent of daily concentrations predicted for the hydrologic year (as described on page 4.6-74 of the Draft EIR/EIS). The water quality impacts simulation was performed using hydrologic data from a wet, normal and dry year. A 95th percentile concentration was identified for each of the three years, and impact significance was evaluated based on the highest of the three 95th percentile values. A graphical display of distribution of reclaimed water concentrations, including the 95th percentile concentration, in each of the three types of years is provided in Figures 4-1 through 4-12 in Appendix I-17 (Water Quality Impacts Analysis Report Volume II - Figures) of the Draft EIR/EIS. Figures 1 through 8 in Appendix D-9 (Analysis of Results From Daily and Monthly Water Balance Models) show the distribution (including the 95th percentile concentration) of reclaimed water concentrations over the 70-year period of record.

In general, the highest 95th percentile concentration occurs during a dry year. As indicated in Response to Comment 8-10, the dry year (1976) occurs only about every 18.5 years. Since the 95th percentile concentration occurs on only 5 percent of days during the particular year, significant impacts will only occur rarely.

Response to Comment 85-230

Comment Summary: The comment asks if the portrayal of only the 95th and 50th percentile reclaimed water concentration values in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 4-5 on page 68 is based on an assumption about the permissibility of discharging the remaining 5 percent of the time.

As indicated in the Response Comments 85-78 and 85-229, each design discharge alternative has been described in Appendix D-10 (Water Balance Contingency Plan) of the Draft EIR/EIS in terms of the full range and frequency of daily discharge rates that would occur over the 70-year period of record. After selection of a Project, the Regional Board would be asked for a permit that allows discharge over the expected range at the expected frequency.

Response to Comment 85-231

Comment Summary: The comment quotes from Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) as follows: "The concentration shown in Tables 4-5 through 4-11 on pages 68 through 110 were estimated for the maximum 95th percentile daily average reclaimed water concentration of the three years examined (wet, dry, normal)." The comment asks for an explanation of the quote.

Design discharge rate is the monthly average concentration in the Russian River that would be exceeded only in the single driest month every 20 months (1:20 reliability). With discharge to the Laguna, reclaimed water will be present in Santa Rosa Creek, the Laguna, and the Russian River. For each of these receiving waters, a range of reclaimed water concentrations is associated with each design discharge as determined by the daily water balance model. The concentrations of reclaimed water will be greater in Santa Rosa Creek than in the River because less dilution occurs in Santa Rosa Creek. For example, with a 20 percent design discharge to the Laguna, the concentration of reclaimed water in the Russian River will range from zero to approximately 20 percent.

The distribution of discharge concentrations as described in Figures 4-1 through Figures 4-12 in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS,) will be different for each type of year (normal, dry, wet). During a wet year the maximum concentration in the River will be approximately 11 percent. During a dry year the maximum concentration in the Russian River will be closer to 20 percent. For the same 20 percent discharge scenario, the concentration of reclaimed water in Santa Rosa Creek will range from zero to 80 percent. Again, these values are different for each type of year. So, in Santa Rosa Creek in a dry year with a 20 percent discharge scenario, the percent reclaimed water in the creek (from zero to 80) will occur with different frequencies. For example, the concentration of reclaimed water in Santa Rosa Creek (dry year, 20 percent discharge) will be less than 80 percent for 99.9 percent of the time and the concentration of reclaimed water in Santa Rosa Creek will be less than 20 percent 3 percent of the time.

In other words, there is a frequency distribution of reclaimed water concentrations associated with each discharge scenario and each year type. As described on page 28 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) the Draft EIR/EIS, to analyze the impact of each discharge scenario on conservative constituents, the resulting 95th percentile concentration for each constituent in each receiving water was estimated. The 95th percentile concentration is the concentration that is higher than is predicted to occur 95 percent of the time. In other words, 95 percent of the time concentrations will be lower than the 95th percentile value. The highest 95th percentile of the three year types was used to evaluate significance.

Response to Comment 85-232

Comment Summary: The comment refers to Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 4-7, and states that the concentration of phthalates is shown to be greater than the point of significance, and asks why this fact is not highlighted.

Phthalates were not highlighted because the point of significance for phthalates is considered questionable. The reasons for this conclusion are discussed in the section on phthalates starting on page 113 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS.

Response to Comment 85-233

Comment Summary: The comment asks for an explanation of several specific apparent inconsistencies between Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 4-7 and the City's 1995 Report of Waste Discharge.

In the Report of Waste Discharge, the concentration of 0.003 mg/L for chromium was the average concentration of chromium in reclaimed water, irrespective of discharge rates. The numbers in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS to which this comment refers are predicted concentrations in receiving water, which are not directly comparable to the concentration in undiluted reclaimed water that is given in the Report of Waste Discharge. There is always mixing between a discharge and the receiving water. The predicted concentrations of chromium in Santa Rosa Creek decrease with increasing concentration of reclaimed water because the average concentration of cadmium in reclaimed water is less than the average concentration of cadmium in Santa Rosa Creek. Therefore, discharge of reclaimed water dilutes the concentration of cadmium in Santa Rosa Creek and the more discharge, the lower the concentration of cadmium.

Response to Comment 85-234

Comment Summary: The comment asks for an explanation of apparent inconsistencies between mercury values in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 4-7 and the City's 1995 Report of Waste Discharge.

The values are not inconsistent. The 1995 Report of Waste Discharge value is the concentration of mercury in reclaimed water and the value in Table 4-7 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS is the predicted concentration of mercury in the receiving water.

Response to Comment 85-235

Comment Summary: The comment asks for an explanation of apparent inconsistencies between cadmium values in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 4-7 and the City's 1995 Report of Waste Discharge.

The values are not inconsistent. The 1995 Report of Waste Discharge value is the concentration of cadmium in reclaimed water and the value in Table 4-7 in Appendix I-16 of the Draft EIR/EIS is the predicted concentration of mercury in the receiving water.

Response to Comment 85-236

Comment Summary: The comment asks for an explanation of apparent inconsistencies between copper values in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 4-7 and the City's 1995 Report of Waste Discharge.

The values are not inconsistent. The 1995 Report of Waste Discharge value is the concentration of copper in reclaimed water and the value in Table 4-7 in Appendix I-16 of the Draft EIR/EIS is the predicted concentration of mercury in the receiving water. The comment misinterprets the predicted concentration for copper in Santa Rosa Creek (95th percentile, 20 percent discharge scenario). The predicted concentration is 0.011 mg/L not 0.003.

Response to Comment 85-237

Comment Summary: The comment asks for an explanation of "impacts from high loadings of various constituents from wastewater on the receiving water body."

The impact of reclaimed water discharge on receiving waters was evaluated in Section 4 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Impacts were evaluated for significance assuming conditions of very little dilution (95th percentile reclaimed water concentration). Impacts that are load related, such as attainment of the Regional Board load reduction strategy, are also addressed in Section 4 in Appendix I-16 of the Draft EIR/EIS.

Response to Comment 85-238

Comment Summary: The comment asks why cyanide is not mentioned in the 1995 Report of Waste Discharge.

Cyanide data were presented in Appendix C of the Report of Waste Discharge and NPDES Permit Renewal Application for the Santa Rosa Subregional Water Reclamation System (CH2M Hill 1995).

Response to Comment 85-239

Comment Summary: The comment asks what cyanide data are available for reclaimed water and Santa Rosa Creek that were collected prior to 1995.

Cyanide data in reclaimed water for 1988 through 1995 are presented in Table 1 on page 7 in Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS. Cyanide data in reclaimed water for 1995-1996 are in Table 2 on page 6 in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS. The EIR/EIS authors are not aware of any cyanide data for Santa Rosa Creek, and none were identified in the scoping or comment phase of the Draft EIR/EIS by other parties.

Response to Comment 85-240

Comment Summary: The comment asks if it is likely that cyanide that exists in Santa Rosa Creek now may have been put there by earlier discharges. The comment also asks what efforts are being made to identify the source of cyanide.

The EIR/EIS authors assume the comment is referring to cyanide in Santa Rosa Creek sediments since aqueous cyanide from earlier discharges would have been carried downstream. As discussed in Section 4.1 in Appendix I-13 (Sediment Quality Characterization and Impacts Assessment) of the Draft EIR/EIS, the only detectable cyanide in Santa Rosa Creek sediments was found above the discharge. No detectable cyanide was found in Santa Rosa Creek below the discharge. Therefore, it is unlikely that cyanide in Santa Rosa Creek came from earlier discharges. Although cyanide in sediments is not thought to result from Santa Rosa discharges, implementation of Mitigation Measure 2.5.5 on page 2-129 of the Draft EIR/EIS calls for identification and control of cyanide to address potential impacts of discharge.

Response to Comment 85-241

Comment Summary: The comment asks why no significant cyanide impact was identified in the Russian River.

A significant impact of cyanide in Santa Rosa Creek and in the Laguna was identified, but the impact is expected to diminish downstream with increasing dilution and no additional cyanide sources. The estimated cyanide concentration in the River was less than the point of significance.

Response to Comment 85-242

Comment Summary: The comment asks for the concentration of cyanide in 2010.

Assuming unchanged concentrations of cyanide in reclaimed water, and discharge at the same rate as explained on page 158 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS), and with unchanged concentration of cyanide in the receiving water upstream of the discharge, the concentration of cyanide in the receiving water below the discharge will be the same in 2010.

Response to Comment 85-243

Comment Summary: The comment asks for “the range of highs for each of the constituents.”

The range of impacts of reclaimed water discharge on receiving water is described in Section 4.1.5 of Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS.

Response to Comment 85-244

Comment Summary: The comment asks for the likely fate of cyanide in a water body.

The fate of cyanide in receiving water was evaluated in the Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS and in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS.

Response to Comment 85-245

Comment Summary: The comment asks if cyanide can be incorporated into sediment and released later into water.

As described on page 184 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text), cyanide is a volatile compound at the pH conditions expected in Project receiving waters, and therefore it does not accumulate in sediments.

Response to Comment 85-246

Comment Summary: The comment states “could we please hear from EPA on the criteria for the phthalate issue.”

The EPA has submitted comments (Comment Letter 2) on the Draft EIR/EIS and did not comment on phthalates. The Regional Board also did not address phthalates in their comments (Comment Letter 8). The Draft EIR/EIS provides a discussion of the EPA’s phthalate guideline on page 113 of Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text). Information there was provided by F.L. Mayer of the EPA Gulf Breeze Laboratory.

Response to Comment 85-247

Comment Summary: The comment concerns the statement “No statistically significant difference exists between the concentrations of detectable constituents in the Laguna above and below the discharge, with the exception of calcium, cadmium, copper, and conductivity” (Appendix I-16 [Water Quality Impact Analysis Report Vol.1] page 121). The comment asks for an explanation of the statement in light of the higher concentrations of some constituents below the discharge (Table 4-18 on page 122).

The EIR/EIS authors do not agree that the statement is a mischaracterization of a statistically significant difference in the concentrations of certain constituents in the Laguna above and below the discharge. While the concentrations of total chromium, total lead, etc. are slightly higher below the discharge, no statistically significant difference between the concentrations above and below the discharge was found. Thus, statistical analysis has shown that while there are differences, they are not statistically meaningful. In the same manner, the concentrations of dissolved nickel, total arsenic, and total magnesium are lower below the discharge but the difference above and below the discharge is not statistically significant. (The test of statistical significance determines the probability that differences in data indicate a true difference in the values above and below the discharge, as compared to the likelihood that any differences are due to random variation; differences are considered to be significant if there is less than a 5 percent chance that the variation is random.)

Response to Comment 85-248

Comment Summary: The comment asks to what extent prior reclaimed water discharges added to the conductivity of the Russian River.

The effect of prior discharges is reflected in the characterization of existing conditions in, Table 4-17 on page 121 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. The impact of prior discharges is approximated by the difference between the “Above Laguna” and “Below Laguna” values in the table. Conductivity averages 248 (± 38) mg/L below the Laguna and 263 (± 46) mg/L above the Laguna. The variability of the data is greater than the average difference between the two locations. Other factors, like background conductivity of Laguna water and Windsor’s discharge also contribute to the difference between these values.

Response to Comment 85-249

Comment Summary: The comment asks for a history of regulation of conductivity standards in the River.

A history of the conductivity standard can be requested from the Regional Board, but it is not relevant to the evaluation of project impacts.

Response to Comment 85-250

Comment Summary: The comment asks “what are the problems with high conductivity?”

High conductivity (which is a measure of salinity in water) causes osmotic regulatory problems (i.e. problems in regulating water intake) in aquatic organisms and is a Title 22 secondary drinking water standard to prevent taste and odor effects.

Response to Comment 85-251

Comment Summary: The comment states that a statement about conductivity on Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) page 129 is inconsistent with a chart on page 115.

As pointed out in Table 2 on page 8 in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS, the point of significance for conductivity in the lower River of 285 μmhos is a 50th percentile standard. This means that conductivity should be less than 285 μmhos in six or more months. As the comment points out, conductivity is predicted to exceed 285 μmhos in only four months. Therefore, the point of significance for conductivity is not predicted to be exceeded and no significant impact on conductivity is expected to occur.

Response to Comment 85-252

Comment Summary: The comment states that spending \$13 million to evaluate project impacts “is the highest level of absurdity.”

The scope of work for the project was developed in consultation with agencies and the public to allow development of adequate information to allow comparison of the identified alternatives at a project level of detail. Although it might have been possible to guess that some alternatives might work, it was necessary to develop quantified analyses to support conclusions regarding impacts.

Response to Comment 85-253

Comment Summary: The comment refers to Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Table 4-21 and asks what “a 95% concentration” means.

The 95th percentile concentration is defined on page 29 in Appendix I-16 of the Draft EIR/EIS as the concentration that is exceeded just 5 percent of the time. Additional discussion of frequency distributions and their use in the water quality analysis is presented in Response to Comments 85-229 and 85-231. Table 4-21 on page 128 in Appendix I-16 presents mean (50th percentile) and 95th percentile concentrations for four stream locations for alternative project scenarios.

Response to Comment 85-254

Comment Summary: The comment refers to Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) page 130 and asks “what data in storage ponds regarding cyanide is this referring to.”

The cyanide data are described in Section 3.2 in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS. Data were collected in Delta Pond and Meadowlane Pond.

Response to Comment 85-255

Comment Summary: The comment asks what “synergistic complexes” cyanide makes with other compounds.

The EIR/EIS authors are not certain what the comment means by “synergistic complexes”. This is not a recognized term in chemistry or biology. However, it is assumed that the comment is expressing concern about the potential for cyanide to combine with other compounds to create more toxic substances. According to the EPA document, *Ambient Water Quality Criteria for Cyanide* (EPA publication 440/5-84-028), cyanide reacts with a variety of organic and inorganic substances in the environment, primarily metals to form metalocyanide complexes, and with organic compounds to form synthetic organocyanides, also known as nitriles. The effect of these complexes is to reduce the toxicity of cyanide since free cyanide is the toxic form of cyanide. Therefore, cyanide does not form complexes that increase the toxicity of the individual compounds, but rather forms complexes that decrease toxicity.

Response to Comment 85-256

Comment Summary: The comment asks what the potential health effects of synergistic complexes are.

The potential health risks of cyanide and other constituents of reclaimed water were evaluated in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. As discussed in Response to Comment 85-255, any cyanide compounds are less toxic than pure cyanide.

Response to Comment 85-257

Comment Summary: The comment asks “what period of time was the cyanide tested in the ponds?”

The dates that the cyanide data in storage ponds were collected are described in Section 3.2 in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS.

Response to Comment 85-258

Comment Summary: The comment asks for the basis of the determination that predicted cyanide concentrations do not exceed the point of significance for cyanide.

The predicted concentration of cyanide exceeded the point of significance at some locations in receiving water and not at others. The method for estimating concentrations that were evaluated for significance is described on page 28 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS, and results of the analysis are described on page 110 in Appendix I-16. Refer also to Response to Comment 85-241.

Response to Comment 85-259

Comment Summary: The comment asks if the concentrations of reclaimed water used for toxicity testing will remain the same in the future as has been used in the past.

The EIR/EIS authors have prepared a memorandum and sent it to the City recommending an alteration in the concentrations of reclaimed water used for toxicity testing. Refer to Responses to Comments 85-133 and 85-162.

Response to Comment 85-260

Comment Summary: The comment to asks if any of the constituents of reclaimed water examined in this document would be identifiable in a TIE (toxicity identification evaluation).

Many constituents (for example heavy metals such as copper and lead, and organic compounds) potentially can be identified through a TIE (toxicity identification evaluation). The purpose of a TIE is to identify reclaimed water constituents that cause toxicity.

Response to Comment 85-261

Comment Summary: The comment asks why no costs for a toxicity identification and toxicity reduction evaluation is given in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text).

The Regional Board has an established water quality objective that prohibits any toxicity in the receiving water. Thus, toxicity impacts would need to be mitigated for the No Action (No Project) alternative as well as any Project alternative that would be implemented. Therefore, toxicity mitigation is not considered a project cost. Refer also to Response to Comment 12-46.

Response to Comment 85-262

Comment Summary: The comment states that mitigation enumeration in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) Tables 4-26 and 4-27 is unclear. The comment refers EIR/EIS authors to another comment letter for additional input on this issue.

The explanation about how to evaluate the information in Tables 4-26 and 4-27 in Appendix I-16 is provided on pages 134 and 135 of Appendix I-16. The EIR/EIS authors did not find any comments in the cited comment letter that Tables 4-26 and 4-27 were unclear.

Response to Comment 85-263

Comment Summary: The comment asks for the basis of the conductivity point of significance.

The point of significance for conductivity is a water quality objective established by the North Coast Regional Water Quality Control Board, as described on Table 2 on page 8 in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS.

Response to Comment 85-264

Comment Summary: The comment states that “calculations are merely an exercise in how to mask the facts with numbers,” asks for the basis of the conductivity standard, and asks for the impacts of conductivity.

The EIR/EIS authors do not agree that “calculations are merely an exercise in how to mask the facts with numbers”. The Draft EIR/EIS was developed to make the evaluation criteria and analysis of impacts quantitative and, therefore, objective. Quantitative calculations are a necessary element of the impacts analysis under this approach. The basis of the conductivity standard is described in the Response to Comment 85-263. Because the criterion as developed by the Regional Water Quality Control Board is not absolute, but specifies 90th and 50th percentile values, the analysis necessarily must reflect these points. Impacts of conductivity are described in the Response to Comment 85-250, and in Table 4-12 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS).

Response to Comment 85-265

Comment Summary: The comment asks for the irrigation regulations currently in effect.

The irrigation regulations from the North Coast Regional Board currently in effect are given in the permit issued by the Regional Board, Board Order 95-18.

Response to Comment 85-266

Comment Summary: The comment asks how current irrigation guidelines are similar to those proposed for Alternatives 2 and 3.

The current irrigation guidelines in effect in the Laguna specify performance standards for reclaimed water management that are similar to those being proposed for the South and West County Project proposals in Measure 2.2.1: Irrigation Conservation and Management Programs on page 2-21 of the Draft EIR/EIS. However, Measure 2.2.1 goes beyond management of reclaimed water and addresses other issues such as management of manure and pesticides.

Response to Comment 85-267

Comment Summary: The comment states that the evaluation of significance is based on a “contrived manipulation,” no human health studies, few aquatic life studies, information is presented piecemeal, and mixing of medians, means and averages ”appears to be an attempt to present numbers so as to minimize impacts.”

The EIR/EIS authors do not agree that the whole basis for significant adverse impacts in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS relies on a contrived manipulative definition. As stated in the comment the purpose of Appendix I-16 is to determine if the project would cause the concentration of constituents in the receiving water to exceed established water quality criteria or worsen any already non-attaining conditions. This definition of an impact is presented in Section 3.1 and also in Section 2.0 in Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS. Refer also to Response to Comment 85-264.

The EIR/EIS authors do not agree that “there are no human health studies.” Numerous studies formed the basis of Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

The comment that no aquatic life impact studies were conducted is not correct. Appendices I-4, I-5, I-6, I-7, I-13, I-15, K-1, K-2, K-3, K-5, L-1, L-2, L-4, L-5, and L-6 of the Draft EIR/EIS summarize extensive field study to evaluate resources and impacts.

The EIR/EIS authors disagree that the information is presented in a piecemeal and disjointed fashion and fails to utilize a uniform format for easy comparisons. Refer to Master Response 1, located in Section 6.2 of this document.

The use of means and medians and long-term averages was not “an attempt to present numbers so as to minimize impact.” Significant impacts of discharge on water quality were identified, and Appendix I-16 of the Draft EIR/EIS contains numerous explanations about how the analysis is conservative (e.g., assumptions skewed toward a finding of significance). Means and averages are the same thing. Medians were used when the

point of significance (as promulgated by a regulatory agency) is in terms of median. This is the case for conductivity. Medians were also used in the analysis of the results of the water quality model to present frequency distribution results of reclaimed water concentrations, and the median frequency was used as the lower limit for the range of impacts analysis. Refer also to Response to Comment 8-21.

Response to Comment 85-268

Comment Summary: The comment asks for the composition of runoff from areas that will be developed.

The potential for stormwater impacts of future development to cause project impacts is evaluated on page 164 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Identification of constituents of concern in urban runoff from development that is consistent with general plans occurs through the CEQA documentation associated with each general plan and individual project.

Response to Comment 85-269

Comment Summary: The comment asks for “Santa Rosa discharge levels” when urban runoff occurs, and the comment asks for the “levels of contaminants in the wastewater.”

