California Regional Water Quality Control Board
North Coast Region
Geoffrey M. Hales, Chairman

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

November 15, 2010

Ms. Jessica Martini-Lamb
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403

Dear Ms. Martini-Lamb:

Subject: Comments on the Notice of Preparation of an Environmental Impact Report for the Fish Habitat Flows and Water Rights Project, SCH No. 2010092087

Thank you for the opportunity to comment on the Notice of Preparation (NOP) of an Environmental Impact Report for the Fish Habitat Flows and Water Rights Project (Fish Flow Project EIR). We appreciate the opportunity to participate early in the environmental review process. The North Coast Regional Water Quality Control Board (Regional Water Board) is a responsible agency for this project, with jurisdiction over the quality of ground and surface waters (including wetlands) and the protection of the beneficial uses of such waters.

The proposed project consists of the management of water supply releases from Lake Mendocino and Lake Sonoma to provide instream flows in the Russian River and Dry Creek. The project proposes to modify the Sonoma County Water Agency's (Water Agency) existing water-right permit to change the minimum instream flow requirements, consistent with the National Marine Fisheries Service's Russian River Biological Opinion dated September 24, 2008.

We have reviewed the NOP for the Fish Flow Project EIR and offer the following recommendations and comments.

General Comments

The mission of the State Water Resources Control Board and Regional Water Boards is to preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. The quality of surface and ground waters in the North Coast Region of California is governed by the *Water Quality Control Plan for the North Coast Region* (Basin Plan) and state-wide Policies. The Basin Plan identifies the existing and potential beneficial uses of water within the North Coast Region and the water quality

objectives necessary to protect those uses. The relevant existing beneficial uses that apply to the Project area include: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Groundwater Recharge (GWR), Water Contact Recreation (REC1), Non-Contact Water Recreation (REC2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Estuarine Habitat (EST), Rare, Threatened, or Endangered Species (RARE), Migration of Aquatic Organisms (MIGR), and Spawning, Reproduction, and/or Early Development (SPWN). The water quality objectives of specific concern to Regional Water Board staff are outlined in the following sections. Together water quality objectives, beneficial uses, the anti-degradation policy, and implementation policies are known as water quality standards. The NOP identifies hydrology and water quality as specific areas of analysis for the EIR, including an analysis of potential cumulative impacts related to the Project. The Fish Flow Project EIR must ensure that the Project complies with the water quality standards within the Project area.

Russian River Water Quality Impairments

Section 303(d) of the federal Clean Water Act and 40 CFR §130.7 require states to identify water bodies that do not meet water quality standards and are not supporting their beneficial uses. These waters are placed on the Section 303(d) List of Water Quality Limited Segments (also known as the list of Impaired Waterbodies). The List identifies the pollutant or stressor causing impairment and establishes a schedule for developing a control plan to address the impairment. On August 4, 2010, the State Water Board adopted the California 2010 303(d) List and the United States Environmental Protection Agency will likely approve or disapprove the 2010 List in November 2010. This 2010 List includes the following three impairments for the Russian River within the Project area: sedimentation/siltation, temperature, and indicator bacteria.

State Water Board staff have begun assessing available data in order to update the 303(d) List. State Water Board staff's assessment includes nutrient and algal biomass data collected within the Project area and submitted by interested parties. At a later date, Regional Water Board staff will consider whether the available data demonstrates that the Russian River within the Project area is impaired for nutrients/biostimulatory substances.

Regional Water Board staff is currently developing a pathogen total maximum daily load (TMDL) for the Russian River to address the indicator bacteria impairments and a temperature implementation policy to address the temperature impairment. The sediment impairment in the Russian River watershed is addressed, in part, by the *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters in the North Coast Region* (Resolution No. R1-2004-0087).

Water Quality Objectives of Concern

The following are the water quality objectives that we believe could be violated under the Fish Flows Project, and a brief explanation of why violations of these objectives are a concern.

Bacteria: *The bacteriological quality of waters of the North Coast Region shall not be degraded beyond natural background levels. In no case shall coliform concentrations in waters of the North Coast Region exceed the following: In waters designated for contact recreation (REC-1), the median fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed 50/100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400/100 ml (State Department of Health Services).*

Per the *Draft Guidance for Fresh Water Beaches* (DHS 2006), freshwater beach posting is recommended when single sample levels exceed the following thresholds: 1) Total coliforms - 10,000 MPN/100mL; 2) E. coli - 235 MPN/100mL; and 3) Enterococcus - 61 MPN/100 mL.

Our working hypothesis, supported in part by preliminary empirical analysis of available data (Attachment 1), is that under a given loading of bacteria from existing sources, reduced flows provides less dilution and may lead to higher bacteria concentrations, potentially causing violation of the bacteria objectives and beach posting thresholds and not supporting REC1 and REC2.

Biostimulatory Substances: *Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.*

Biostimulatory substances include nitrogen and phosphorus. It is generally recognized that flow, along with channel morphology and riparian conditions, is a "risk cofactor" that can affect the biostimulatory response of nutrients in a waterbody (Tetra Tech 2006). Assuming all other factors are constant, a given concentration of nitrogen and phosphorus in a waterbody can lead to greater biostimulation under reduced flows. Biostimulation can result in more aquatic plant productivity under lower flow conditions.

Dissolved Oxygen: *The instantaneous minimum concentration of dissolved oxygen (DO) required is 7.0 mg/L. Half of the monthly mean DO values for the year must be 10.0 mg/L or greater.*

Reduced DO conditions can occur, particularly during pre-dawn and early morning hours, due to respiration of aquatic plants and decomposition of organic

matter, which can occur under biostimulatory conditions in a water body. As summarized above, biostimulatory conditions may result from reduced flows in the Project area.

Toxicity: *All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Water Board.*

The toxic parameters of concern are blue-green algae toxins. Algal productivity is a biostimulatory response. Algal biomass can include blue-green algae species. Some blue-green algae species produce algal toxins that can be harmful to humans, pets, and wildlife.

Temperature: *The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.*

At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature.
At no time or place shall the temperature of WARM intrastate waters be increased more than 5°