The discharge of reclaimed water discharged during future runoff events will be in accordance with the range for the specific alternative described in the Draft EIR/EIS in Table 1-15 in Chapter 1; Figure 3.1-2 in Section 3.1; Figures 1 through 8 in Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models); and Figures 4-1 through 4-12 in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures). In general, the concentration of reclaimed water in the receiving water is low during storm events because of the increased receiving water flow. The range of constituent concentrations in reclaimed water is not expected to change since the range of constituent concentrations already includes measurements made during periods of runoff; the inflow and infiltration are not expected to increase for reasons described on page 157 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Refer also to Response to Comment 118-16.

Response to Comment 85-270

Comment Summary: The comment asks for the “common fate of constituents that get discharged together with the urban runoff.”

The fate of the constituents “that get discharged together with urban runoff” is evaluated in Appendix K-4 (Ecological Risk Assessment) and I-13 (Sediment Quality Characterization and Impact Assessment) of the Draft EIR/EIS for toxic and bioaccumulatory substances. For all other constituents such as nutrients the fate is evaluated in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of

the Draft EIR/EIS. These appendices address constituents that are found in both reclaimed water and urban runoff.

Response to Comment 85-271

Comment Summary: The comment asks if any compounds are “estrogenic chemicals that intermix and get stored in sediments to cause potential health problems to humans and wildlife.”

Some compounds in reclaimed water are suspected of having estrogenic effects. Potential health problems to humans and wildlife caused by estrogenic substances are evaluated in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS. Refer also to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-272

Comment Summary: The comment asks how wells along the Laguna would be affected by the project.

Wells along the Laguna are not affected by discharge. Refer to Responses to Comments 83-1, 83-2, 83-3 and 17-3.

Response to Comment 85-273

Comment Summary: The comment asks if Laguna wells have been studied and what is the result of any such study.

Refer to Responses to Comments 83-1, 83-2, 83-3 and 17-3.

Response to Comment 85-274

Comment Summary: The comment asks if prior reclaimed discharges and urban runoff have affected wells along the Laguna.

Laguna wells are addressed in Responses to Comments 83-1, 83-2, 83-3 and 17-3. The effect of prior discharges and other factors on the wells is not evaluated in the Draft EIR/EIS because these are not related to the Project alternatives. Based on the analysis included in the Responses to Comments 83-1, 83-2, 83-3 and 17-3, however, the effect of prior discharges is considered nil.

Response to Comment 85-275

Comment Summary: The comment asks for a list of the “additional chemicals in urban runoff that are expected to be added by the accommodated growth allowed by this project.”

Identification of constituents of concern in urban runoff due to development that is consistent with of general plans occurs through the CEQA documentation associated with each general plan and individual project. Urban stormwater runoff quality depends on land use practices and regional air quality, since both of these factors result in deposition of pollutants on the land surface. Development that is consistent with general plans includes no new land uses and would not affect regional air quality. Therefore, no additional chemicals would be expected in urban stormwater runoff from development that is consistent with general plans.

Response to Comment 85-276

Comment Summary: This comment asks for an explanation of the following statement made on page 165 (page 164 of the CD-ROM version) of Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text): "No cumulative projects have been identified that would change background water quality conditions in the Laguna or Santa Rosa Creek, which are not affected by any wastewater discharges except that of the Subregional System and the City of Windsor."

The EIR/EIS authors agree that this statement requires further clarification.

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

Page 165, Appendix I-16. The first paragraph in the Dilution Model section is revised as follows:

...No cumulative projects have been identified that would change background water quality conditions in the Laguna or Santa Rosa Creek, ~~which.~~ The Laguna and Santa Rosa Creek are not affected by any wastewater discharges except that of the Subregional System and the City of Windsor. The City of Windsor discharges to the Laguna at Trenton Healdsburg Road, but no change in its maximum discharge rate (because of Basin Plan restrictions) or quality (because of pretreatment regulations) are included in cumulative projects. Since no cumulative projects have been identified that will change background water quality conditions in the Laguna or Santa Rosa Creek (including the City of Windsor discharges), the Subregional System project cannot cause an exceedence, or cause the magnitude of an existing exceedence (e.g. cyanide) to increase in the Laguna or Santa Rosa Creek other than those identified for the Subregional System Project alone. ~~despite any impacts of cumulative projects on water quality.~~

In the Russian River, no significant impacts from dilution model constituents in Santa Rosa's reclaimed water were identified, with the exception of conductivity in the Russian River above the Laguna. This means that the Project discharge will not cause water quality objectives to be exceeded. Additional discharges of 4 mgd or 6.5 cfs (see Table 4-41) to the River from cumulative projects are expected during a normal year, but not in a dry year. The total of 6.5 cfs does not

include Cloverdale and Healdsburg because these discharge to groundwater and do not affect Russian River quality during the dry season when impacts are otherwise most likely to occur in the River. All of the other discharges in Table 4-41 are currently constrained by a 1 percent discharge limitation, so growth in these communities is not expected to result in higher reclaimed water concentration in the Russian River during a dry year when River flows remain low. Based on pretreatment regulations and the Regional Board requirement that these discharges be maintained at or upgraded to tertiary level, the quality of these discharges (except for conductivity, which is addressed below) is expected to remain constant. Thus, in a normal hydrologic year, an incremental wastewater flow of 6.5 cfs (relative to the minimum River flows of about 400 to 600 cfs that would occur in a normal year discharge season) is considered to be negligible and not expected to affect Russian River quality with regard to dilution model constituents. Therefore, the cumulative impacts analysis will not address any of the constituents evaluated using the dilution method, other than conductivity, in the Russian River.

Response to Comment 85-277

Comment Summary: The comment asks to what extent the modeling of contaminant loadings has included estimates for runoff toxins.

With the exception of nitrate and ammonia, the water quality models described in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS predicted concentrations, not loadings. Therefore, contaminant loadings from runoff toxins were not predicted. The concentration of urban runoff constituents was considered in the evaluation as part of the existing condition, since previous water quality sampling that was used to characterize existing conditions includes the effect of urban runoff.

Response to Comment 85-278

Comment Summary: This comment asks if the Draft EIR/EIS quotation in Comment 85-276 indicates that because the point discharges are regulated they will not cause impacts from their discharge.

The sentence in the Draft EIR/EIS that follows the quoted sentence states that no change in the City of Windsor's maximum discharge rate (because of Basin Plan restrictions) or quality (because of pretreatment regulations) are expected. The Draft EIR/EIS has evaluated existing conditions but has not determined the impacts of existing discharges from other municipal systems.

Response to Comment 85-279

Comment Summary: The comment asks for an enumeration of “upsets and breakdowns at both SR and Windsor Treatment Plants.” The comment also asks for a description of the “fate of wastewater in those circumstances.”

The analysis of impacts is based on reclaimed water quality data that reflect upsets and breakdowns. Reclaimed water quality data are summarized in Appendices H-2 (Reclaimed Water Quality) and H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS. Upsets and breakdowns at the Windsor Treatment Plant are reflected in the receiving water quality. Refer to Appendix I-6 (Russian River Water Quality Monitoring Results) of the Draft EIR/EIS. Refer also to Master Response 8, located in Section 6.2 of this document, with regard to *Giardia* and *Cryptosporidium*.

Response to Comment 85-280

Comment Summary: The comment asks for a description of impacts due to “headloss of filters in February 1993.”

The effect of media loss from filters on pathogens is addressed in Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-281

Comment Summary: The comment asks for a description of the “water quality effect loss (sic) of about 1 foot of media in each of the filter cells for the period March, 10 1993 to October 2, 1993?”

The effect on *Giardia* and *Cryptosporidium* of media loss from filters is addressed in Master Response 8, located in Section 6.2 of this document. Any effect on other constituents is reflected in data provided in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS.

Response to Comment 85-282

Comment Summary: The comment asks for a description of the effect of a large mass of rags and grit entering the plant in March 1993.

The effect of any large mass that may have entered on the plant in March 1993 on the amount of *Giardia* and *Cryptosporidium* in reclaimed water at that time is not known since the amount of these pathogens was not being measured at the time. Refer also to Master Response 8, located in Section 6.2 of this document. Effects of rags and grit on other constituents is reflected in data provided in Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS.

Response to Comment 85-283

Comment Summary: The comment asks, in reference to pathogens, “what about mudballs building up under the filters in May 1993, causing lowered filter efficiency.”

A mudball is an accumulation of alum, which is added in the treatment process to enhance coagulation, and may attract other particulate matter. The effect of mudballs in the filters in May 1993 on the amount of *Giardia* and *Cryptosporidium* in reclaimed water at that time is not known since the amount of these pathogens was not being measured at the time. There is no indication that mudballs affect levels of *Giardia* and *Cryptosporidium* in reclaimed water. Refer also to Master Response 8, located in Section 6.2 of this document. Any effect on other constituents is reflected in data provided in Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS.

Response to Comment 85-284

Comment Summary: The comment asks “what happened when digester #3 broke down in March, 1993? What tests were taken for cryptosporidium at that time?”

Digesters treat solids and their performance doesn’t affect reclaimed water quality. No analysis for *Cryptosporidium* was conducted at that time.

Response to Comment 85-285

Comment Summary: The comment states “and what about problems in the Lab? What was reported when three days of bad coliform samples caused them to be invalid in April, 1993?”

Neither the EIR/EIS authors nor the City of Santa Rosa are aware of any invalidated coliform samples from April 1993. The comment provided no documentation of such data.

Response to Comment 85-286

Comment Summary: The comment asks for the impact of lab personnel morale on data quality.

Refer to Response to Comment 85-108.

Response to Comment 85-287

Comment Summary: The comment asks for a list of “all failing fish bioassays.”

The results of the 1992-1996 chronic toxicity tests are presented in Table 7 on page 13 in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS.

Response to Comment 85-288

Comment Summary: The comment asks about “the unacceptable analysis of copper, nickel and chlorine residual” from August 1993.

The copper, nickel, and chlorine residual analyses deemed unacceptable by the Department of Health Services in 1993 were special evaluation samples and not part of the reclaimed water quality database. The analyses were subsequently repeated and found acceptable by the Department of Health Services. The comment also cites Department of Health Services findings about laboratory conditions, which have since been corrected.

Response to Comment 85-289

Comment Summary: The comment asks “what assurances are in place that the lab is functioning properly at all times and that all test results can be thoroughly relied on?”

Refer to Responses to Comments 85-107 and 85-108.

Response to Comment 85-290

Comment Summary: The comment asks if any testing was done during upsets and, if so, what was the results for all constituents of concern.

Reclaimed water data for the time periods cited in Comments 85-280 through 85-285 are presented in the appendices of Appendix H-2 (Reclaimed Water Quality) and in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS.

Response to Comment 85-291

Comment Summary: The comment asks if no testing was done during upsets, why is it safe to assume no release of toxins “into the system” occurred.

Toxins are always present in reclaimed and other waters. Toxicity testing shows that the concentration of toxins in reclaimed water is usually below the concentration at which impacts can be measured. Refer to page 7 in Appendix H-2 (Reclaimed Water Quality) of the Draft EIR/EIS. Refer also to Response to Comment 85-290.

Response to Comment 85-292

Comment Summary: The comment states that “EIR assumes that the system is always functioning properly and fails to address the many excursions from a perfect operation.”

Refer to Response to Comment 85-279.

Response to Comment 85-293

Comment Summary: The comment asks for a description of plant upsets and responses during the last 10 years.

As noted in the Response to Comment 85-279, the analysis of project impacts in the Draft EIR/EIS is based on the assumption that plant upsets will occur. A detailed description of the history of such upsets is thus not a necessary part of the Draft EIR/EIS, which evaluates a range of reclaimed water reuse and disposal alternatives.

Response to Comment 85-294

Comment Summary: The comment asks for the impact of reclaimed water discharges under storm flow conditions.

Dilution of reclaimed water is very high when high flows occur, and impacts are related to reclaimed water concentration. Refer to page 164 of Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS..

Response to Comment 85-295

Comment Summary: The comment states that the computer modeling does not characterize impacts adequately.

The EIR/EIS authors believe that no better tool exists for evaluating impacts. The comment does not suggest any alternative methods and no more specific response to the comment is thus possible. Refer to Response to Comment 85-469.

Response to Comment 85-296

Comment Summary: The comment states that the Draft EIR/EIS screens out the potential for some cumulative impacts because of Basin Plan restrictions. The comment asks about the propriety of assuming this in light of the fact that all of the Santa Rosa's long-term project alternatives are inconsistent with the Basin Plan. The comment also asks what Basin Plan changes the City of Santa Rosa anticipates to accommodate the selected project.

The City of Santa Rosa's interpretation of the Basin Plan is that no Basin Plan changes are needed for implementation of the Projects in the Draft EIR/EIS. The Basin Plan (page 4-2.00) identifies conditions that must be met for the Regional Board to grant an exception to the 1 percent discharge restriction. These conditions apply to all Russian River and Laguna discharges (thus all alternatives), and address factors such as system reliability and impact on beneficial uses. Any cumulative projects that are implemented by exception to the Basin Plan 1 percent discharge restriction by definition meet the exception conditions. Thus, cumulative projects could not be implemented without analysis to identify any significant negative impacts.

Response to Comment 85-297

Comment Summary: The comment states that the cumulative impacts analysis does not consider other River discharges.

Other River discharges considered in the cumulative impacts analysis are identified in Table 4-41 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS, and analysis for each constituent is described beginning on page 158 in Appendix I-16. The analysis of existing conditions reflects current discharges.

Response to Comment 85-298

Comment Summary: The comment describes a specific turbidity phenomenon in the Laguna and asks for an explanation of how existing reclaimed discharges contributes to the phenomenon.

The EIR/EIS authors are not aware that any such phenomenon has been documented. Additional information about the phenomenon would be needed to respond.

Response to Comment 85-299

Comment Summary: The comment asks for an explanation as to why the lower Russian River is persistently green throughout the summer and muddy brown throughout the winter.

The green color probably derives from algae that grow in the Russian River as a result of the hydraulic, nutrient, and light regime. The muddy brown color is probably the result of very fine suspended sediment that is derived from erosion in the watershed. The comment also asks for the relationship of cumulative impacts to the algae and sediment issues. Both algae and sediment are evaluated in the project and cumulative impacts analysis, and the analysis is based on existing conditions that occur as described in this response.

Response to Comment 85-300

Comment Summary: The comment asks the extent to which reclaimed water discharges have contributed to the conditions described in comment 85-299.

The Draft EIR/EIS evaluates the potential impact of the project alternatives on erosion and algae. The impact of existing discharges can be determined by comparing Table 4-3 to Table 4-4 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS.

Response to Comment 85-301

Comment Summary: The comment asks if the City is willing to commit to establish effluent quality limits and not exceed them.

The existing and future discharge permits establish effluent limits that the City must commit to meet. Limits are established for constituents that the Regional Board considers to be a potential threat to beneficial uses.

Response to Comment 85-302

Comment Summary: The comment expresses concerns that the EIR/EIS does not address the issue of estrogenic effects of wastewater on fish, and in particular that two recent studies (by M. A. Lewis and by S. Jobling and J. P. Sumpter) should be considered.

The potential estrogenic impacts of the Santa Rosa reclaimed water discharge are discussed in Draft EIR/EIS Appendix J-2, (Human Health Effects and Wildlife Effects of Environmental Estrogens), which includes discussion of the Lewis and the Jobling and Sumpter studies. A third study by Purdom et al., which is attached, but not specifically referenced in the comment, is also discussed in Appendix J-2. Refer also to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-303

Comment Summary: The comment states that steelhead spend a great deal of time in the main stem of the Russian River, perhaps including spawning, and asks what impacts would occur if river discharges are increased during spawning season.

Adult steelhead appear to remain in the main stem of the Russian River for several weeks before pulses of runoff following winter rains or other stimuli trigger their ascent of the tributaries to spawn. The main stem of the river is not thought to be an important spawning place for steelhead because shallow gravels in areas of moderate flow are not found there in the spawning season, and the summer water temperatures are too high for juvenile steelhead survivorship. The present discharge practices include releases of reclaimed water during steelhead spawning season, and future increased discharges would also occur then. As indicated in Appendix L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS, steelhead populations in Santa Rosa and Mark West Creeks appear to be limited by summer survivorship in upstream nursery areas, not by lack of spawning adults. There is no evidence that existing or future discharges would reduce steelhead reproductive success.

Response to Comment 85-304

Comment Summary: The comment expresses concern that steelhead are assumed to swim through the discharge zones in the Laguna and Santa Rosa Creek in a single night, and whether the conclusions would be valid if this assumption was not met. Other assumptions about steelhead migration are proposed.

Whether one assumes upmigrating steelhead adults move through the Laguna in response to runoff from rains or if they wait for higher dilution of reclaimed water makes no difference to the interpretation of the fyke net catch data summarized in Appendix L-2

(Anadromous Fish Migration Study Program, 1991 - 1995) of the Draft EIR/EIS. Each fish caught was associated with the flow and reclaimed water concentration conditions that occurred when the fish was captured just above the reclaimed water zone. There was no tendency for more fish to be caught when the reclaimed water dilution was higher on the day of capture.

Response to Comment 85-305

Comment Summary: The comment expresses concern that since nets could not be deployed at very high streamflows a total count of migrating steelhead could not be made.

The EIR/EIS authors agree that the inability to fish at high flows is a limitation of the study approach. Construction and operation of facilities to capture all fish during flood flows would be prohibitively expensive. The method chosen provided more useful information in low rainfall years with several smaller rainstorms than years with major floods during the migration season. For example, during the 1994 study nets were deployed for most of the migration season, and some estimates could be made about the total number of migrants. Refer to pages 80 and 81 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994)). In contrast, fyke netting associated with the 1995 study, described in Appendix L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS, did not provide much information, because the season was much rainier, and nets often could not be deployed during the most important part of the season.

Response to Comment 85-306

Comment Summary: Concern is expressed that streamflow data for the upper Laguna was lacking.

Reliable flow measurement requires particular conditions at the site of measurement such as a constant relationship of depth to flow. No such relationship exists at many locations in the Laguna because of the variable backwater conditions created by the Russian River and shallow slope of the Laguna channel. Gauges were deployed at locations where backwater conditions do not usually occur over the range of flows of relevance to the anadromous fish study described in Appendix L-2 (Anadromous Fish Migration Study Program, 1991 - 1995) of the Draft EIR/EIS. These locations are Santa Rosa Creek at Willowside Road, Mark West Creek at Slusser Road, and the Laguna at Trenton Healdsburg Road.

The comment describes a concern about not having measured flow in the upper Laguna, which is the third substantial portion of the watershed, and the only tributary that was not routinely gauged. The three gauge locations cited above are strategic since they represent two of the three major tributaries of the Laguna and entire Laguna. Flow from the upper Laguna was estimated by calculating the difference between the sum of flow at Santa

Rosa Creek at Willowside Road and Mark West Creek at Slusser Road, and flow in the Laguna at Trenton Healdsburg Road.

A flow gauge was also deployed for shorter period in the Laguna at Occidental Road to provide the basis to refine this relationship. A regression equation was developed using the relationship between flow at Occidental Road and other gauges. For periods when the Occidental flow gauge was inoperable, the regression equation was used based on the relationship between flow at Occidental Road and Trenton-Healdsburg Road for the period when both gauges were working. Refer to pages 16 and 17 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. Daily estimates for flow in all parts of the Laguna system were provided in each of the annual fish reports.

Response to Comment 85-307

Comment Summary: This comment asks whether fish caught going upstream are the same individuals that were also caught going downstream.

Fish were marked when first caught. Appendix 3-4 of Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS presents the recapture information.

Response to Comment 85-308

Comment Summary: This comment asks whether historical numbers are available for steelhead in Santa Rosa Creek.

Steelhead runs in Santa Rosa Creek are thought by many people to have once been larger than they are now, but no quantitative information is available on sizes of past runs.

Response to Comment 85-309

Comment Summary: This comment asks whether some steelhead adults avoid high reclaimed water concentrations by remaining in the river during low flows and high concentrations in the creeks, and subsequently ascend when flows and wastewater dilution are higher.

Fish are known to migrate following rains. Whether fish avoid the creek because of the reclaimed water concentration itself was tested on two occasions. In 1994 and in 1995 the City of Santa Rosa provided week-long no-discharge “windows” during the migration season to test whether fish would be more likely to migrate when reclaimed water was not being released. Refer to (see page 25 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) and page 21 in Appendix L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS. In neither case were more fish caught during the “window” than before or after it. Based on these data it seems likely that if there were a large number of “avoiders” holding in the river awaiting lower

concentrations, then a pulse of migration should be apparent during the “window,” since in both cases it was provided during the time when fish were usually caught. This is discussed on page 79 in Appendix L-1.

Response to Comment 85-310

Comment Summary: This comment inquires how water diversions from Maacama Creek impact fish migration.

Water diversions are discussed in Appendices L-1 (Anadromous Fish Migration Study Program, 1991-1994) and L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS in the context of summer survivorship of salmonid juveniles in the upper reaches of the creek. Since diversions occur during the summer, they do not directly influence adult fish migration during the winter. Diversions affect survival of juveniles, which could indirectly affect adult migration by reducing the number of returning adults.

Response to Comment 85-311

Comment Summary: This comment asks whether Maacama Creek is a good reference site to typify a natural steelhead creek that does not receive municipal wastewater.

The Maacama Creek watershed is comparable in size and location to that of Mark West Creek and Santa Rosa Creek, and Maacama Creek does not contain municipal discharges. Maacama Creek was considered to be most similar to Mark West and Santa Rosa creeks of candidate streams. However, as discussed on page 52 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS, this does not necessarily mean that Maacama Creek is “natural” in every way, since numerous other human activities have influenced and continue to influence virtually every coastal California stream, including Maacama Creek.

Response to Comment 85-312

Comment Summary: This comment asks whether water diversions in Maacama Creek explain low numbers of wild anadromous fish caught.

As stated above in Response to Comment 85-310, water diversions occur in summer and do not directly influence winter fish migration. The low proportion of wild versus hatchery adults caught in Maacama Creek was attributed to the proximity of the hatchery on Dry Creek. Refer to page 79 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS.

Response to Comment 85-313

Comment Summary: This comment asks how many fish can be spawned by a single female adult steelhead.

This study did not attempt to determine how many fish were spawned per female. It is known from other studies that an adult steelhead may spawn several thousand eggs. The number of fish that survive to become smolts may be a very small fraction of this number.

Response to Comment 85-314

Comment Summary: This comment inquires as to how many spawning fish would be required to produce the smolts captured moving downstream.

Redd surveys as described on pages 74 and 77 in (Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS) succeeded in locating very few nests, so this study did not provide an estimate of the number of successful spawners. Summer mortality as described on page 81 in (Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS is an indication that the available habitat for young trout, and not the number of fish spawned, puts a limit on how many survive to smolt in fall. In theory, one female could have produced all of the juveniles that were captured, but this is very unlikely given likely mortality between the egg and juvenile stages.

Response to Comment 85-315

Comment Summary: This comment asks why juvenile fish were going upstream.

Smolt catches are discussed on page 38 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. Early in the season some juvenile steelhead were caught going upstream, and these were assumed to be fish which were displaced downstream of the nets following rains but were not yet ready to smolt. Not all trapped fish can be assumed to be migrating, since some up- and downstream movements are local. Refer to page 23 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS).

Response to Comment 85-316

Comment Summary: This comment asks for an explanation of how juvenile fish counts were tabulated, and in particular whether some of the juvenile fish could have been counted more than once.

The EIR/EIS authors agree that information on this subject was not included in the Draft EIR/EIS, and should be added.

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

Page 38, Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994). The following paragraph is added before the fifth paragraph.

Juvenile fish catches reported below are the counts of fish caught on each day in each net. Juveniles were not marked throughout the study, so it is possible that a

given fish could have been counted more than once. However, this is assumed not to be a significant source of error for the following reason. Early in the study juveniles captured in fyke nets were marked. Very few juveniles were ever recaptured, regardless of whether they were first caught moving up- or downstream. Thus no evidence was found that a significant number of young steelhead were milling back and fourth in the vicinity of the fyke nets. Counting the downstream-moving fish only (and ignoring the upstream-moving counts, as is done below) probably gives a conservative estimate of smolt numbers, for the following reason. A few downstream-moving fish may be caught twice, but it is probable that a larger number of the fish caught moving upstream (which probably also eventually went out to sea) may not have been included in the downstream count (for example because such fish may have passed the net site while the nets were not set or not fishing effectively). Marking of juvenile salmonids was resumed in conjunction with the lower Laguna fyke netting, as described on page 16.

Response to Comment 85-317

Comment Summary: This comment questions the conclusions about the relation between up- and downmigrating fish because no fishing was done at high flows, when most fish tend to migrate.

The limitation set by the fyke net study design is discussed above in Response to Comment 85-305. This subject in relation to up- versus down-migrating adults is discussed on page 38 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS.

Response to Comment 85-318

Comment Summary: This comment asks again whether fish can get counted more than once.

Adult fish were marked and fish captured again are tabulated in Appendix 3-4 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. Some smolts may have been counted more than once. Refer to Response to Comment 85-316.

Response to Comment 85-319

Comment Summary: This comment asks how many fish hold in the River until flows are high before moving up the creeks.

It is assumed that steelhead hold in the river until conditions are right for ascent into the creeks, but this study did not attempt to count fish in the river. This subject is also discussed in Responses to Comments 85-304 and 85-309.

Response to Comment 85-320

Comment Summary: This comment asks to what extent do young salmonids move up and down the various stream reaches.

This study did not directly attempt to determine the extent to which young salmonids move up and down the various stream reaches. It is assumed that juveniles primarily move downstream during the winter and spring, although a few observations made during the study indicate that at least some fish move upstream as well. Refer to page 38 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. How far up they move is not known. Later in spring virtually all smolts were moving downstream. Young steelhead did not tend to mill back and forth in the vicinity of the fyke nets. Refer to Response to Comment 85-316. Capture of a few hatchery-marked coho salmon smolts at the lower Laguna fyke net site indicates that these fish moved upstream from the Russian River to the fyke net site near River Road, a distance of about three miles. Refer to Table 3-5-4 in Appendix L-1. No marked smolts were caught at the Willowside or Slusser Road fyke net sites, but the few unmarked smolts found at those sites listed in Appendix 3-5-4 of Appendix L-1 and discussed on pages 41 and 45 in Appendix L-1, could have come from another tributary, such as Green Valley Creek, about six or seven miles downstream. No coho juveniles were ever found in the juvenile density index zones in Santa Rosa or Mark West Creek.

Response to Comment 85-321

Comment Summary: This comment asks what the study has revealed about the reproductive health of the young fish spawned in the study area.

This study did not attempt to measure the reproductive health of young fish produced in the study area. However, the persistence of self-sustaining populations in each creek provides evidence that successful reproduction is taking place. Refer to Response to Comment 85-401.

Response to Comment 85-322

Comment Summary: This comment asks if this study is useful in determining chronic toxicity of wastewater on steelhead.

The study summarized in Appendices L-1 (Anadromous Fish Migration Study Program, 1991-1994) and L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS did not attempt to measure chronic toxicity. In nature the steelhead adults and smolts are exposed to treated wastewater for a relatively brief period in the migration corridor, so they are not chronically exposed to wastewater.

Response to Comment 85-323

Comment Summary: This comment asks whether any dead fish were subjected to tissue analysis.

No tissue analysis was done on dead fish. Tissue analysis was not included in the study plan. Most dead fish had obvious wounds associated with predator attacks, primarily by birds, but also including turtles and aquatic mammals. Refer to page 51 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. Tissue analysis was therefore not deemed necessary to determine cause of death.

Response to Comment 85-324

Comment Summary: This comment asks whether the ordinates (vertical axes) of Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) Figures 4-5 through 4-8 (which read “number of rainbow trout”) should say “steelhead.”

The EIR/EIS authors agree that the figures named in the comment (as well as some other figures, tables, and appendix titles listed below) should be changed.

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

Page 58, Appendix L-1. The ordinate label for Figure 4-2 is revised as follows:

Number of ~~Rainbow Trout~~ Steelhead

Page 65, Appendix L-1. The ordinate label for Figure 4-4 is revised as follows:

~~Number of Rainbow Trout per Habitat Unit~~ Number of Steelhead per Habitat Unit

Page 67, Appendix L-1. The ordinate label for Figure 4-5 is revised as follows:

~~Number of Rainbow Trout~~ Number of Steelhead

Page 68, Appendix L-1. The ordinate label for Figure 4-6 is revised as follows:

~~Number of Rainbow Trout~~ Number of Steelhead

Page 69, Appendix L-1. The ordinate label for Figure 4-7 is revised as follows:

~~Number of Rainbow Trout~~ Number of Steelhead

Page 70, Appendix L-1. The ordinate label for Figure 4-8 is revised as follows:

~~Number of Rainbow Trout~~ Number of Steelhead

Appendix 4-3-1, Appendix L-1. The column headings referring to “Total Trout” are revised as follows:

~~Total Trout~~ Total Steelhead

Appendix 4-3-2, Appendix L-1. The column headings referring to “Total Trout” are revised as follows:

~~Total Trout~~ Total Steelhead

Appendix 4-3-3, Appendix L-1. The column headings referring to “Total Trout” are revised as follows:

~~Total Trout~~ Total Steelhead

Appendix 4-3-4, Appendix L-1. The column headings referring to “Total Trout” are revised as follows:

~~Total Trout~~ Total Steelhead

Page vii , Appendix L-1. The title of Appendix 4-3-5 is revised as follows:

~~Appendix 4-3-5. Summary of Juvenile Rainbow Trout Abundance by Stream Reach and Age Class, Fall 1993, Summer, 1994, and Fall 1994.~~ Appendix 4-3-5. Summary of Juvenile Steelhead Abundance by Stream Reach and Age Class, Fall 1993, Summer, 1994, and Fall 1994.

Appendix 4-3-5, Appendix L-1. The title is revised as follows:

~~Summary of Juvenile Rainbow Trout Abundance by Stream Reach and Age Class, Fall 1993, Summer, 1994, and Fall 1994.~~ Summary of Juvenile Steelhead Abundance by Stream Reach and Age Class, Fall 1993, Summer, 1994, and Fall 1994.

Appendix 4-3-5, Appendix L-1. The table heading referring to “juvenile Rainbow Trout” is revised as follows:

~~All juvenile Rainbow Trout, number per habitat unit~~ All juvenile Steelhead, number per habitat unit

Appendix 4-3-5, Appendix L-1. The table heading referring to “young-of-the-year Rainbow Trout” is revised as follows:

~~Young-of-the-year Rainbow Trout, number per habitat unit~~ Young-of-the-year Steelhead, number per habitat unit

Page vii, Appendix L-1. The title of Appendix 4-3-6 is revised as follows:

~~Appendix 4-3-6. Fork Lengths of Young-of-the-year Rainbow Trout, Summer, 1994, and Fall 1994.~~ Appendix 4-3-6. Fork Lengths of Young-of-the-year Steelhead, Summer, 1994, and Fall 1994

Appendix 4-3-6, Appendix L-1. The title is revised as follows:

~~Fork Lengths of Young-of-the-year Rainbow Trout, Summer, 1994, and Fall 1994.~~ Fork Lengths of Young-of-the-year Steelhead, Summer, 1994, and Fall 1994.

Appendix 4-3-6, Appendix L-1. The table heading referring to ‘Young-of-the-year Rainbow Trout’ is revised as follows:

~~Young-of-the-year Rainbow Trout~~ Young-of-the-year Steelhead

Appendix 4-3-7, Appendix L-1. The ordinate label is revised as follows:

~~Number of Young-of-the-year Rainbow Trout per Habitat Unit~~ Number of Young-of-the-year Steelhead per Habitat Unit

Appendix 4-3-8, Appendix L-1. The ordinate label is revised as follows:

~~Number of Trout Over One Year Old per Habitat Unit~~ Number of Steelhead per Habitat Unit

Response to Comment 85-325

Comment Summary: This comment asks whether similar studies have been made of steelhead populations in creeks less influenced by human activities, and how many fish were caught there.

The number of fish in the spawning run in the studied creeks and some others is discussed on pages 80 and 81 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. Waddell Creek in southern San Mateo County (the only data set that permits a confident measure of adult population size) averaged 432 adults per year in the 1930’s and 1940’s.

Response to Comment 85-326

Comment Summary: This comment states that the study does not convincingly prove that wastewater has no impact on the migration, reproduction, or general health of the steelhead populations in Mark West and Santa Rosa Creeks.

The conclusions drawn on page 78 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS are that the study failed to provide any evidence that reclaimed water in the migratory corridor impairs migration, reproduction or rearing of steelhead. The basis of these conclusions are that 1) capture of adult

upmigrants was not related to reclaimed water concentration; 2) experimental no-discharge “windows” did not result in higher catches; and 3) the juvenile population in the upper parts of the streams appeared to be limited by summer survivorship, not by lack of spawners.

Response to Comment 85-327

Comment Summary: This comment states that Maacama Creek is not a good reference stream because of the high level of water diversions.

The issue of finding a suitable reference stream is addressed in Response to Comment 85-311. Water diversions are also present in upper Mark West Creek. Refer to pages 60 and 61 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS.

Response to Comment 85-328

Comment Summary: This comment repeats the assertions made in comment 85-326 above, that the study fails to prove that wastewater is safe.

The conclusions drawn from the study are discussed on page 78 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS and in Response to Comment 85-326.

Response to Comment 85-329

Comment Summary: This comment expresses skepticism about the use of downmigrant catches to support the conclusion that many upmigrants were not caught in the fyke nets; and states that if upmigrants are missed, that proves that steelhead prefer to migrate during high flows.

Only 3 of the 23 adults caught moving downstream in Santa Rosa Creek were recaptured individuals. Refer to Appendix 3-3-1 of Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. The other 20 were not caught as upmigrants, so it is clear that not all upmigrants were caught. The speculations made on pages 80 and 81 in Appendix L-1 about the number of fish in the spawning run in Santa Rosa Creek rely on a number of explicitly unproven assumptions. However, the fact that all three approaches discussed lead to roughly the same estimate of adult migrants lends credibility to the estimate. Steelhead prefer to migrate during high flows (refer to Response to Comment 85-309).

Response to Comment 85-330

Comment Summary: This comment expresses the opinion that the study fails to show that increased discharges in the migratory corridor will provide the environment that steelhead require.

The study was made during existing discharge practices, and the conclusions drawn on page 78 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS refer to those practices. However, as shown in Figure 4-24 of Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS, the expected reclaimed water concentrations in Santa Rosa Creek under the 10 percent and 20 percent design discharge components differ from the existing conditions concentrations mainly in the increased frequency (number of days per year) that a given concentration will occur. The maximum concentration would not differ much from the maximum which occurs under existing conditions. Study results showing that steelhead will migrate through reclaimed water at existing concentrations thus indicate that they will continue to migrate with increased discharges.

Response to Comment 85-331

Comment Summary: This comment asks why male and female fish were not shown separately on charts showing fish catches versus reclaimed water concentrations.

The sex of each adult fish captured is listed in Appendix 3-3 in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS. (In some cases--green fish which do not release eggs or milt--the determination of sex is equivocal). The pattern found in this and other studies of steelhead migration is for males to ascend the creek first, and for females to follow later. Since this pattern was generally followed, while the concentration of reclaimed water in the migratory corridor varied irregularly (refer to Figures 3.2 and 3.4 in Appendix L-1), the EIR/EIS authors decided against further complicating an already complex figure with information that does not contribute to the conclusions.

Response to Comment 85-332

Comment Summary: This comment states that the Russian River steelhead was proposed for federal listing as endangered, and repeats sentiments expressed in comments 85-326 and 85-328 above.

Refer to Response to Comment 85-326.

Response to Comment 85-333

Comment Summary: This comment asks what the difference is between Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) and Appendix L-2 (Anadromous Fish Migration Study Program, 1991-1995).

Appendix L-1 of the Draft EIR/EIS reports in detail the fish studies made in the 1993-1994 season, and reviews the catch vs. concentration information for the combined data from all four years studied. Appendix L-2 of the Draft EIR/EIS reports in detail the fish studies made in the 1994-1995 season and reviews the catch vs. concentration

information for the combined data from all five years studied. Appendix L-2 also compares the juvenile density data with that reported in Appendix L-1.

Response to Comment 85-334

Comment Summary: This comment concludes that numbers of steelhead migrating upstream have been small because very few fish were caught in the 1993-1994 and 1994-1995 fyke netting programs.

The inability of fyke nets to capture all migrants is discussed in Response to Comment 85-305.

Response to Comment 85-335

Comment Summary: This comment asks how many of the adult fish caught were male and how many female.

The sex of each fish is listed in Appendix 3-3 of Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS.

Response to Comment 85-336

Comment Summary: This comment repeats thoughts expressed in comments 85-326, 85-328, and 85-332 above.

Refer to Response to Comment 85-326.

Response to Comment 85-337

Comment Summary: This comment asks whether the habitat requirements for steelhead and coho salmon listed on Appendix L-4 (Aquatic Habitat Survey Results) page 6 are for migration or spawning.

The requirements listed on page 6 of Appendix L-4 of the Draft EIR/EIS are for spawning and juvenile rearing.

Response to Comment 85-338

Comment Summary: This comment asks what are the temperature requirements for juvenile steelhead and coho.

Both species require cool streams, as stated on page 6 of Appendix L-4 (Aquatic Habitat Survey Results) of the Draft EIR/EIS. Cool streams are those that do not exceed approximately 18 - 20 °C.

Response to Comment 85-339

Comment Summary: This comment inquires why water diversions in upper Mark West Creek are not mentioned on Appendix L-4 (Aquatic Habitat Survey Results) page 10, where the creek is described as being in a fairly natural condition and supporting self-sustaining annual runs of wild steelhead.

The statements made on page 10 in Appendix L-4 of the Draft EIR/EIS are general conclusions drawn from several years of study, and do not necessarily include every detail. Water diversions from Mark West Creek are discussed on pages 60 and 61 in Appendix L-1, (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS.

Response to Comment 85-340

Comment Summary: This comment asks what are the factors creating warm water habitat in the Laguna de Santa Rosa, Santa Rosa Creek, and the Russian River.

Habitat is designated as warm water in the Regional Board's Basin Plan based on criteria explained therein. In general, air temperature and shade are the primary factors that determine if a water will be warm enough to be so classified. The only source of dry season flow in natural northern California streams is groundwater discharge. Since groundwater tends to be cool, streams are often relatively cool near their origin. Lower Santa Rosa Creek, the Laguna and the lower Russian River are located far from their source, and warming is natural and expected in the dry season. Warming has been accelerated in some locations due to the absence of a corridor of riparian trees that once shaded the streams. Refer to page 10 of Appendix L-4 (Aquatic Habitat Survey Results) of the Draft EIR/EIS.

Response to Comment 85-341

Comment Summary: The comment asks "to what extent do the nutrients in wastewater contribute to the warm water environment in" the Laguna, Santa Rosa Creek and the Russian River.

The basis for classification of habitats as warm water is described in Response to Comment 85-340, and nutrient load is not one of these factors. Inorganic nutrients are necessary for warm and cool waters to sustain a normal food web. Nutrients generally distinguish eutrophic (high nutrient, high productivity) from oligotrophic (low nutrient, low productivity) waters, rather than warm and cold waters.

Response to Comment 85-342

Comment Summary: This comment asks how the aquatic habitats can be described without reference to the vegetation, animal and insect life and geomorphology of the waterway.

The purpose of Appendix L-4 (Aquatic Habitat Survey Results) is to report general results of habitat surveys, with emphasis on the physical aspects of habitat characterization. Details of the biota of the habitats are given in Appendix L-5 (Aquatic Life Survey Results) of the Draft EIR/EIS.

Response to Comment 85-343

Comment Summary: The comment inquires about the status of various frog species found within the Russian River and its tributaries.

The EIR/EIS authors assume that this comment is asking about the legal status of various frog species found within the Russian River and its tributaries. The only three special-status frog species that are likely to occur within this watershed are California red-legged frog, northern red-legged frog and foothill yellow-legged frog. Refer to page 3 in Appendix L-5 (Aquatic Life Survey Results) of the Draft EIR/EIS. The California red-legged frog is currently listed as federally-threatened, as well as a State species of special concern. The northern red-legged frog is a State species of concern. The foothill yellow-legged frog was formerly a federal candidate, but is now only listed as a State species of special concern. All other frog species that would be likely to occur within this project-area portion of the Russian River watershed are not currently listed.

Response to Comment 85-344

Comment Summary: The comment asks what evidence exists that the threatened status of various species of frogs in the Russian River possibly results from exposure to environmental estrogens.

The EIR/EIS authors are aware that endocrine disrupters have been implicated in diminished reproductive success of some endangered species (e.g., Florida panther), but no evidence currently exists to suggest that environmental estrogens have contributed to the threatened status of the California red-legged frog or to the decline of the foothill yellow-legged frog. The current status of the California red-legged frog and foothill yellow-legged frog is believed to be caused by a combination of factors including over-exploitation for the restaurant industry at the turn of the century (California red-legged frog only); destruction of habitat due to agriculture, development and flood control measures; and the introduction of bullfrogs and non-native predatory fish (perch, bass, catfish and mosquito fish, etc.). Refer to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-345

Comment Summary: The comment states that the quality of maps in Appendix L-5 (Aquatic Life Survey Results) is such that streams cannot be easily distinguished from roadways.

Streams are shown on the map with a dashed line and roadways are shown with a solid line. Streams and roads are both labeled.

Response to Comment 85-346

Comment Summary: The comment states a disagreement with the “assumption of this EIR that it is not necessary to examine the entire watershed for the condition of aquatic life since irrigation will not be increasing in the Laguna.”

Surveys in areas that would potentially be affected by the Project were conducted based on two key criteria. One criterion was the adequacy of existing information, and the other criterion was access permission. The lack of additional surveys in the Laguna was related to the large amount of existing information.

Response to Comment 85-347

Comment Summary: The comment refers to Appendix L-5 (Aquatic Life Survey Results) and asks for “the cumulative impact of years of increased wastewater flows” on aquatic life.

Aquatic life impacts are evaluated in Appendix L-7 (Aquatic Biological Resources Impacts Analysis Report) and Section 4.9 of the Draft EIR/EIS. The impacts of existing and past discharges are summarized in the Draft EIR/EIS in the description of existing conditions, but have not been evaluated for significance in the Draft EIR/EIS; rather the impact of changes to the existing discharge have been evaluated for significance. There is no evidence that aquatic life has been or will be adversely affected by discharge.

Response to Comment 85-348

Comment Summary: The comment refers to Appendix L-5 (Aquatic Life Survey Results) and asks about the potential for changes to the existing irrigation system and the impact of any such changes on aquatic life.

The Project does not propose any changes in the existing irrigation system. Existing conditions have been evaluated as a baseline for the analysis of impacts.

Response to Comment 85-349

Comment Summary: The comment states that California freshwater shrimp were found in Green Valley Creek, and asks what the chances are that they might occur in Santa Rosa Creek, Laguna de Santa Rosa, Russian River, Mark West Creek, or other smaller unnamed creeks that run from the proposed reservoir sites to any of these main tributaries.

Habitat requirements for California freshwater shrimp and results of California freshwater shrimp surveys can be found on pages 4.9-42 through 4.9-43 of the Draft EIR/EIS, and on pages 2.3-49 through 2.3-53 in Appendix K-1 (Biological Resources, Volume I) of the

Draft EIR/EIS. California freshwater shrimp require low gradient streams with undercut banks and extensive root masses from alders, willows, blackberries or similar vegetation, that extend out into the water. These streams can be ephemeral, but must at least have deep pools that remain year round, every year for the California freshwater shrimp to retreat to during the dry season. Channelization of streambeds and/or the presence of introduced predatory fishes (i.e., perch and bass) is very detrimental to California freshwater shrimp populations (pers comm. Larry Serpa, conversation with Sam Bacchini, HBA biologist, August, 1995).

Extensive surveys for California freshwater shrimp have been conducted by Larry Serpa (a noted biologist with the Nature Conservancy) throughout the known range of the species (Napa, Sonoma, and Marin Counties) and he is considered to be one of the foremost experts on California freshwater shrimp. Although Mr. Serpa has conducted extensive California freshwater shrimp surveys of Santa Rosa Creek downstream of McDonalds Plaza, he has not observed California freshwater shrimp there (pers comm. Larry Serpa, conversation with Sam Bacchini, HBA biologist, 12/20/96). Mr. Serpa stated that although California freshwater shrimp are known to have occurred in Santa Rosa Creek in the past, and suitable (restored) habitat exists there now, they are believed to have been extirpated from Santa Rosa Creek during times when the creek was channelized (pers comm. Larry Serpa, conversation with Sam Bacchini, HBA biologist, 12/20/96).

Although California freshwater shrimp occur in tributaries upstream of both the Laguna de Santa Rosa and Russian River, Mr. Serpa felt that they are unlikely to occur in either of these waters due to the extensive populations of introduced predatory fish that they contain. Although Mr. Serpa has not observed California freshwater shrimp in Mark West Creek he felt that the likelihood of occurrence in this creek is higher than in any of the other waters named in this Comment (pers comm. Larry Serpa, conversation with Sam Bacchini, HBA biologist, 12/20/96).

Harland Bartholomew & Associates biologists and Mr. Serpa conducted California freshwater shrimp surveys of all of the proposed reservoir sites, and the creeks leading from them, downstream to their confluence with the next major waterway in support of the Draft EIR/EIS in August of 1995. The survey methodologies and results can be found on pages 4.9-42 through 4.9-43 of the Draft EIR/EIS and on pages 2.3-49 through 2.3-53 in Appendix K-1 (Biological Resources, Volume I) of the Draft EIR/EIS. In summary, although limited amounts of varying quality habitat occur either on or downstream of some of the proposed reservoir sites, no California freshwater shrimp were observed during the surveys conducted for this Draft EIR/EIS. Additionally, Mr. Serpa felt that California freshwater shrimp are unlikely to occur at these sites due to the fact that the habitat that was observed was generally small in area (compared to sites where they are known to occur) and isolated from areas where they are known to occur by long stretches of unsuitable habitat (pers comm. Larry Serpa, conversation with Sam Bacchini, HBA biologist, August, 1995).

Response to Comment 85-350

Comment Summary: The comment asks if California red-legged frog or northwestern pond turtle are found in tributaries of the Laguna de Santa Rosa other than Crane and Copeland Creeks. Additionally, because California red-legged frog, northwestern pond turtle and California freshwater shrimp are found in tributaries of the Laguna de Santa Rosa could those species also occur downstream in the Laguna? Is there suitable habitat for any of these species in areas through which wastewater will flow?

California red-legged frog and especially northwestern pond turtle are very likely to occur in other tributaries of the Laguna de Santa Rosa assuming that there is appropriate habitat in those tributaries. Northwestern pond turtle is also likely to occur downstream in both the Laguna de Santa Rosa and the Russian River.

California red-legged frog and California freshwater shrimp have similar habitat requirements, suffer from many of the same threats and therefore frequently occur in the same areas. As was stated in Response to Comment 85-349, California freshwater shrimp are unlikely to occur in the Laguna de Santa Rosa or the Russian River due to the large populations of introduced predatory fish. For the same reason, in addition to the presence of bullfrogs, California red-legged frogs are unlikely to occur there either. For the above reasons, reclaimed water is unlikely to pass through suitable habitat for California red-legged frog or California freshwater shrimp. However, reclaimed water may pass through suitable habitat for northwestern pond turtle.

Response to Comment 85-351a

Comment Summary: The comment asks why there were no aquatic invertebrate lists prepared for the Russian River and the Laguna.

Aquatic invertebrate lists were prepared only for those areas (primarily storage reservoir sites and new agricultural areas) for which there was little or no current information available. Since the lists for the storage reservoirs and the agricultural irrigation areas were prepared as part of the current Project, they were included in the Draft EIR/EIS. The intent of the lists was to determine what aquatic invertebrates currently exist within those Project areas not previously studied. The exclusion of aquatic invertebrate lists for the Laguna and Russian River does not suggest that potential impacts to such species were ignored in the Draft EIR/EIS.

Response to Comment 85-351b

Comment Summary: The comment asks whether there is a chance that higher river discharges would affect aquatic invertebrates.

The potential exposure of aquatic organisms and wildlife of Santa Rosa Creek and the Laguna de Santa Rosa to chemical substances was evaluated in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS under the assumption that future

water quality in these streams will be similar to the current quality of undiluted reclaimed water (i.e., 100 percent discharge). This is considered a conservative exposure scenario because the typical contribution of the reclaimed water to the flow in those two streams will be lower than 100 percent. No risk was identified at the Laguna de Santa Rosa or Santa Rosa Creek for direct exposure of aquatic organisms to chemical substances at detectable levels in the reclaimed water (EQ value smaller than 1), except for cyanide (EQ of 2.3). An EQ of 2.3 is considered a low (and less than significant) risk.

Potential ecological risks for the Russian River were evaluated for a design concentration of 20 percent. This future contribution of the reclaimed water to the Russian River flow is likely to occur only occasionally during very dry-weather conditions when there is a minimum potential for in-stream dilution. Under typical flow conditions, concentrations in the Russian River will be considerably smaller than those indicated by the design discharge criteria. For the Russian River, no risk to aquatic organisms was identified for direct exposure of aquatic organisms at any of the discharge scenarios (EQ less than 1).

Response to Comment 85-352

Comment Summary: The comment asks if more aquatic life surveys were not done because no changes to the existing irrigation system are proposed. The comment also asks for evaluation of cumulative effects of expansion of the existing system.

Refer to Responses to Comments 85-346 and 85-348. The existing system is part of the existing environment, and thus forms the baseline for all analysis conducted to determine Project impacts.

Response to Comment 85-353

Comment Summary: The comment asks what the likelihood is, once Kelly Farm Demonstration Wetland has been in operation longer, that cadmium will show up in the sediments, aquatic life, and vegetation.

The comment cites Page 16 of Appendix I-13 (Sediment Quality Characterization and Impacts Assessment) of the Draft EIR/EIS. The text there continues to state that the low concentration of cadmium in the sediments makes it difficult to substantiate a conclusion that the source is reclaimed water. As described in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from The Santa Rosa Subregional System) of the Draft EIR/EIS, no evidence of cadmium bioaccumulation was found in the Kelley Farm wetlands. Cadmium in wetlands such as those at Kelly Farm resides in the sediment as a sulfide precipitate, and is transferred from sediment to aquatic life. Marsh sediments are continually increasing in depth as material deposits from various processes such as decomposition of organic matter. As the cadmium deposits to the sediment, the amount of sediment is also increasing. Therefore, the concentration of cadmium in the sediment that is due to reclaimed water will remain the same assuming the cadmium concentration in reclaimed water and the sediment formation rate remain constant. The samples were taken from the surface sediments, which would represent the

maximum cadmium concentration. The concentration of cadmium in aquatic organisms that ingest sediment will also remain constant. The concentration of cadmium in vegetation will depend on a variety of factors, such as the rate of cadmium uptake, the depth of the cadmium containing sediment, and the depth of the roots.

Response to Comment 85-354

Comment Summary: The comment asks how long Kelly Farm Demonstration Wetland and Brown Pond have been "on line."

Kelly Farm Demonstration Wetland was established in 1989. Brown Pond was established in 1978.

Response to Comment 85-355

Comment Summary: The comment states that data in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) should be organized differently.

The EIR/EIS authors used their judgment regarding document organization, and attempted to provide information in an accessible and complete fashion. Refer to Master Response 1, located in Section 6.2 of this document.

Response to Comment 85-356

Comment Summary: The comment asks if tissue concentrations in aquatic life change over time.

The concentration of metals in aquatic organisms increases until it comes to equilibrium with the surrounding medium or toxicity results in death, whichever occurs first. Likewise, sediment concentrations come to equilibrium with overlying water. The equilibrium phenomenon is identified on page 2 of Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. Refer also to Response to Comment 85-353.

Response to Comment 85-357

Comment Summary: The comment asks if the effects of bioaccumulation on all phases of aquatic organisms' life cycle was evaluated.

The analysis of bioaccumulation in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water From the Santa Rosa Subregional System) of the Draft EIR/EIS is based on collection and analysis of organisms considered by the EIR/EIS authors to be representative of each aquatic and amphibious trophic (pertaining to food or nutrition) level in habitats currently exposed to reclaimed water, including the Laguna, Russian River and Kelly Farm Demonstration Wetland. Every life stage of each species was not sampled and reported in Appendix L-6. Appendix K-4 (Ecological Risk

Assessment) of the Draft EIR/EIS evaluates potential project impacts using an approach that accounts for sensitive life stages.

Response to Comment 85-358

Comment Summary: The comment asks for an accounting of a decrease in metals concentration at Kelly Wetland. The comment asks “where did they go?”

A comparison of metals concentrations in sediment, plant and animal tissue at Kelly Farm Demonstration Wetland measured in 1994 with those measured in 1991 is provided in Section 6 of Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water From the Santa Rosa Subregional System) of the Draft EIR/EIS. The comment does not specifically refer to Section 6 of Appendix L-6, but the EIR/EIS authors assume the comment refers to the decrease in metals concentration reported in that Section. The equilibrium phenomenon controlling metals in sediments and tissues is described in Response to Comment 85-356. A mass of each metal is discharged into the Kelly Farm wetland each year, and the metals are deposited in sediment, accumulated in and cycled through living organisms, and a mass of metals leaves the wetland each year in discharged water and in tissue (through predation and other processes).

The Kelly Farm Demonstration Wetland study was not designed to address how input, internal compartments, and output have changed, but data have been evaluated in Section 6 of Appendix L-6 to address this question to the extent that an evaluation is supported by the data. Page 28 in Section 6 states that sediment concentration “changes do not appear to be related to changes in reclaimed water concentrations.” Thus, the implication of the Section 6 analysis is that the mass of metals corresponding to the change in concentration was discharged from the wetland.

Response to Comment 85-359

Comment Summary: The comment asks if the reduced levels in Kelly Pond in comparison to reference sites could be a factor of the length of time wastewater has been stored there.

Many metals in wetlands such as that at Kelly Farm reside in the sediment as a sulfide precipitate, and are transferred from sediment to aquatic life. Marsh sediments are continually increasing in depth as material deposits from various processes such as decomposition of organic matter. As the metals deposit to the sediment, the amount of sediment is also increasing. Therefore, the concentration of metals in the sediment will remain the same assuming the metals concentration in reclaimed water and the sediment formation rate remain constant. An exception to this is nickel, which does not precipitate readily and tends to pass through wetlands. The Kelly Farm samples were taken from the surface sediments, which would represent the maximum metals concentration. Thus concentrations would not necessarily be expected to increase through time, and the levels in the Kelly Farm wetland are thought to be representative.

Response to Comment 85-360

Comment Summary: The comment asks “where are the reference sites?”

The locations of the reference sites are given in the first paragraph of Section 8.0 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS.

Response to Comment 85-361

Comment Summary: The comment asks why Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) “state that the Mussel Watch program was dropped because of its erratic results.”

The EIR/EIS authors are unable to find any statement in Appendix L-6 about the Mussel Watch Program being discontinued by the Regional Board because of its erratic results. Nonetheless, the EIR/EIS authors understand that the Regional Board’s rationale for the decision to remove the mussel watch monitoring requirement from the Subregional System’s discharge permit was based on the absence of any trend in the data that was useful in establishing that the reclaimed water discharge was having an adverse impact on beneficial uses.

Response to Comment 85-362

Comment Summary: The comment states that no study of pesticides was conducted because they were not found in sediments. The comment also asks what studies have been conducted whether irrigation runoff from the existing irrigation system carries pesticides.

The comment that no study of pesticides was conducted is factually incorrect. As discussed in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS, pesticides were analyzed in tissues and sediments. Refer to Table 1 on page 8 of Appendix L-6. Pesticides were not found in detectable concentrations as indicated in Table 4 on page 5 of Appendix L-6), so the potential for bioaccumulation could not be assessed. Pesticides in Laguna sediments were measured. Refer to Appendix I-13 (Sediment Quality Characterization and Impacts Assessment), of the Draft EIR/EIS. The effect of pesticide applications in the existing Laguna irrigation area on existing conditions is reflected in the data in Appendix I-13.

Response to Comment 85-363

Comment Summary: The comment asks which Laguna farmers that irrigate use which pesticides, and how much pesticide do they use.

Pesticide application in the Laguna may affect existing conditions, and this has been evaluated as described in Response to Comment 85-362. The EIR/EIS authors do not have information about pesticide use on specific properties and do not consider it relevant to the Draft EIR/EIS. Effects of existing practices are reflected in the data discussed in Response to Comment 85-362.

Response to Comment 85-364

Comment Summary: The comment asks if pesticides used by Laguna farmers that irrigate bioaccumulate in waterways, and expresses concerns about the estrogenic effects of pesticides.

Refer to Response to Comment 85-363. The fate and bioaccumulation of pesticides are addressed in Appendix I-13 (Sediment Quality Characterization and Impacts Assessment), Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) and Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS.

Response to Comment 85-365

Comment Summary: In reference to Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System), this comment states that “there are frequent comments about the low level of these chemicals in evidence” in the sediments and organisms from Kelly Farm Demonstration Wetland.

A word search of Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) in the Draft EIR/EIS yielded 10 uses of the word low. Of these, four referred to bioaccumulation factors and E/B ratios where “low” is defined by accepted methodology. Three uses of “low” referred to the content of metals in the Clark Fork River (Montana) reference site. One use of “low” referred to water levels, one use to the power of a statistical test, and one to the N (number of samples) in the statistical test. No reference to “low” levels of chemicals in Kelly Farm Demonstration Wetland was found, so a more detailed response is not possible.

Response to Comment 85-366

Comment Summary: The comment asks for the pesticide concentration in aquatic biota that is “safe.”

The determination of safety of constituents in reclaimed water is addressed for wildlife and aquatic biota in Appendix K-4 (Ecological Risk Assessment) and for humans in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

Response to Comment 85-367

Comment Summary: The comment asks “which of these heavy metals is estrogenic? Carcinogenic? Causes birth defects? etc.”

Which heavy metals are estrogenic, carcinogenic, or teratogenic (causing birth defects) are discussed on page 2-16 in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) and throughout Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

Response to Comment 85-368

Comment Summary: The comment asks about the timing of sample collection in Kelly wetland.

Details on the 1994 sampling in Kelly Farm Demonstration Wetland are given in Section 4.0 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. No harvesting of plants is conducted.

No details of the sampling plan for the 1991 Kelly Farm bioaccumulation study are given in Appendix L-6.

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

Page 18, Appendix L-6. The following sentences are added to the end of the first paragraph:

[The 1991 KFDW samples were collected in October 1991. A summary of the sampling plan for the 1991 collections in KFDW can be found in Table 4 of CH2M-Hill, et al. \(1992\).](#)

Response to Comment 85-369

Comment Summary: The comment asks about the relationship between accumulation of substances in plants and in animals.

Bioaccumulation in plants is important because animals eat plants and plant metals can be transferred to animals that eat plants. Bioaccumulation in animals is discussed in Section 7.2 in Appendix L-6 (Bioaccumulation in Organisms Exposed to Reclaimed Water From the Santa Rosa Subregional Water Reclamation System) of the Draft EIR/EIS.

Response to Comment 85-370

Comment Summary: The comment asks how chemicals move through the environment.

Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS is based on basic principles of mass conservation and transfer between trophic levels in the environment, and published information about transfer factors between trophic levels. The EIR/EIS authors do not consider a detailed explanation of transfer between trophic levels to be necessary to disclose project impacts. Also refer to Responses to Comments 85-359 and 85-369.

Response to Comment 85-371

Comment Summary: The comment asks about the fate of metals that leach from sediments.

The metals examined in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS do not volatilize to a significant extent. Therefore, the metals are found in either an aqueous form (dissolved or suspended in water) or in a solid form (in the sediment). When the metal content of the sediments goes down, the metals are entering the aqueous phase. Aqueous phase metals are transported downstream or enter the groundwater. Metals can also be taken up by plants and animals and incorporated into their tissues.

Response to Comment 85-372

Comment Summary: The comment is that data should be obtained from all three Kelly wetland cells.

As stated in the Section 3.1 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS, at the time the Kelly Farm Demonstration Wetland study was designed, wetland creation was potentially part of the Project. Cell 3 was selected for this study because it is most similar to the type of wetland that would have been created for the Project. All the data collected from Kelly Farm for the study are described and analyzed in Appendix L-6 of the Draft EIR/EIS. Virtually all of the data were collected in Cell 3.

Response to Comment 85-373

Comment Summary: The comment asks if the substances in the sediments are separate from the plants?

Substances in the sediments are separate from the plants. However, plants have the ability to take up substances in the sediments and incorporate them into their tissues.

Response to Comment 85-374

Comment Summary: The comment asks if plants draw toxins into themselves from the sediments.

Plants accumulate substances from soil. Refer to Response to Comment 85-373.

Response to Comment 85-375

Comment Summary: The comment asks under what circumstances plants accumulate soil constituents.

The circumstances under which substances are taken up from sediments into plants in Kelly Farm Demonstration Wetland are reflected in the results of the analyses presented in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. Uptake occurs until equilibrium is reached. Refer to Response to Comment 85-356.

Response to Comment 85-376

Comment Summary: The comment asks if toxins can be taken from the water and not the sediments. It further asks how and when this process occurs.

Substances can be taken from water and sediments. Refer to Response to Comment 85-356.

Response to Comment 85-377

Comment Summary: The comment asks how “we can be sure that the benchmark values are indeed representative of” Russian River biota.

The EIR/EIS authors consider the benchmarks to be appropriate for the organisms considered in the ecological risk assessment that is described in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. The basis of the benchmarks is described in Section 5 of Appendix K-4. Whenever possible, benchmarks that were used were obtained from animals that might be found in the Laguna and Russian River watersheds. When benchmarks were unavailable for a specific ecological receptor, benchmark values were extrapolated from test organisms to selected ecological receptors. The extrapolation criteria were described in Section 5.6 in Appendix K-4.

Response to Comment 85-378

Comment Summary: The comment asks for the meaning of the term benchmark.

The term is defined on page 5-1 in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. The initial phase for assessment of ecological risk is the comparison of contaminant concentrations in soil, water, and sediment to reference values that identify threshold levels below which adverse effects on organisms are unlikely. These reference values for potential effects on site organisms are referred to as benchmarks.

Response to Comment 85-379

Comment Summary: The comment asks how NOEL values are calculated.

The method for determining “no observable effect level” (NOEL) values from lowest-observed-effect level (LOEL) values when NOEL values are not available is described in the last paragraph of Section 4.3.3 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. When NOEL data were unavailable, an extrapolation was made from the reported LOEL. The extrapolation used factors ranging from 5 to 100, depending on the exposure duration (chronic, subchronic, or acute exposures), and the reported effect (NOEL, LOEL, or lethal concentration). This approach is considered to be extremely conservative, and the rationale for derivation of extrapolation factors is described by Ford et al. (1992).

Response to Comment 85-380

Comment Summary: The comment asks if the values in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) Table 3 were estimated using the WAE or SAE method.

The sediment data in Table 3 in Appendix L-6 of the Draft EIR/EIS were analyzed using a strong acid extraction (SAE) method.

This was not stated in Appendix L-6 of the Draft EIR/EIS.

Therefore, the following changes are made to the Draft EIR/EIS:

Page 8, Appendix L-6. The following sentence is added to the end of the third paragraph.

[The metal content of the sediment samples was analyzed using a strong acid extraction method.](#)

Response to Comment 85-381

Comment Summary: The comment refers to Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) page 18 and asks “what does the 1991 number represent?”

As stated at the beginning of Section 6.0 in Appendix L-6 of the Draft EIR/EIS, replicate samples were not taken in 1991, so the value given is the single measurement.

Response to Comment 85-382

Comment Summary: The comment asks “since the concentration for arsenic went up for crayfish in the range, why not mention it?”

The EIR/EIS authors consider the comment to be unclear, but assume that the comment requests a statement that the upper end of the range of arsenic in 1994 was higher than the single value in 1991. The purpose of this section is to compare differences between 1991 and 1994. One of three measurements in 1994 was higher than in 1991 while two of three measurements in 1994 were lower than in 1991. The EIR/EIS authors find no compelling evidence to conclude that the concentration in 1994 is higher than in 1991.

Response to Comment 85-383

Comment Summary: The comment states “for chromium (Appendix L-6 page 20) the Cattail Rhizomes had a range that went over 1991 value that deserves mentioning.”

The 1991 data are within the range of the 1994 data. Refer to Response to Comment 85-382.

Response to Comment 85-384

Comment Summary: The comment states that there are higher metals present in 1994 than 1991 in cattail rhizomes, bulrush seeds, crayfish mosquitofish, and sediments and that there seems to be an attempt to minimize the importance of these.

The EIR/EIS authors disagree with this comment’s assertion that in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS there was an attempt to minimize the importance of increased metals concentrations in sediment and tissues in 1994 relative to 1991. Where the average detectable concentration of a metal was higher than in the 1991 samples, this fact is noted in the text.

Response to Comment 85-385

Comment Summary: The comment asks if the whole point of the bioaccumulation study in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) wasn’t to show where metals go. The comment further asks if metals are all taken up by the plants from the sediments and if they ever transfer back to the sediments from the plants.

Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS was not intended to “show where metals go,” but rather to ascertain whether they are accumulating in tissues. The uptake of metals from sediment by plant tissue is discussed in Section 7.0 in Appendix L-6. When plants die, their metal content can become part of the organic detritus (ooze) on the surface of sediment, incorporated into other tissues, or dissolved in water and flushed downstream.

Response to Comment 85-386

Comment Summary: The comment states that “Your relating these amounts to the wastewater was unclear. Do these numbers always represent what is coming out of wastewater alone?”

Metals and organics in sediment and tissues do not only come from reclaimed water. Other sources include local geology, aerial fallout, and land use practices (with the latter two being washed into the aquatic environment with runoff).

Response to Comment 85-387

Comment Summary: The comment asks where cadmium goes when mosquitofish with cadmium in their bodies die.

The fate of reclaimed water constituents that accumulate in sediment or biota is evaluated in Appendices I-13 (Sediment Quality Characterization and Impacts Assessment), L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) and K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. These reports are based on basic principles of mass conservation and transfer between trophic levels in the environment, and published information about transfer factors between trophic levels. The fate of cadmium in a mosquitofish when it dies is addressed in the pathways described in Appendix K-4. When animals die, the elements in their bodies are transferred to the predator or other compartments (e.g., sediment, water, etc.) . Refer also to Response to Comment 85-385.

Response to Comment 85-388

Comment Summary: The comment asks “what is the relationship between sediment concentrations of heavy metals and plants and aquatic life.”

It is unclear whether this comment is asking about the numerical relationship or the trophic relationship of sediment and aquatic life (plant and animal). The numerical relationships between sediment concentrations of heavy metals and aquatic life are reflected in the data presented in Table 19 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water From the Santa Rosa Subregional System) of the Draft EIR/EIS. Refer also to Responses to Comments 85-356, 85-385 and 85-387.

Response to Comment 85-389

Comment Summary: The comment asks how one value can be a percentage of another.

The EIR/EIS authors assume this is referring to the concentration of heavy metals in sediment relative to plants as discussed in Section 7.0 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. In this section, the concentrations of heavy

metals in sediments and tissues are in the same units of mass per mass (mg/Kg). Since they are in the same units, one can determine the concentration of a particular metal of one sample type (for example, mosquitofish) relative to another sample type (sediment) by dividing the concentration of the metal in one by the concentration of the same metal in the other. This gives the relative concentrations in the two sample types as a percentage.

Response to Comment 85-390

Comment Summary: The comment asks how to interpret the concentration of copper in a crayfish when it is expressed as a percentage of copper in sediments.

The percentage of copper in crayfish relative to the sediments was used as an initial screening tool. A bioaccumulation factor was calculated as the ratio of concentration in organism tissues to the concentration in sediments. This is described in more detail in Section 4.3.1 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. Because the ratio is greater than one, it indicates that crayfish concentrate copper at a higher level than is present in the surrounding sediments. This result is discussed on page 32 of Appendix L-6.

Response to Comment 85-391

Comment Summary: The comment asks if the comparisons of heavy metal bioaccumulation test results to sediment metal contents are an accepted manner of showing bioaccumulation or if this scientific analysis would be considered speculative by other toxicologists and biologists.

The comparisons of heavy metals concentrations in tissues with heavy metal concentrations in sediment is an accepted manner of showing bioaccumulation. It is stated that few reference studies are available that relate metals bioaccumulation in aquatic organisms to concentrations in wetland sediments. This does not imply that few studies are available which support the methodology used. As described in Section 4.3 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS, risk assessment methods recommended by the EPA were used to evaluate bioaccumulation potential and ecological risks to vegetation, aquatic organisms, and terrestrial wildlife from contaminants in Kelly Farm Demonstration Wetlands sediments.

Response to Comment 85-392

Comment Summary: The comment states that the author of the comment letter was "unable to obtain a professional assessment of the analysis provided before the deadline of circulation", and "reserves the right to bring this issue up at a latter date."

It is not clear to which analysis the comment is referring. The 65-day circulation period of the document between August 3, 1996 and October 7, 1996 exceeds the required circulation period. For a discussion of document circulation and review time, refer to Master Response 4, located in Section 6.2 of this document. CEQA does not require that comments received after the end of the circulation period be addressed in the Final EIR and neither CEQA nor NEPA allows a commentor to reserve the right to submit additional comments.

Response to Comment 85-393

Comment Summary: The comment asks if the risk to small animals from heavy metals will increase as more wastewater is processed and discharged and more industry comes into the area as a result of the accommodation of this project.

The risks associated with heavy metals in reclaimed water were assessed for a range of discharge alternatives in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. It was concluded that heavy metals in reclaimed water for a range of discharge alternatives presented low or no risk to fish and wildlife. Concentrations of metals in reclaimed water are not predicted to increase with increased development. Refer to the discussion of cumulative water quality impacts on page 4.6-137 of the Draft EIR/EIS.

Response to Comment 85-394

Comment Summary: The comment asks if “these ratios hold up if the analysis was pointed toward estrogenic impacts of these metals.”

The EIR/EIS authors assume this comment is referring to ratios of exposure to benchmark values. Benchmark values for estrogenic effects are not available, which is why the evaluation does not consider the potential impact of estrogenic substances. Refer also to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-395

Comment Summary: The comment asks if animals can “get cancer” by exposure to benchmark levels.

Benchmark concentrations are, by definition, the levels of a substance exposure at which no effect, including cancer, is observed. The basis of benchmarks is described in Section 4.3.3 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS.

Response to Comment 85-396

Comment Summary: The comment asks how “you know that in the case of cadmium, lead and mercury, these levels can’t affect reproductive success.”

The risks to wildlife from metals is addressed in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. Preference was given in the selection of benchmarks to toxicological data documenting effects on reproduction and development associated with chronic exposures. Refer to Section 5.3 in Appendix K-4.

Response to Comment 85-397

Comment Summary: This comment states that the rationale given for higher levels of six organics in clams downstream of the discharge was that Santa Rosa's wastewater did not show any elevated readings at that time to justify attributing the increase to their discharge. The comment then asks how it could be proved that Santa Rosa's wastewater was not to blame for these increases since the monitoring of organics occurs only once every three months.

This comment mischaracterizes the discussion concerning five of the six organics found in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. This discussion indicates that:

- Although the average concentrations in clams of the six organic compounds were higher below the discharge, no regular pattern above versus below the discharge existed for five of the compounds (chlordane, DDT, PCB, dacthal, and dieldrin). In some years, the concentrations were higher above the discharge.
- These five compounds have never been found in detectable concentrations in Santa Rosa's reclaimed water.
- Three of the compounds, chlordane, DDT, and dieldrin are banned and are not expected to be present in reclaimed water.

For the above reasons, the EIR/EIS authors consider Santa Rosa's discharge not to be the cause of elevated levels of these organics in clams.

The sixth organic compound, total benzenhexachloride (BHC), also did not show a regular pattern of increased concentrations in clams below the discharge. For two of the five years, the concentration of BHC in clams was below detection below the discharge but detectable in the Russian River above the discharge. This irregular pattern of concentrations of BHC in clams above and below the discharge is an indication that Santa Rosa's discharge is unlikely to be causing elevated levels of BHC in clams. In addition, its use to control tree borers could account for much of the elevated concentrations in clams. Thus, more evidence than just the lack of a relationship between concentration in reclaimed water and concentration in clam tissues enables the conclusion to be reached that Santa Rosa's reclaimed water is unlikely to cause increases in BHC in clams below the discharge.

Response to Comment 85-398

Comment Summary: The comment asks why the No Project alternative is described on Appendix L-7 (Aquatic Biological Resources Impacts Analysis Report) page 9 as being similar to the 10 percent design discharge.

Page 9 in Appendix L-7 of the Draft EIR/EIS states that the maximum daily discharge rate for the No Action (No Project) Alternative is similar to that of the 10 percent design discharge alternative, which is consistent with Table 4-2 in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. With existing facilities the City would not be able to keep discharge below 1 percent (or even 5 percent) under all foreseeable weather conditions. Under conditions of very low Russian River flows, the discharge would exceed 10 percent.

Response to Comment 85-399

Comment Summary: The comment expresses disagreement with the a statement in Appendix L-7 (Aquatic Biological Resources Impacts Analysis Report) that “there is no apparent relationship between (migratory) fish movement and reclaimed water concentration.”

The fish migration data have been provided for comment, and the comment offers no alternative interpretation for consideration by the EIR/EIS authors. Refer to Response to Comment 85-326.

Response to Comment 85-400

Comment Summary: The comment asks how the EIR/EIS authors can assume that “spawning was completely successful” given that “estrogenic impacts” were not assessed.

The EIR/EIS authors have not assumed that spawning was completely successful. The EIR/EIS authors concluded from juvenile density data that the streams were populated with fish that were spawned by adults that migrated through reclaimed water, and factors other than the number of adult fish reaching spawning areas appeared to control juvenile production.

Response to Comment 85-401

Comment Summary: The comment asks what is known about the reproductive viability of the offspring of fish exposed to reclaimed water.

This matter was not directly studied. However, the EIR/EIS authors concluded that steelhead populations are self-sustaining (i.e., reproduction is not dependent on hatchery-raised fish). Other studies such as, Shapovolov and Taft, 1954, referred to in Appendix L-1 (Anadromous Fish Migration Study Program, 1991-1994) of the Draft EIR/EIS, have shown that approximately 99 percent of the adults spawn in their natal stream. Thus,

steelhead spawning in Santa Rosa Creek are the offspring of adults that were exposed to reclaimed water. The combination of these facts suggests that offspring of fish exposed to reclaimed water are reproductively viable. It would never be possible to assume that spawning was "completely" successful, as a variety of natural environmental factors such as temperature, water flow, and predation would normally reduce survival of offspring of spawning fish.

Response to Comment 85-402

Comment Summary: The comment asks what kind of anadromous fish migration study results would have shown that reclaimed water was affecting the migratory instinct of fish.

The following results would have indicated the likelihood of an effect: 1) if capture of adult upmigrants was related to reclaimed water concentration (it was not); 2) if experimental no-discharge "windows" resulted in higher catches (they did not); and 3) if the juvenile population in the upper parts of the streams appeared limited by a lack of sufficient spawners (juvenile populations were ample, indicating sufficient spawners, but were reduced by low summer survivorship). The results, therefore, provided no evidence reclaimed water was interfering with migration.

Response to Comment 85-403

Comment Summary: The comment asks how the EIR/EIS authors know that "the migration instinct of individual fish was not sometimes confused."

The EIR/EIS authors do not know that the migration instinct of individual fish was not sometimes confused by reclaimed water or other causes of water quality variation, and have not claimed such knowledge. However, the study results indicate that any such confusion is not resulting in reduced juvenile production.

Response to Comment 85-404

Comment Summary: The comment applies Comments 85-175 through 85-301 to Appendix K-4 (Ecological Risk Assessment).

Refer to Responses to Comments 85-175 through 85-301, which also address implications to Appendix K-4 of the Draft EIR/EIS.

Response to Comment 85-405

Comment Summary: The comment inquires whether the ecological risk assessment addressed just adult life stages of species.

The screening process for ecological risk was based on available toxicological data for the most sensitive stage of an organism's life cycle. Accordingly, benchmarks used in the Santa Rosa assessment were generally obtained from long-term exposures (chronic

exposures) that included sensitive stages in the life cycle of the test organisms. In the case of fish and amphibians, juvenile stages are tested (both for survival and growth); in the case of aquatic invertebrates, female survival and reproduction rates are measured; benchmarks for terrestrial wildlife were selected to indicate potential effects on reproduction (litter or clutch size) in multi-generation studies whenever data were available. Section 5 of Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS discusses methods used for development of benchmark values.

Response to Comment 85-406

Comment Summary: These comments inquire whether the ecological risk assessment differentiated between males and females (especially pregnant females).

Refer to Response to Comment 85-405.

Response to Comment 85-407

Comment Summary: These comments inquire whether the ecological risk assessment addressed risk to young and unborn.

Refer to Response to Comment 85-405.

Response to Comment 85-408

Comment Summary: These comments inquire whether the ecological risk assessment considered airborne exposures.

Airborne pathways, applicable to the wildlife exposure during irrigation, were included in the risk calculations, as indicated on pages 4-1 through 4-10 in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. This exposure mechanism is generally not considered a major exposure pathway and, consequently, applicable benchmarks are seldom available. In general, potential effects on wildlife exposure through air transfer are considered far less significant than the risk by food ingestion that accounts for potential bioaccumulation of chemical substances along the food chain. Volatilization is not considered a major transfer mechanism because volatile substances are present at very low concentrations in the reclaimed water and further reductions in concentration will occur during the extended storage period of the reclaimed water.

Response to Comment 85-409

Comment Summary: These comments inquire whether the ecological risk assessment considered dermal exposures.

Dermal exposure pathways, applicable to the wildlife exposure during irrigation, were included in the risk calculations, as indicated on pages 4-1 through 4-10 in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS. This exposure mechanism is generally not considered a major exposure pathway and, consequently, applicable

benchmarks are seldom available. In general, potential effects on wildlife exposure through dermal contact are considered far less significant than the risk by food ingestion that accounts for potential bioaccumulation of chemical substances along the food chain. Volatilization is not considered a major transfer mechanism because volatile substances are present at very low concentrations in the reclaimed water and further reductions in concentration will occur during the extended storage period of the reclaimed water.

Response to Comment 85-410

Comment Summary: The comment inquires if the ecological risk assessment considered all other current discharges into the Laguna and Russian River cumulatively with Santa Rosa's discharge. The comment also asks about the illegal placement of asbestos laden sewer pipes near creeks that are being illegally disposed of.

In the Laguna de Santa Rosa, exposure was assessed at 100 percent reclaimed water, similar to the storage and irrigation sites discussed in the previous paragraph. Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS does not show significant risk to aquatic life in the Laguna de Santa Rosa (EQ less than 5), and cumulative projects could not contribute more than the 100 percent exposure already discussed.

In the Russian River, Appendix K-4 assumed the maximum design discharge rate of 20 percent of river flow (20 percent exposure). The risk assessment identified an EQ of 9.28 for harbor seals (largely due to aluminum, EQ = 9.21), a less-than-significant impact, but close to the point of significance of EQ = 10. Because there are many point and non-point sources of discharge into the Russian River in the cumulative projects list, it is possible that aluminum concentrations may increase enough to cumulatively exceed the EQ = 10 threshold as discussed on page 4.9-90 of the Draft EIR/EIS. This is considered a significant cumulative impact.

For other aquatic life besides harbor seals, Appendix K-4 identified an EQ of less than 1.4, far below the point of significance. Although cumulative projects in the Russian River watershed may increase the concentration of some chemicals evaluated in the risk assessment, contributions from cumulative projects will not be able to increase pollutants (other than aluminum) in the River sufficient to increase the EQ to 10 or greater. This is because the concentration of chemicals of concern will need to increase several fold in order to increase risk levels to that extent.

The comment does not provide any specific information regarding asbestos-laden sewer pipes. Sources of contamination such as this were not considered in the ecological risk assessment because it is not a Project-related impact and it is difficult to accurately examine contamination scenarios such as this.

Response to Comment 85-411

Comment Summary: The comment asks if any consideration was given to the risks caused by exposure to environmental estrogens on reproductive capacity. Additionally, the comment asks what is the justification for ignoring in the Draft EIR/EIS, the risks associated with exposure to environmental estrogens when the extensive documentation exists that impacts do occur (even if the level of certainty of the risk has not been quantified).

The analysis in the Draft EIR/EIS has not ignored the potential impacts of environmental estrogens. Discussion and evaluation of impacts associated with environmental estrogens can be found in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS. It is not, however, possible to evaluate environmental estrogens quantitatively, because no benchmark values exist. Refer to Master Response 9, located in Section 6.2 of this document, which deals with endocrine disruption in general and estrogenic effects specifically.

Response to Comment 85-412

Comment Summary: The comment asks whether the entire Russian River (downstream of the Laguna and Russian River confluence) was considered in the study.

The ecological risk assessment for the Russian River included modeling of water quality and sediment transport along the downstream section of the river. Stream data collected included three sampling locations downstream of the Laguna and Russian River confluence. Figure 1.1 of Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS illustrates the sampling locations in the Russian River above and below the discharge point.

Modeling of the water and sediment quality were conducted under a worst-case scenario of exposure to the reclaimed water (a maximum reclaimed water contribution of 20 percent to the stream flow under low-flow conditions). For wildlife, including waterfowl and harbor seal, an elevated dietary exposure was assumed (50 percent), and both food ingestion and direct water intake were analyzed.

Response to Comment 85-413

Comment Summary: The comment asks what assumptions were made about contamination levels in the lower Russian River.

The quantitative evaluation of potential effects of contaminant sources unrelated to the Santa Rosa Subregional facility, such as urban run-off or failed septic systems was not included in the risk analysis, except to the extent that these other sources contribute to existing conditions. However, as discussed in Response to Comment 85-413, when risk values due to the project were close to the point of significance (EQ=10), it was assumed that cumulative impacts could result in an EQ greater than 10.

Response to Comment 85-414

Comment Summary: The comment asks whether lifetime exposure was considered.

Lifetime exposures of waterfowl and other wildlife were accounted for in the risk calculations by the use of chronic exposure benchmarks that identify potential long-term effects on reproduction and/or other sublethal effects. Refer to Tables 5.3 and 5.4, on pages 5-6 through 5-8 in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS.

Response to Comment 85-415

Comment Summary: The comment asks if any tests have been performed to determine the cumulative effects of exposure to viruses, parasites and other pathogens on the population.

No tests have been performed to determine the cumulative effects of pathogens on aquatic organism populations due to the lack of benchmarks upon which to base the test analysis. However, the effects of reclaimed water borne pathogens on human populations is discussed in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Additionally, refer to the Responses to Comments in Comment Letters 10 and 14 which discuss environmental pathogens in greater detail.

Response to Comment 85-416

Comment Summary: The comment asks if “any water test samples of pathogens” were taken at a time when the filters weren’t functioning at full capacity.

The intended meaning of “capacity” in the comment is unclear, but the EIR/EIS authors assume the comment refers to the reduced filter media depth condition cited in Appendix H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS. Appendix H-3 provides pathogen data collected during this period.

Response to Comment 85-417

Comment Summary: The comment asks whether the increase in cryptosporidium cysts, due to lower filtration effectiveness, was taken into account when risk assessment data were assembled.

The potential risk associated with viruses, parasites, and other pathogens (including cryptosporidium) is a human-health issue not addressed in the ecological risk assessment.

Response to Comment 85-418

Comment Summary: The comment asks whether the exposure potential is the same for low and high concentrations.

Length of the exposure determines the proper usage of average and maximum exposure concentration values. For short-term exposures, the maximum exposure concentration value is appropriate because lethality or other acute effects are associated with the highest exposure values. Chronic exposures, in contrast, are best represented by average values that account for variation both in time and space. For example, fish ingestion by waterfowl over a several month period results in exposure to multiple tissue levels of chemicals (thus an average value) since waterfowl do not selectively seek contaminated fish (as would be indicated by a maximum value). Accordingly, the ecological risk assessment for the Santa Rosa facility was based on the use of the maximum values as the exposure concentrations for acute exposures, while average values were used for evaluation of chronic exposures. Refer to Table 6.4 on page 6-7 in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS.

Response to Comment 85-419

Comment Summary: The comment asks if averages are a realistic measure for determining level of exposure.

Pages 4-1 through 4-10 in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS, describes how the exposure potential was calculated based on factors associated with the organisms' life history such as food ingestion rates, diet composition, water intake rates, and foraging range. Table 4.4 on page 4-9, in Appendix K-4 provides a long-term average of the concentration of chemical substances in plant, invertebrate and fish tissues during continuous exposure to undiluted reclaimed water over a four-year monitoring period at Kelly Farm Demonstration Wetlands. Refer to Response to Comment 85-418 for a discussion of why average values are deemed realistic for chronic exposures.

Response to Comment 85-420

Comment Summary: The comment inquires about cumulative exposures that consider other sources of contamination.

Refer to Response to Comment 85-410.

Response to Comment 85-421

Comment Summary: The comment asks if any tissue samples or autopsies have been performed on dead seals or other dead water animals to determine cause of death.

The EIR/EIS authors are unaware of any autopsies that have been conducted by the Marine Mammal Center or other organizations on dead seals and water animals that have been found along the mouth of the Russian River. No autopsies or tissue samples were performed as part of the environmental review process for the Project. Because the commentor has not provided any information about such tissue samples or autopsies no further response could be provided.

Response to Comment 85-422

Comment Summary: The comment asks whether tissue concentrations from Kelly Farm Wetlands were the only data used in the ecological risk assessment and whether exposure to all potential toxins in the Russian River was evaluated.

The Kelly Farm Demonstration Wetlands project was carried out to assess, among other issues, the potential for long-term bioaccumulation of metals and organic substances in plants, invertebrate and fish. The study evaluated continuous exposure to undiluted reclaimed water over a four-year monitoring period and was not limited to heavy metals; data for organic substances were not listed in Table 4.4 in Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS because all organic substances tested in tissue samples were very low (below analytical detection limits). The use of long-term monitoring data for organism tissues from Kelly Farm Wetlands as a surrogate value for Russian River organisms is a conservative approach because it assumes a 100 percent exposure to the reclaimed water when, in reality, the typical contribution of the reclaimed water to the Russian River flow will be less than 2 percent. Refer to Table 6.1 on page 6-3 in Appendix K-4 of the Draft EIR/EIS. Refer to Response to Comment 85-410 regarding cumulative exposures.

Response to Comment 85-423

Comment Summary: The comment asks for an explanation of discrepancies between Table 4.4 in Appendix K-4 (Ecological Risk Assessment) and Table 19 in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System).

The noted values in Table 19 of Appendix L-6 of the Draft EIR/EIS are in error. The concentrations are reported correctly in Table 3 of Appendix L-6 of the Draft EIR/EIS. Four of the five revised numbers are values that were below detection so potential bioaccumulation could not be ascertained. For the fifth value (concentration of lead in bulrush seeds), the ratio of tissue concentration to sediment concentration only changed from less than one percent to two percent. This error does not alter the conclusion in the text that the concentrations of lead in vegetation tissues were equivalent to less than 12 percent of their concentration in sediments.

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

Page 33, Appendix L-6. Table 19 is revised as follows:

Table 19.

Potential Bioaccumulation of Metals in Organism Tissues Of Kelly Farm Demonstration Wetlands

	Concentration in Sediments (mg/kg)	Ratio of Tissue Concentration to Sediment Concentration ^a				Tissue Concentration (mg/kg)			
		Cattail Rhizomes	Bulrush Seeds	Crayfish	Mosquitofish	Cattail Rhizomes	Bulrush Seeds	Crayfish	Mosquitofish
Aluminum	18,500	0.06	< 0.01	0.02	0.07	1,183	35	449	1,232
Arsenic	3.38	0.09	< 0.02	0.23	0.10	0.30	< 0.06	0.77	0.33
Cadmium	< 0.36	-	-	-	-	< 0.22 <u>< 0.20</u>	< 0.06	< 0.15	< 0.28 <u>< 0.26</u>
Chromium	63.5	0.06	< 0.01	0.03	0.08	4.09	0.30	1.88	4.94
Copper	24.6	0.30	0.18	3.48	0.28	7.38	4.35	85.7	6.79
Lead	11.1	0.11	< 0.01 <u>0.02</u>	0.08	0.10	1.24	0.03 <u>0.27</u>	0.94	1.06
Mercury	0.089	-	0.19	0.56	1.24	< 0.038 <u>< 0.040</u>	0.017	0.050	0.110
Nickel	97.1	0.07	0.04	0.05	0.05	7.1	3.6	4.5	4.9
Selenium	< 0.7	-	-	-	\geq <u>< 1.0</u>	< 0.38 <u>< 0.40</u>	0.20	0.59	0.84
Silver	< 3.6	-	-	-	-	0.92	0.80	0.60	1.36
Zinc	63.8	0.24	0.08	0.97	2.23	15.4	5.0	62.2	142.2

Page 30, Appendix L-6. Table 17 is revised as follows:

Table 17. cont.

Concentration of Metals in Sediments and Organism Tissues of Kelly Farm
Demonstration Wetlands

	Concentration in Sediments (mg/kg)	Tissue Concentration (mg/kg)			
		Wetland Vegetation		Aquatic Fauna	
		Cattail Rhizomes	Bulrush Seeds	Crayfish	Mosquitofish
Mercury					
1994, average concentration ^a	0.089	<0.038 <0.040	0.017	0.050	0.110
1991, single sample ^b	<0.050	<0.150	<0.03	0.110	0.270
Change relative to 1991	Increased	-	-	-55%	-59%
Nickel					
1994, average concentration ^a	97.1	7.1	3.6	4.5	4.9
1991, single sample ^b	124.0	22.3	3.7	14.5	7.3
Change relative to 1991	-22%	-68%	-2%	-69%	-33%
Selenium					
1994, average concentration ^a	<0.7	<0.38<0.40	0.20	0.59	0.84
1991, single sample ^b	<0.5	<1.54	<0.35	<0.97	<0.85
Change relative to 1991	-	-	-	-	-
Silver					
1994, average concentration ^a	<3.3	0.92	0.80	0.60	1.36
1991, single sample ^b	0.59	<0.38	<0.09	0.29	<0.21
Change relative to 1991	-	Increased	Increased	107%	-
Zinc					
1994, average concentration ^a	63.8	15.4	5.0	62.2	142.2
1991, single sample ^b	139.0	41.5	10.2	91.8	128.0
Change relative to 1991	-54%	-63%	-51%	-32%	11%

^a Average of four composite samples of sediment and three composite samples of organisms collected in August 1994.

^b Concentration for single grab sample collected in October 1991.

Page 35, Appendix L-6. Table 20 is revised as follows:

Table 20

Comparison of Metals concentrations In Wetland Vegetation

Concentration (mg/kg)	Kelly Farm Wetlands, CA	Crandall Creek Marsh, CA	Milltown Reservoir Wetlands, MT
Arsenic			
Sediments	3.38	-	15.0
Roots of vegetation	0.30	-	4.2
Cadmium			
Sediments	0.36	-	3.0
Roots of vegetation	0.22 0.20	-	5.4
Copper			
Sediments	24.6	50.3	50.0
Roots of vegetation	7.4	16.1	21.9
Lead			
Sediments	11.1	8.0	22.0
Roots of vegetation	1.2	3.2	22.9
Zinc			
Sediments	63.8	99.5	930.0
Roots of vegetation	15.4	40.8	73.8
Bioconcentration Factors			
Arsenic	0.09	-	0.28
Cadmium	0.64 0.56	-	1.79
Copper	0.30	0.32	0.44
Lead	0.11	0.40	1.04
Zinc	0.24	0.41	0.08

1. Kelly Farm: August 1994 average values for sediments and cattail rhizomes (this report).
2. Crandall Creek: data for marsh sediments and cattail roots (*Typha latifolia*) (Demgen 1993).
3. Milltown Reservoir: data for soils and below ground tissues of aquatic vegetation at sites where the minimum contamination levels were detected (Linder et al. 1994).

Page 40, Appendix L-6. Table 23 is revised as follows:

Table 23

Potential Risk for Adverse Effects on Terrestrial Fauna from Metals in Organism Tissues At the Kelly Farm
Demonstration Wetlands

Tissue Concentration at KFDW (mg/kg)	Diet Source				Dietary Benchmark ^a (mg/kg)
	Cattail Rhizomes	Bulrush Seeds	Crayfish	Mosquitofish	
Arsenic	0.30	0.06	0.77	0.33	Not Applicable (NA)
Cadmium ^b	0.22 <u>0.20</u>	0.06	0.15	0.28 <u>0.26</u>	NA
Chromium	4.09	0.30	1.88	4.94	NA
Copper	7.38	4.35	85.7	6.79	NA
Lead	1.24	0.27	0.94	1.06	NA
Mercury	0.038 <u>0.040</u>	0.017	0.050	0.110	NA
Nickel	7.1	3.6	4.5	4.9	NA
Selenium	0.38 <u>0.40</u>	0.20	0.59	0.84	NA
Silver	0.92	0.80	0.60	1.36	NA
Zinc	15.4	5.0	62.2	142.2	NA

Page 34, Appendix L-6. The following modification is made to the second paragraph:

Compared to the Milltown Reservoir wetlands, Kelly Farm wetlands had lower concentrations of arsenic, cadmium, copper, lead, and zinc, both in sediments and organism tissues (Table 20). Bioaccumulation factors (except for zinc) were also lower at Kelly Farm, which had values from 0.09 to ~~0.64~~0.56. At Milltown Reservoir, the vegetation content of cadmium and lead was similar or exceeded the concentration measured in the sediments. At Milltown Reservoir, zinc levels in vegetation were very elevated relative to Kelly Farm, but the bioaccumulation factor was low due to the high concentration of the metal sediments of the Milltown Reservoir. This suggests that physiological regulation of zinc may occur in emergent plants.

Response to Comment 85-424

Comment Summary: The comment requests the right to bring up additional issues regarding human health risks at a later date, and refers to subsequent comments and a letter from Dr. Marion Moses.

Neither CEQA or NEPA require the City to respond to comments submitted after the end of the comment period, nor do CEQA or NEPA allow a commentor to reserve the right to submit additional comments. Each of the subsequent comments referred to in this comment including those submitted by Dr. Moses are addressed individually.

Response to Comment 85-425

Comment Summary: The comment expresses concern about the effect of Giardia and Cryptosporidium on humans.

Refer to Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-426

Comment Summary: The comment states that the number of Giardia and Cryptosporidium samples is inadequate basis for the analysis of impacts in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens).

Appendix J-2 of the Draft EIR/EIS addresses xenoestrogens, and protozoan pathogens such as *Giardia* and *Cryptosporidium* are not considered to have estrogenic properties. The number of *Giardia* and *Cryptosporidium* samples is addressed in the Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-427

Comment Summary: The comment expresses concern about the frequency of filter problems and the effect of such problems on effluent quality.

Refer to Responses to Comments 85-279 through 85-284 and to Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-428

Comment Summary: The comment states that “because the Sonoma County Water Agency and other downstream water users do not filter their water supply, we believe that cryptosporidium is a real and present danger.”

Users of surface waters are required to comply with the Surface Water Treatment Rule (SWTR), which mandates filtration (or equivalent) of waters such as the Russian River. The Department of Health Services has evaluated Sonoma County Water Agency intakes and has determined that the gravel provides filtration that is equivalent to that required by the SWTR. The effect of *Cryptosporidium* on human health is addressed in Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-429

Comment Summary: The comment states that if a cited report stating that fecal streptococcus causes respiratory infection of swimmers is correct, then fecal streptococcus should be monitored.

The Regional Board is required to establish effluent monitoring requirements for constituents of concern, and has the authority to require such monitoring at any time. As water contact standards or criteria for fecal streptococcus are promulgated, local agencies such as the County of Sonoma may need to monitor fecal streptococcus at locations of water contact. Fecal streptococcus is a bacterium and, as such, is readily disinfected by UV or chlorination, as described in Master Response 8, located in Section 6.2 of this document. There is no need to monitor reclaimed water separately for this bacterium, because coliform is an adequate indicator of disinfection efficiency. Because of the totally different character of reclaimed water and natural surface water bodies (one is disinfected, the other is not), different indicator organisms are appropriate.

Response to Comment 85-430

Comment Summary: The comment asks whether the City is going to use “old standards even while new information implies significant risk from higher discharges” and whether the City has a responsibility to exceed the safety standards incorporated into current laws if new information warrants it.

The EIR/EIS authors do not agree with the conclusion of this comment (i.e., that new information is available which implies significant risk from higher discharges) based on our analyses found in Appendices J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) and J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS and summarized in Section 4.7 of the Draft EIR/EIS. The City has considered proposed regulations (e.g., for State of

California reclaimed water regulations) where such information has been published in at least draft form by the State. However, this information can only be used as guidance because the City cannot predict the future course of governmental regulation or exactly what information scientific advances may ultimately reveal. Because no specific new information has been included in the comment, we are unable to respond more specifically.

Response to Comment 85-431

Comment Summary: The comment requests information about the reproductive health effects of phthalates (especially bis(2-ethylhexyl)phthalate [DEHP]).

As noted in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS, phthalates have been identified as potential endocrine disrupters (reproductive toxicants). Although not explicitly stated in the human health risk assessment, reproductive effects (e.g., decreased fertility and reduced live births in mice) were considered by the EPA when deriving the reference dose for DEHP that was used in the risk assessment. The reference dose for DEHP is believed to adequately protect for potential reproductive health effects because it is about one ten-thousandth of the dose at which these effects were observed in the experimental system. Further information about the reproductive health effects of phthalates is contained in the supporting documentation for the Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS, which has been publically available.

Response to Comment 85-432

Comment Summary: The comment says “many of the issues we raised in the section on Ecological Risk Assessment are pertinent here” (in apparent reference to the Appendix J-2 of the Draft EIR/EIS).

Comments 85-404 through 85-423 address Appendix K-4 (Ecological Risk Assessment) and each is addressed below in relation to Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens).

Comment 85-404 suggests that Comments 85-175 through 85-301 apply to Appendix K-4 of the Draft EIR/EIS. Comment 85-432, thus, also suggests that Comments 85-175 through 85-301 to Appendix J-2 of the Draft EIR/EIS. Each of the Comments 85-175 through 85-301 is specific and has been addressed as completely as possible in the respective responses.

Comment 85-405 asks if a range of life stages were evaluated. Appendix J-2 of the Draft EIR/EIS presents a summary of existing information about xenoestrogenic effects on human and wildlife. Information about a range of life stages is included in Appendix J-2. An example is the discussion of trout egg impacts on page 4-4 in Appendix J-2. Refer also to the bottom of page 4-1 in Appendix J-2.

Comment 85-406 asks if impacts were distinguished by gender or reproductive condition. Appendix J-2 of the Draft EIR/EIS presents a summary of existing information about xenoestrogenic effects on humans and wildlife. Information by gender or reproductive condition is included in Appendix J-2. Examples are the discussions of breast cancer on page 3-4 and of female English sole on page 4-2 in Appendix J-2 .

Comment 85-407 asks how to evaluate the risk to “the young and unborn.” Studies of xenoestrogenic impacts to the young and unborn are cited and described in Appendix J-2 of the Draft EIR/EIS. Examples are the discussions of DES effects on pregnant women and of trout egg impacts on page 4-4 in Appendix J-2. Details on how the referenced studies were conducted are outside the scope of the Draft EIR/EIS.

Comments 85-408 and 85-409 ask if airborne exposures and other pathways were considered. The analysis of xenoestrogens in Appendix J-2 of the Draft EIR/EIS generally does not distinguish between effects resulting from different exposure pathways, but the potential for various exposure pathways such as inhalation of airborne compounds is recognized on page 2-4 in Appendix J-2.

Comment 85-411 asks how the Draft EIR/EIS consultants “can justify completely ignoring” xenoestrogens. Xenoestrogens were not ignored. Appendix J-2 of the Draft EIR/EIS is dedicated to the subject of xenoestrogens.

Comment 85-412 and 85-413 asks if the entire Russian River downstream of the Laguna was included in the study. Appendix J-2 of the Draft EIR/EIS is a summary of studies conducted elsewhere and does not include any site-specific analysis of the Russian River.

Comment 85-414 asks if lifetime exposures were considered. Studies of lifetime exposure to xenoestrogens are described in Appendix J-2 of the Draft EIR/EIS. Examples are described in the Freshwater Ecosystem section of Appendix J-2.

Comment 85-420 asks if cumulative exposures should be considered. Studies of lifetime exposure to xenoestrogens are described in Appendix J-2 of the Draft EIR/EIS. Examples are described in the Freshwater Ecosystem section of Appendix J-2.

Comments 85-410, 85-415, 85-416, 85-417, 85-418, 85-419, 85-421, 85-422 and 85-423 do not relate to xenoestrogens or their impacts.

Response to Comment 85-433

Comment Summary: The comment asks that the possible summertime impacts due to wintertime discharges be identified, noting that chemicals may be re-released from sediments.

Measurements of chemical concentrations in sediments collected near existing discharge points are found in Appendix I-13 (Sediment Quality Characterization and Impacts Assessment) of the Draft EIR/EIS. Generally, the chemicals detected in sediments did

not correlate with chemicals found in reclaimed water. The environmental fate of chemicals detected in reclaimed water (including their adsorption to sediments) are discussed in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS). Generally, some metals, pesticides, and phthalates may adsorb to sediments. Once adsorbed they are unlikely to desorb in significant concentrations. A more likely exposure pathway could occur from the ingestion of sediments by benthic organisms and subsequent bioconcentration and biomagnification in the food web. The potential for these phenomena to occur is discussed in Appendices K-4 (Ecological Risk Assessment) and L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) and summarized in Sections 4.8 and 4.9 of the Draft EIR/EIS.

Response to Comment 85-434

Comment Summary: The comment asks that the fate of all coliforms, organics, heavy metals, and pathogens as they leave the plant be identified.

This information can be found in the text and appendices of the Draft EIR/EIS. The known and potential fates of both the chemicals and microorganisms in reclaimed water are discussed in Appendices J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens), J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water), K-4 (Ecological Risk Assessment), and L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS. Actual measurements of water and sediments are contained in Appendices H-2 (Reclaimed Water Quality), H-3 (Reclaimed Water Quality Update), I-4 (Laguna de Santa Rosa Water Quality Monitoring Results), and I-13 (Sediment Quality Characterization and Impacts Assessment) of the Draft EIR/EIS. Results from these reports are considered in Sections 4.7, 4.8, and 4.9 of the Draft EIR/EIS. Because the comment identifies no specific chemicals or microorganisms that have not been included in the Draft EIR/EIS, a more specific response cannot be provided.

Response to Comment 85-435

Comment Summary: The comment asks that all the opportunities for contact by summer users of the Russian River be identified.

Potential uses of the Russian River (e.g., swimming, wading, and sport fishing) are identified and considered in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Because the comment identified no additional uses that may be of concern, a more specific response cannot be provided.

Response to Comment 85-436

Comment Summary: The comment asks if there have been any health surveys of people who have wells along the Laguna and “if not, why not?”

No health surveys of people who have wells along the Laguna were conducted as part of the Draft EIR/EIS because groundwater does not flow from the Laguna to the wells, and because the wells are not considered to be under the influence of surface water. Groundwater studies (as discussed in Section 4.5 of the Draft EIR/EIS) indicate that the streams and rivers in the Santa Rosa Plain are typically discharge points for groundwater that is, groundwater is moving into streams and rivers and not from the streams and rivers to groundwater. Refer to Response to Comment 17-3.

Response to Comment 85-437

Comment Summary: The comment asks whether toxicity values for sensitive sub populations take into account the possible accumulation of toxins in fat tissue.

All toxicity values used in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS are based on chronic (long-term) exposures. For those chemicals that are known to bioaccumulate, the EPA and California EPA have considered epidemiological studies that reported tissue concentrations of bioaccumulative substances. Further information about the health effects of bioaccumulative chemicals can be found in the supporting documentation for Appendix J-3 of the Draft EIR/EIS, which has been publically available.

Response to Comment 85-438

Comment Summary: The comment asks that the health risk to anglers in the Russian River be quantified. As noted in the human health risk assessment Appendix J-2 Human Health Effects and Wildlife Effects of Environmental Estrogens), anglers may be exposed via direct contact with water in the Russian River and via the consumption of fish.

The direct exposure to water was not quantified in the risk assessment because it would present a very much smaller risk than that calculated for the hypothetically exposed person who uses undiluted reclaimed water as a domestic water source. The health risk from consuming fish is quantified in the risk assessment and was found to be less than significant.

Response to Comment 85-439

Comment Summary: The comment notes that some people may use the beaches on the Russian River in April and May and asks that the risk to these people be determined.

Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS recognizes that these events may occur; however they would have shorter exposure times (an hour or two of recreation per event in April

and May vs. four, fifteen minute baths per week in the domestic use scenario), lower water ingestion rates (fifty milliliters per recreational event vs. one liter per day for the domestic use scenario) and smaller exposure frequencies (a few days of recreational use in April and May vs. 350 days per year for domestic use). The recreational pathway thus presents only a small fraction of the potential exposure as compared to that quantified for the hypothetically exposed person who uses undiluted reclaimed water as a domestic water source. Because the health risks for most chemicals (nitrates are the exception) were found to be less than significant, it was determined unnecessary to quantify the health risks from recreational use of the Russian River. Because water ingestion in the recreational use scenario is less than one thousandth of the water ingestion in the domestic use scenario, even nitrates would not exceed the level of significance in the recreational use scenario.

Response to Comment 85-440

Comment Summary: The comment asks how it was determined that no sustenance fishing occurs in the Russian River.

As noted in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS, the EIR/EIS authors contacted California Department of Fish and Game officials regarding sustenance-level fishing.

Response to Comment 85-441

Comment Summary: The comment asks for an estimate of the risk to people who eat a lot of fish.

The EIR/EIS authors determined that this calculation was unnecessary and inappropriate because there was no evidence for sustenance fishing on the Russian River and because the results of the Kelly Farms Demonstration Wetlands study and the State's Toxic Substances Monitoring Program, as described in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS, found no evidence of significant bioaccumulation in aquatic organisms.

Response to Comment 85-442

Comment Summary: The comment asks if fish tissue have been analyzed to determine toxicity of various species.

Data on selected organic and inorganic chemicals have been collected for a variety of fish collected from the Russian River as part of the California EPA's Toxic Substances Monitoring Program. Some of these data were used in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Additional discussion of these data is contained in Appendix L-6 (Evaluation

of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS.

Response to Comment 85-443

Comment Summary: The comment asks about the risks to a person who may accidentally fall in the river.

Since this is presumably a one-time event, the exposure to chemicals and microorganisms in the Russian River would be very much smaller than that of a person who uses the Russian River for recreational use on a regular basis. Refer to Response to Comment 85-439.

Response to Comment 85-444

Comment Summary: The comment asks about “the compounded risks of using river water in clean up efforts after a big flood?”

Clean up efforts are of limited duration and frequency. Therefore, risks from exposure to river water during cleanup would be less than those examined in the domestic use and recreational use scenarios. Because no specific information is given about how the comment expects that river water would be used in clean up efforts, a more specific response cannot be provided.

Response to Comment 85-445

Comment Summary: The comment asks for the fate of toxins that bioaccumulate.

Toxins bioaccumulate because they are actively and/or selectively accumulated by enzyme systems. Some nonpolar toxins bioaccumulate because they are much more soluble in lipid tissue than in water. Toxins in water, sediment and other biota are subject to these bioaccumulation processes, and Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS provides an estimate of the transfer of toxins through the environment based on existing information about their chemistry and ability of organisms to accumulate the toxin. The concentration of constituents in biota eventually attains an equilibrium with surrounding media (i.e., water and sediment). Constituents are constantly added to the River system from sources such as runoff and wastewater discharge, and lost from the River system as compounds are transformed by biological activity to other constituents and/or washed into the sea. When animals die, the elements in their bodies are dispersed in the environment.

Response to Comment 85-446

Comment Summary: The comment asks if the risk assessment looks at impacts in conjunction with other exposures, noting that there are many sources of contamination in the Laguna and Russian River.

While no data for other dischargers were quantitatively analyzed in the risk assessment, the risk assessment did qualitatively compare reclaimed water quality with that of the Russian River upstream of the current discharge point. Water quality monitoring results for the Laguna de Santa Rosa are in Appendix I-4 (Laguna de Santa Rosa Water Quality Monitoring Results) of the Draft EIR/EIS and for the Russian River are in Appendix I-6 (Russian River Water Quality Monitoring Results) of the Draft EIR/EIS.

Response to Comment 85-447

Comment Summary: The comment notes that xenoestrogens may act synergistically and asks whether consideration to these interactions was given in the risk assessment.

The EIR/EIS authors recognize that synergism is a source of uncertainty in the current risk assessment methodology and that the EPA revisits and updates the methodology as new information becomes available. It is an even greater source of uncertainty for xenoestrogens, for which there is still much debate in the scientific community about the nature of endocrine disrupters and the concentrations at which they act. No scientific consensus has been reached on effective dosages. A qualitative discussion of this topic is presented in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS. A discussion of the effects that this uncertainty has on estimates of the human health risk is contained in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Refer to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-448

Comment Summary: The comment asks where dioxins are discussed.

Dioxins are discussed as potential endocrine disrupters in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS. Dioxins were analyzed and were not detected in reclaimed water. A complete set of the sampling results is contained in Appendices H-2 (Reclaimed Water Quality) and H-3 (Reclaimed Water Quality Update) of the Draft EIR/EIS.

Response to Comment 85-449

Comment Summary: The comment states that Cryptosporidium was detected in reclaimed water, this fact was reported in Appendix H-3 (Reclaimed Water Quality Update), and Cryptosporidium was not evaluated in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water).

Cryptosporidium was found in reclaimed water and was not evaluated in the biological hazard assessment within Appendix J-3 of the Draft EIR/EIS. *Cryptosporidium* is addressed in Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-450

Comment Summary: The comment asks for a description of “the scientific communities’ (sic) belief about the effectiveness of chlorine to disinfect cryptosporidium and giardia.”

Chlorine is not considered to be an effective disinfectant for *Cryptosporidium*, and is only slightly effective (0.5 log reduction) on *Giardia* (see *Initial Study and Negative Declaration for Conversion to Ultra-Violet Disinfection* (February, 1997). Both organisms are removed by filtration. This is addressed further in Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-451

Comment Summary: The comment notes that the “theories” discussed in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) were not used in the human health risk assessment.

The study of endocrine disrupters is an emerging field of investigation and there is still much debate in the scientific community about the nature of endocrine disrupters and the concentrations at which they act. No scientific consensus has been reached on effective dosages; therefore it was deemed inappropriate to speculate on reference doses for these chemicals. Without reference doses, it is not possible to provide a quantitative evaluation of potential estrogenic effects which are discussed qualitatively in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS within the framework of the Human Health Risk Assessment. Refer to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-452

Comment Summary: The comment identifies a book that was provided as an attachment, with the intent of urging decision makers to read the book.

The book, “Our Stolen Future” addresses human health assessment, and has been made available to the City Council and Board of Public Utilities Members.

Response to Comment 85-453

Comment Summary: The comment states “why not institute an irrigation management program for the Laguna.”

The impacts of the existing system are not part of the Project being evaluated in the Draft EIR/EIS, and therefore, no recommendations are made regarding management of the existing system.

Comment 85-454

Comment Summary: The comment states "why not prohibit farmers who over irrigate from being eligible for no interest loans?"

The Subregional System has no authority to regulate loan programs or deny individuals no interest loans that might be available from other agencies to potential irrigators in the South or West County. Over irrigation of land as identified in Measure 2.2.3: Restrict Surface and Subsurface Irrigation Water Runoffs on page 2-23 in the Draft EIR/EIS will not be allowed except on Reyes Soils. If overirrigation were to occur and farmers did not attempt to comply, the provision of water will be denied. The City has a program to provide dairy waste management assistance to dairy farmers in the Laguna, but it is not within the scope of the Draft EIR/EIS to recommend mitigation for existing system operations.

Response to Comment 85-455

Comment Summary: The comment questions "why not use irrigation site resources maps in the Laguna, especially in regard to oak trees."

No additional irrigation is proposed in the Laguna. The impacts of the existing system are not part of the Project and are not evaluated in the Draft EIR/EIS, and therefore, no recommendations are made regarding management of the existing system.

Response to Comment 85-456

Comment Summary: The comment questions "why not follow the same irrigation practices for the Laguna as in 2.2.3, 2.2.4, and 2.2.5."

No additional irrigation is proposed in the Laguna. The impacts of the existing system are not part of the Project and are not evaluated in the Draft EIR/EIS, and therefore, no recommendations are made regarding management of the existing system.

Response to Comment 85-457

Comment Summary: The comment questions "will the pesticide control program be used in the Laguna area."

No additional irrigation is proposed in the Laguna. The impacts of the existing system are not part of the Project and are not evaluated in the Draft EIR/EIS, and therefore, no recommendations are made regarding management of the existing system.

Response to Comment 85-458

Comment Summary: The comment states that the Russian River Watershed Protection Committee (RRWPC) and its supporters have serious concerns regarding the proposed increase of discharge into the Russian River. Those concerns are specified in the Trial Brief, Proposed Decision and Findings, and Closing Argument that is included with this comment letter. The RRWPC feel that they have made very credible arguments in this brief, and would like to see their concerns included as part of the mitigation plan.

The comment is not specific as to which portions of the *Trial Brief, Proposed Decision and Findings*, and *Closing Argument* relate to the analysis in the Draft EIR/EIS and the EIR/EIS authors thus cannot provide a more specific response. The portions of the complaint that the EIR/EIS authors consider to be relevant to the Draft EIR/EIS have been addressed in Chapters 4.6 through 4.10 and in Appendices I through M of the Draft EIR/EIS. Additionally, a final court decision on the subject lawsuit found no merit in the lawsuit. For additional information refer to the final court decision, *Findings of Fact and Conclusions of Law RE Specific Alleged Violations*, No. C-95-1550 SC, located in Section 6.4 of this document.

Response to Comment 85-459

Comment Summary: The comment states that Table 2.5.1 on page 2-127 says nothing about discharges at 20 percent, only storage and asks what will be the discharge plan for the season. The comment also asks what is meant by reduced fall and spring discharge?

The project storage curve was developed and controls discharge as described on page 3 in Appendix D-8 (Water Balance Model - Summary and Results) of the Draft EIR/EIS. Page 3 states that “Actual river discharge is calculated by comparing water available for storage to the target storage volume. . . . Actual river discharge is calculated based on irrigation demand, reclaimed water inflow and target storage.” The effect of the storage curves in Table 2.5.1, in terms of percent wastewater in the receiving waters for normal, dry, and wet years is presented in Figures 4-24 through 4-35 in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS.

The storage curve shown in Table 2.5.1 allows for accumulation of more reclaimed water storage in fall, and thus less discharge. This can be seen by comparing storage volumes for project operations to mitigation operations.

Response to Comment 85-460

Comment Summary: The comment states that it is unacceptable that the city will not start a cyanide source control program immediately.

The EIR/EIS authors consider this comment to be related to Regional Board jurisdiction, not the Draft EIR/EIS. Refer also to Response to Comment 8-29.

Response to Comment 85-461

Comment Summary: The comment asks what happens to volatilized cyanide.

Levels of cyanide in reclaimed water are low (from nondetectable to 0.03 mg/L) and would be much lower than typically regulated concentrations in air (5 mg/m³, OSHA exposure standard), even if one assumed the cyanide were 100 percent volatilized. Some biological degradation of cyanides to thiocyanate would be expected to occur in wastewater and in soils where reclaimed water is used for irrigation. Thiocyanate is much less toxic than cyanide (it is also a detoxification product of cyanides in humans) and its sulfur and nitrogen components would eventually enter the nutrient cycle of plants and microorganisms, although given the low concentrations, the overall contribution would be insignificant.

Response to Comment 85-462

Comment Summary: The comment asks if there are risks when volatilized cyanide combines with other compounds.

The Bay Area Air Quality Management District has conducted several studies on the volatilization of cyanide and has found that, even at levels substantially higher than those experienced with the Santa Rosa wastewater project, it disperses very quickly, has little chance of reacting with other compounds and does not pose any risks (personal communication, Bay Area Air Quality Management District, George Fuller, December 1996).

Response to comment 85-463

Comment Summary: The comment refers to comments in Comment Letter 118, regarding nitrogen loading mitigation.

Refer to Responses to Comments 118-126 through 118-132

Response to Comment 85-464

Comment Summary: The comment asks if there will be a toxicity identification program for sublethal toxic amounts.

A toxicity identification program for sublethal amounts is not proposed based on the Draft EIR/EIS impacts evaluation. Lethality is used as the end point because it is the one of regulatory significance. Refer to Table 6 on page 43 see Appendix I-12 (Development of Evaluation Criteria for Potential Water Quality Impacts) of the Draft EIR/EIS.

Response to Comment 85-465

Comment Summary: The comment recommends that Mitigation Measure 2.5.10: Discharge Prohibition During Flood Stage on page 2-137 should be modified so that discharge ceases when rising waters reach 28 feet on the Hacienda gauge instead of 31 feet.

Flood stage is defined as 32 feet. The threshold of 31 feet was established based on the assessment that the time of reclaimed water travel from the Laguna to flood-prone areas is shorter than the time required for the water to rise from 31 to 32 feet. Thus, the EIR/EIS authors do not concur with the recommendation.

Response to Comment 85-466

Comment Summary: The comment states incorrectly that the City has taken no action regarding surfactants that are suspected of being estrogenic. The comment requests that the City obtain more information and consider future action.

The degradation products of certain surfactants (alkylphenol polyethoxylates) are believed to be estrogenic (endocrine disrupters). As a result of information gathered as part of Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS the City directed its consultants to analyze for these chemicals in the Laguna Plant reclaimed water. None were detected. The comment is not specific as to what further action should be considered in light of this information.

Response to Comment 85-467

Comment Summary: The comment states that the project analysis focused on impacts rather than on project description resulting in a disjointed and difficult format.

Refer to Master Response 1, located in Section 6.2 of this document, concerning the document's organization.

Response to Comment 85-468

Comment Summary: The comment states a concern for the organization of the document and notes slight variations of lists of toxics in three different sections. The comment also questions whether decision makers will be able to provide adequate basis for their decision because the document presentation was convoluted.

Not enough detail is provided in the comment to identify if any variation occurs in the lists of toxic compounds. It is not clear what section and what toxic lists are in reference. Concerning document organization, refer to Master Response 1, located in Section 6.2 of this document.

Response to Comment 85-469

Comment Summary: The comment expresses a “grave concern” that computers were used to estimate impacts and questions whether the EIR/EIS authors have “even seen the Russian River.”

The EIR/EIS authors attended meetings of the Water Quality Modeling Workgroup with the commentor on 6 June 1994, 18 July 1994, 3 August 1994, and 27 February 1995. The commentator was asked at each such meeting, after expressing the concern about water quality modeling using a computer, if the commentor had a superior method of evaluating discharge alternatives which would not require testing in the field. Field testing of discharge alternatives is not possible. The commentator offered no alternatives then and the commentor offers no alternatives in any written Draft EIR/EIS comment. The collection of field data documented in Appendices L-1 through L-7 of the Draft EIR/EIS attest to the numerous visits to the River for scientific purposes.

Response to Comment 85-470

Comment Summary: The comment states that it is problematic that health, economic and other studies were not conducted on behalf of the recipients of the waste. There are no impact studies on the tourist industry or health of people of the lower Russian River.

Refer to Master Response 7, located in Section 6.2 of this document, regarding impacts to the tourist economy. Health effects of a variety of scenarios for exposure to reclaimed water are presented in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Section 4.7 of the Draft EIR/EIS concluded that "Direct discharge of reclaimed water into the Laguna de Santa Rosa or the Russian River will not adversely affect water quality at drinking water sources and would not adversely affect human health via other potential exposure pathways" (refer to page 4.7-61).

Response to Comment 85-471

Comment Summary: The comment requests that connections be made between high breast cancer rates, low birth rates, increasing rates of salmonellosis, and higher rates of giardiasis.

There is no evidence that existing breast cancer and birth rates in Sonoma County have any relevance to the Long-Term Wastewater Project. A survey of breast cancer and birth rates is beyond the scope of the Draft EIR/EIS. Section 4.7 of the Draft EIR/EIS discusses public drinking water supplies in the project area, and has found that drinking water in the project area was at or below maximum contaminant limits (refer to page 4.7-3). In addition, drinking water supplies in the project are not considered to be under the influence of surface water, and thus are not affected by discharges from the City of Santa Rosa. The Draft EIR/EIS has not attempted to do a survey of rates of salmonellosis and

giardiasis throughout the project area because there is no reason to attribute any connection to the Long-Term Wastewater Project.

Response to Comment 85-472

Comment Summary: The comment cites cancer rates in Sonoma County.

As discussed in Response to Comment 85-471, there is no reason to connect the Long-Term Wastewater Project with Sonoma County cancer rates. The comment does not provide any specific data about why such a connection is thought to exist.

Response to Comment 85-473

Comment Summary: The comment refers to subsequent comments.

Each of the following comments is addressed individually.

Response to Comment 85-474

Comment Summary: The comment states that storage facilities less than 1 billion gallons in capacity were not considered included in the Draft EIR/EIS, and that this resulted in inflated project costs.

A detailed discussion of sizing of storage facilities is presented in Appendix D-6 (Documentation in Support of Elimination of Alternatives) of the Draft EIR/EIS starting on page 23. Refer to Master Response 14, located in Section 6.2 of this document, regarding small storage reservoirs.

Response to Comment 85-475

Comment Summary: The comment states that large reservoirs are cost prohibitive and prohibit phasing.

Refer to Master Response 14 regarding phasing and small storage reservoirs, located in Section 6.2 of this document.

Response to Comment 85-476

Comment Summary: The comment suggests that cost benefits to agriculture have not been considered.

Section 4.18 of the Draft EIR/EIS discusses potential benefits of reclamation to the local agricultural economy, beginning on page 4.18-38.

Response to Comment 85-477

Comment Summary: The comment states that benefits of phasing and funding programs available to farmers have not been addressed.

Refer to Master Response 14, located in Section 6.2 of this document, regarding phasing. Funding programs have not been considered. None of the cost figures for any alternatives or components have evaluated cost savings that might be available through low-cost loans or grants.

Response to Comment 85-478

Comment Summary: The comment expresses support for a phased, multi-reservoir system; states that the problem would have been solved by now if phasing had started ten years ago, and that an agricultural project can be expanded more easily than river discharge.

Refer to Master Response 2, located in Section 6.2 of this document, concerning project selection. It may be correct that if the City of Santa Rosa had been able to start building a project ten years ago, the problem would be solved by now. Unfortunately, this is not the situation, and the City must address the current problem. Refer to Master Response 14, located in Section 6.2 of this document, regarding project phasing. Because the transmission pipelines in the Project are sized to provide for the amounts of reclaimed water based upon a 21 million gallons per day ADWF, the EIR/EIS authors do not agree that once a pipeline to an agricultural area is in place, expansion will necessarily be possible. Also, the capacity of the river to accept discharge would be a limitation to expansion of discharge in the future.

Response to Comment 85-479

Comment Summary: The comment states that because plant upgrade and expansion for Alternative 5B has already been funded and built, this assures that costs for this option are significantly lower than for other options, which thereby “loads the deck in favor of its selection.”

The recent plant upgrade would be necessary for all of the alternatives, so the fact that it is already built does not change the relative costs of alternatives. Expansion of plant capacity has not yet happened, and the cost of expansion of the headworks is included in all of the alternatives, including Alternative 5B.

Response to Comment 85-480

Comment Summary: The comment states that “Studies have been avoided on any current practices utilized with this option.”

It is not clear what studies the comment is suggesting should be done. The existing environment in the Laguna de Santa Rosa is described in the Draft EIR/EIS, and the No Project Alternative, which essentially represents the current situation, is evaluated. However, that evaluation of impacts of other aspects of the existing system is not required by CEQA.

Response to Comment 85-481

Comment Summary: The comment asserts that in most analyses, there is a lack of differentiation of the various risks and impacts among the 5, 10, 15 and 20 percent design discharge options for the two discharge points.

Chapter 4 of the Draft EIR/EIS distinguishes between discharge locations at the 20 percent design discharge rate by associating impacts with Alternatives 5A or 5B. Impacts of the 5, 10, and 15 percent design discharge options are summarized in Appendix A (Range of Discharge Evaluation) of the Draft EIR/EIS. Appendix A states that differences in impacts expected for the 5, 10, and 15 percent design discharge options are found only with respect to water quality, resulting from a change in the volume of water discharged (an increase from the 1 percent discharge and 20 percent discharges evaluated in Chapter 4), and the location of the 5, 10, and 15 percent design discharge options is explicitly stated on page A-21 as being the Laguna. The impact of discharges at the 5, 10 and 20 percent design discharge rates is described in detail in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS. Page 24 in Appendix I-16 states explicitly that the Laguna is the location of discharges at the 5 and 10 percent design discharge rates upon which the impacts analysis is based. The location of discharge is specified throughout Appendix I-16.

Response to Comment 85-482

Comment Summary: The comment states reliance on regulatory standards eliminates discussion of issues outside the regulatory framework and specifically references studies of estrogenic effects.

The specific study referenced in the comment was not undertaken because it was determined that the results would not be conclusive. Refer to Master Response 9, located in Section 6.2 of this document. Although regulations do not address potential endocrine disrupters, the Draft EIR/EIS provides an extensive discussion of the issues to inform the reader about current scientific knowledge and the uncertainties in the scientific community.

Response to Comment 85-483

Comment Summary: The comment states that potential need for construction of additional treatment facilities by the Sonoma County Water Agency has not been addressed.

As discussed in the Response to Comment 18-3, the Draft EIR/EIS has not identified any impacts that would require additional treatment. Refer to Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-484

Comment Summary: The comment asks that the method for determining discharge under the existing system, and the basis for this method be described.

Refer to Response to Comment 85-64.

Response to Comment 85-485

Comment Summary: The comment asks for an explanation of “7 day averages, seasonal and yearly averages, and when they are in effect and how determined.”

The context of the comment is discharge operations, and the only application of a seven-day average of which the EIR/EIS authors are aware is for determining compliance with the discharge rate limitation under the existing discharge permit. Existing operations are not based on a seven-day average, but based on the peak flow from the previous day, as described in Response to Comment 85-64. The EIR/EIS authors are unaware of the use of any seasonal or yearly averages for purposes of Subregional System discharge operations. Refer also to Response to Comment 85-491.

Response to Comment 85-486

Comment Summary: The comment asks for an explanation of the relationship between “the 5% discharge to the storage curve and precisely how that curve is determined.”

The storage curve was established by the Subregional System in approximately 1985 as a basis for operations during the interim period. The storage curve is described on page 33 in Appendix I-8 (Water Quality Model - Summary and Results) of the Draft EIR/EIS. It is based on historic River flows and is adjusted yearly to account for changes in reclaimed flow, total storage and irrigation area. The curve was established to maximize compliance with the 5 percent discharge limitation.

Response to Comment 85-487

Comment Summary: The comment asks for a description of “the exact circumstances under which higher discharges are allowed and for how long.”

The conditions for granting approval under existing conditions for discharge in excess of one percent are described in the Regional Board’s Action Plan for the Santa Rosa Area, which is included in the Basin Plan beginning on page 4-4.00. The Regional Board decides when and for how long to allow discharge in excess of one percent.

Response to Comment 85-488

Comment Summary: The comment asks for a description of the “true” reclaimed water concentrations that result from discharge operations.

Figures 1 through 8 in Appendix D-9 (Analysis of Results from Daily and Monthly Water Balance Models) of the Draft EIR/EIS show the distribution of simulated daily average reclaimed water concentrations at Hacienda Bridge for the 70-year simulation period for Project design discharge rates. Figures 4-7 through 4-9 in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS show the daily average reclaimed water concentrations at Oddfellows for the three water quality impact simulation years (dry, normal and wet). Concentrations at Hacienda and Oddfellows are similar to those downstream of the Laguna/Russian River confluence after complete mixing of the two waters. Actual discharge rates are estimated in Appendices L-1 (Anadromous Fish Migration Study Program, 1991-1994) and L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS.

Response to Comment 85-489

Comment Summary: The comment asks for “actual discharge percentages into Santa Rosa Creek and the Laguna de Santa Rosa.”

Figures 4-1 through 4-6 in Appendix I-17 (Water Quality Impact Analysis Report Volume II - Figures) of the Draft EIR/EIS show the simulated daily average reclaimed water concentrations at the requested locations for the three water quality impact simulation years (dry, normal and wet). Actual reclaimed water concentrations are provided in Appendices L-1 (Anadromous Fish Migration Study Program, 1991-1994) and L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS.

Response to Comment 85-490

Comment Summary: The comment asks why flow has not been measured in the Laguna above and below Santa Rosa Creek confluence.

Refer to Response to Comment 85-306. As described in Appendices L-1 (Anadromous Fish Migration Study Program, 1991-1994) and L-2 (Anadromous Fish Migration Study Program, 1991-1995) of the Draft EIR/EIS, flow has been measured in the Laguna at Occidental Road (above Santa Rosa Creek), Laguna at Trenton Healdsburg Road (below Santa Rosa Creek), Mark West Creek and Slusser Road, and Santa Rosa Creek at Windsor Road.

Response to Comment 85-491

Comment Summary: The comment states that “the document does not detail current discharge calculations as allowed by the Regional Board.” The comment also asserts that operation of the existing system according to Regional Board compliance method would result in concentrations of 10 to 15 percent, which is greater than the currently-allowed 5 percent. The comment goes on to request a description of how “such an average (10 to 15 percent) would affect actual discharge and associated impacts.”

Refer to Response to Comment 85-64 which describes how existing operations are based on peak flow from the previous day and compliance with the existing discharge limitation is determined using a seven-day average discharge rate. Response to Comment 85-64 includes revisions to the Draft EIR/EIS which describe the basis for existing operations. Monthly monitoring reports submitted to the RWQCB comment the City's compliance with the 5% limitation. The effect of discharge at rates that result in receiving water concentrations in the range of 10 to 15 percent are evaluated in Appendix I-16 (Water Quality Impact Analysis Report Volume I - Text) of the Draft EIR/EIS.

Response to Comment 85-492

Comment Summary: The comment states that the public input process was ignored and objects to the fact that Alternative 2M was not chosen for further study.

Please refer to Response to Comment 85-49.

Response to Comment 85-493

Comment Summary: The comment states public input was not followed, and recommendations of citizen committees were ignored.

The alternatives selected for consideration in the Draft EIR/EIS were shaped by public proposals and comments in an extensive public involvement process, but technical feasibility and reliability were also evaluated by City staff. Some options were not carried forward because they did not meet necessary screening criteria. Refer to Responses to Comments 85-49 and 85-50.

Response to Comment 85-494

Comment Summary: This comment states that fishery studies did not determine whether steelhead upmigrants suffered sublethal effects from contact with wastewater.

Refer to Responses to Comments 85-321 and 85-322.

Response to Comment 85-495

Comment Summary: This comment restates Comment 85-309: since relatively few fish were captured it is possible that some fish avoided the wastewater.

Refer to Response to Comment 85-309.

Response to Comment 85-496

Comment Summary: This comment states that sublethal effects of wastewater on juvenile salmonids are unknown.

The EIR/EIS authors agree that sublethal effects on juvenile salmonids are unknown. Sublethal effects would appear to be unlikely, however, since juvenile salmonids are not exposed to reclaimed water in their nursery habitat.

Response to Comment 85-497

Comment Summary: The comment states, incorrectly, that nutrients in wastewater discharges are likely to raise water temperatures and foster an increase of warm water predator species which adversely affect steelhead and salmon. The comment then asks how this situation will be remedied.

Nutrients in increased wastewater discharges will not raise water temperatures.

Response to Comment 85-498

Comment Summary: The comment asks for the long-term impact of the project on streambank erosion.

Refer to Response to Comment 85-87.

Response to Comment 85-499

Comment Summary: The comment states that the Draft EIR/EIS uses water quality regulations as the basis for analysis of impacts. It also notes that the City is not conducting further studies on environmental estrogens (endocrine disrupters) because regulating agencies do not as yet require it.

The City has considered both existing and proposed regulations (e.g., for State of California reclaimed water regulations) where such information has been published in at least draft form by the State. However, this information can only be used as guidance because the City cannot predict the future course of governmental regulation or exactly what information scientific advances may ultimately reveal. The comment is correct in stating that regulating agencies do not require testing for endocrine disrupters.

Response to Comment 85-500

Comment Summary: The comment states that the human health risk assessment fails to take into account synergistic effects of chemicals.

The EIR/EIS authors recognize that synergism is a source of uncertainty in the current risk assessment methodology as proposed by EPA. A discussion of the effects that this uncertainty has on estimates of the human health risk is contained in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Refer to Response to Comment 85-447 and Response to Comment 85-520.

Response to Comment 85-501

Comment Summary: The comment refers to a letter written by Dr. Marion Moses that is attached.

Responses are provided to each of Dr. Moses' comments. Refer to Response to Comment 85-522.

Response to Comment 85-502

Comment Summary: The comment states that the analysis of toxics in the wastewater downplays several problems and provides inadequate sampling in others and further states that the number of samples for Cryptosporidium, Giardia lamblia, Legionella, Salmonella, and Shigella are inadequate.

Refer to Response to Comment 10-7 and Master Response 8, located in Section 6.2 of this document, regarding pathogens. Because specific concerns regarding toxics are not expressed in the comment a specific response is not possible.

Response to Comment 85-503

Comment Summary: The comment identifies drinking water-borne disease outbreaks as a concern and suggests that drinking water regulations be reevaluated.

Exposure of humans to pathogens of reclaimed water origin in their drinking water is evaluated on page 4.7-32 and also beginning on page 4.7-60 of the Draft EIR/EIS. Additional detail is provided in Appendix J-3 (Human Health Risks From Chemical and Biological Components of Reclaimed Water) beginning on page 3-1. Master Response 8, located in Section 6.2 of this document, also addresses effects of pathogens. Master Response 8 describes the current reevaluation of drinking water regulations.

Response to Comment 85-504

Comment Summary: The comment states that Santa Rosa's lead levels are bordering on the very high side. The comment also states that silver, cyanide, dissolved silver, and zinc are very high, indicating possible contamination from electroplating, electronics, and photo finishing industries. The comment states that asbestos is too high and in light of the asbestos-contaminates sewer pipes that were recently illegally disposed of by City contractors, this is a very serious issue.

Refer to Response to Comment 85-111 regarding lead levels. Refer to Response to Comment 85-118 regarding silver levels. Refer to Response to Comment 85-119 regarding potential industrial contamination. Refer to Response to Comment 85-117 regarding cyanide and asbestos contamination.

Response to Comment 85-505

Comment Summary: The comment states that phthalates are carcinogens and xenoestrogens that need to be monitored more closely.

The potential risk of phthalates to humans and wildlife are addressed in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) and Appendix K-4 (Ecological Risk Assessment) of the Draft EIR/EIS and was found to be less than significant.

Response to Comment 85-506

Comment Summary: The comment states that “while heptachlor showed up only once, this is a very serious event since this chemical is a known carcinogen and banned years ago”.

Refer to Responses to Comments 85-196, 85-226, and 85-227.

Response to Comment 85-507

Comment Summary: The comment states that Lindane should be “much more closely monitored.”

Lindane is currently monitored quarterly as required by the Regional Board. The comment does not indicate why more frequent monitoring is indicated. The Regional Board has the authority to impose a requirement for more frequent Lindane monitoring.

Response to Comment 85-508

Comment Summary: The comment says that nitrate levels are high, and that nitrate can cause adverse impacts.

Refer to Response to Comment 85-112.

Response to Comment 85-509

Comment Summary: The comment states that runoff from development will cause increased toxins from urban runoff.

Refer to Response to Comment 85-268.

Response to Comment 85-510

Comment Summary: The comment states that an increase in impervious surfaces will increase downstream flooding and asks for a description of the impacts and costs resulting from this growth.

Refer to Response to Comment 85-81.

Response to Comment 85-511

Comment Summary: The comment is an attached book titled, “Our Stolen Future” and has been made available as an exhibit to the response to comments.

Refer to Response to Comment 85-452, and to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-512

Comment Summary: The comment states that the documents from the “long range EIR” have been reviewed and expresses general concern about toxics.

Specific concerns were expressed in subsequent comments and each comment is addressed specifically in the Responses to Comments below.

Response to Comment 85-513

Comment Summary: The comment notes that the discharge of toxics to ecological systems increases health risks to organisms that rely on the system for sustenance, food, recreation, or other uses.

The EIR/EIS authors agree that the release of chemicals to the environment has the potential to impact ecological and human receptors. Several appendices in the Draft EIR/EIS address this issue including Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water), Appendix K-4 (Ecological Risk Assessment), and Appendix L-6 Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System). Significant impacts on human health are summarized in Section 4.7 of the Draft EIR/EIS. Impacts to terrestrial (Section 4.8 of the Draft EIR/EIS) and aquatic wildlife (Section 4.9 of the Draft EIR/EIS) were found to be less than significant.

Response to Comment 85-514

Comment Summary: The comment states (incorrectly) that average, but not maximum, chemical concentrations were used to evaluate the human health risk from exposure to reclaimed water.

The Human Health Risk Assessment calculated risk values from the maximum detected concentrations of both the chemical and biological components detected in the treatment plant’s reclaimed water. Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS contains a description of the methods used in the human health risk assessment.

Response to Comment 85-515

Comment Summary: The comment states that the Draft EIR/EIS did not evaluate biological or health indicators.

Tissue samples have been collected from organisms in the Kelly Farm Demonstration Wetland and have been analyzed for potentially bioaccumulative chemicals. The results of this study are presented in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System.) of the Draft EIR/EIS.

Response to Comment 85-516

Comment Summary: The comment asks if there are data on fish from the Russian River.

Data on selected organic and inorganic chemicals have been collected for a variety of fish collected from the Russian River as part of the California EPA's Toxic Substances Monitoring Program. Some of these data were used in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. Additional discussion of these data is contained in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS.

Response to Comment 85-517

Comment Summary: The comment asks if there are data from people who rely on fish from the river for food or sport fishing.

The EIR/EIS authors contacted the Department of Fish and Game and determined that sustenance fishing does not occur on the Russian River (refer to Responses to Comments 85-440 and 85-441). The EIR/EIS authors are not aware of any public health data on this topic for the Russian River. However, fish and shellfish are periodically collected from the Russian River and analyzed for chemicals (e.g., metals, pesticides, PCBs) that may pose a threat to human health. Pesticides and metals have been detected in aquatic organisms both above and below the current discharge point for the Laguna Plant, but no correlation with the Laguna Plant's discharge has been observed. A discussion of the results of these analyses is contained in Appendix L-6 (Evaluation of Bioaccumulation in Organisms Exposed to Reclaimed Water from the Santa Rosa Subregional System) of the Draft EIR/EIS.

Response to Comment 85-518

Comment Summary: The comment notes that baseline health data are important for evaluating health impacts.

The EIR/EIS authors agree with the comment.

Response to Comment 85-519

Comment Summary: The comment asks if dibenzodioxins and dibenzofurans were analyzed in reclaimed water.

These chemicals were analyzed and were not detected in reclaimed water. A complete set of the sampling results is contained in Appendices H-2 (Reclaimed Water Quality) and H-3 (Reclaimed Water Quality Updated) of the Draft EIR/EIS.

Response to Comment 85-520

Comment Summary: The comment states that the human health impacts from chemicals are discussed “one chemical at a time,” that this procedure fails to take into account synergistic or multiplicative effects, and that the EPA is reconsidering its current approach to risk assessment.

The EIR/EIS authors recognize that synergism is a source of uncertainty in the current risk assessment methodology and that the EPA revisits and updates the methodology as new information becomes available. A discussion of the effects that this uncertainty has on estimates of the human health risk is contained in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

Response to Comment 85-521

Comment Summary: The comment notes that recent advances in toxicology make older tests insufficient as predictors of potential human health risks, citing new work on endocrine disrupters as an example.

The EIR/EIS authors recognize that this is a source of uncertainty in the risk assessment methodology. A discussion of the effects that this uncertainty has on estimates of human health risk is contained in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. The study of endocrine disrupters is an emerging field of investigation and there is still much debate in the scientific community about the nature of endocrine disrupters and the concentrations at which they act. No scientific consensus has been reached on effective dosages. A qualitative discussion of this topic is presented in Appendix J-2 (Human Health Effects and Wildlife Effects of Environmental Estrogens) of the Draft EIR/EIS. Refer also to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-522

Comment Summary: The comment expresses concern about exposure of vulnerable populations (embryos, infants, children) to chemicals.

The EIR/EIS authors recognize that exposure of sensitive subpopulations is an important consideration in the risk assessment process. The health risk estimates contained in the risk assessment were calculated using a childhood exposure scenario. In addition, some

chemical toxicity information is based on fetal toxicity or the special sensitivity of children (e.g., nitrate and nitrite). Carcinogenic health risks were calculated with a combined childhood and adult exposure. A complete discussion of the uncertainty associated with estimating health risks for sensitive populations is contained in Appendix J-3 (Human Health Risks from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

Response to Comment 85-523

Comment Summary: The comment describes how to interpret acute toxicity data and some limitations of acute toxicity data.

Acute toxicity was not a parameter that is used to evaluate reclaimed water quality or project impacts. Chronic toxicity is used because it is a more sensitive indicator and can detect synergisms.

Response to Comment 85-524

Comment Summary: The comment notes that there are important public health concerns related to risk of infectious disease from bacteria, protozoa, viruses, and other agents in the effluent.

These risks are analyzed in Appendix J-3 (Human Health Risk from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS.

Response to Comment 85-525

Comment Summary: The comment states that the human health risk was not properly assessed and that short term solutions are being proposed for long term problems.

The EIR/EIS authors disagree with the conclusions of this comment based on our analysis found in Appendix J-3 (Human Health Risk from Chemical and Biological Components of Reclaimed Water) of the Draft EIR/EIS. While there is always some uncertainty associated with the predictive risk assessment process, a conservative (health protective) approach, which follows established EPA and California EPA guidelines, was used. Multiple conservative inputs, including the use of maximum chemical concentrations, reasonable maximum exposure estimates, and chronic reference doses, were used to increase the likelihood that the risk calculations would overestimate risk. None of the analyses was performed to justify a particular alternative. The Draft EIR/EIS evaluates several alternatives, in addition to a Russian River discharge, that are intended to provide a long-term solution to disposal of the City's reclaimed water and that are also protective of human and environmental health. The human health risk assessment evaluated potential exposure in all of these reuse scenarios.

Response to Comment 85-526

Comment Summary: The comments is an attached article titled, "A Global Decline in Microbiological Safety of Water: A call for Action."

The article is submitted in support of Comment 85-428. Refer to Response to Comment 85-428.

Response to Comment 85-527

Comment Summary: The comment is an attached article titled, "US Outbreaks of Cryptosporidiosis."

The article is submitted in support of Comment 85-425. Refer to Master Response to 8, located in Section 6.2 of this document.

Response to Comment 85-528

Comment Summary: The comment is a magazine article from Journal AWWA dated September 1996 and entitled "Waterborne disease surveillance". The article is labeled Attachment #6.

The article is submitted in support of Comment 85-425. Refer to Master Response 8, located in Section 6.2 of this document.

Response to Comment 85-529

Comment Summary: The comment is a magazine article from Science dated June 7, 1996 and entitled "Synergistic Activation of Estrogen Receptor with Combination of Environmental Chemicals". The article is labeled Attachment #7.

The article is submitted in support of Comments 85-135, 85-142 and 85-447. Refer to Response to Comments 85-135 and 85-447 and to Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-530

Comment Summary: The comment is a magazine article from Science dated June 7, 1996 and entitled "New Yeast Study Finds Strength in Numbers". The article is labeled Attachment #8.

The article is submitted in support of Comments 85-135, 85-142 and 85-447. Refer to Responses to Comment 85-135, 85-447 and Master Response 9, located in Section 6.2 of this document.

Response to Comment 85-531

Comment Summary: The comment is an article from Science News dated September 28, 1996 and entitled “‘Clean’ water may infect swimmers”. The article is labeled Attachment #9.

The article is submitted in support of Comment 85-429. Refer to Response to Comment 85-429.

Response to Comment 85-532

Comment Summary: The comment is an article from Aquatic Toxicity, 27 (1993) pages 361 - 372 and entitled “Detergent components in sewage effluent are weakly oestrogenic to fish: An in vitro study using rainbow trout (Oncorhynchus mykiss) hepatocytes”. The article is labeled Attachment #10.

The article is submitted in support of Comment 85-302. Refer to Response to Comment 85-302.

Response to Comment 85-533

Comment Summary: The comment is an article from Chemistry and Ecology, 1994, Vol. 8, pages 275 - 285 and entitled “Estrogenic Effects of Effluents from Sewage Works”. The article is labeled Attachment #11.

The article appears to have been submitted in support of Comment 85-302. Refer to Response to Comment 85-302.

Response to Comment 85-534

Comment Summary: The comment is an article from Wat. Res. Vol. 25, No. 1, pages 101 - 113, 1991 and entitled “Chronic and Sublethal Toxicities of Surfactants to Aquatic Animals: A Review and Risk Assessment”. The article is labeled Attachment #12.

The article is submitted in support of Comment 85-302. Refer to Response to Comment 85-302.

Response to Comment 85-535

Comment Summary: The comment is an article from Women’s Health Today: Perspectives on Current Research and Clinical Practice, pages 201 - 207, (1994) and entitled “Endocrine-disrupting environmental contaminants and reproduction: lessons from the study of wildlife”. The article is labeled Attachment #13.

While not specifically referenced, this article appears to have been submitted in support of Comment 85-447. Refer to Response to Comment 85-447.

Response to Comment 85-536

Comment Summary: The comment is an article from Science News, Volume 146, July 2, 1994 and entitled "Something's Fishy". The article is labeled Attachment #14.

While not specifically referenced in the comment this article appears to have been submitted in support of Comment 85-421. Refer to Response to Comment 85-421.

Response to Comment 85-537

Comment Summary: The comment is an article from California Morbidity dated May 5, 1995 and entitled "Cryptosporidiosis - A Growing Public Health Concern". The article is labeled Attachment #15.

While not specifically referenced in the comment this article appears to have been submitted in support of Comment 85-425. Refer to Response to Comment 85-425.

Response to Comment 85-538

Comment Summary: The comment is a copy of a City of Santa Rosa Utilities Department memorandum with the subject being the Sue Kramer Report/Recommendations. The memorandum is labeled Attachment #16.

The document is submitted in support of Comments 85-21 and 85-108. Refer to Response to Comment 85-108.

Response to Comment 85-539

Comment Summary: The comment is an article from The Press Democrat dated October 6, 1996 and entitled "Watching, waiting for SR's wastewater decision". The article is labeled Attachment #17.

The document is submitted in support of Comment 85-1b. Refer to Response to Comment 85-1b.

Response to Comment 85-540

Comment Summary: The comment is a copy of a Plaintiffs Trial Brief dated July 24, 1996 regarding United States District Court Northern District of California Case No.: C-95-1550-SC, Russian River Watershed Protection Committee and Brenda Adelman v. City of Santa Rosa and Does 1-10, Inclusive. The Plaintiffs Trial Brief is labeled Attachment #18.

The document is submitted in support of Comment 85-458. Refer to Response to Comment 85-458.

Response to Comment 85-541

Comment Summary: The comment is a copy of a Plaintiffs Closing Argument dated September 6, 1996 regarding United States District Court Northern District of California Case No.: C-95-1550-SC, Russian River Watershed Protection Committee and Brenda Adelman v. City of Santa Rosa and Does 1-10, Inclusive. The Plaintiffs Closing Argument is labeled Attachment #19.

The document is submitted in support of Comment 85-458. Refer to Response to Comment 85-458.

Response to Comment 85-542

Comment Summary: The comment is a copy of a report prepared by the Sonoma County Public Health Department and entitled "Health Profile '94: The Health of Our Community". The report is labeled Attachment #20.

The report appears to be submitted in support of Comment 85-472. Refer to Response to Comment 85-472.

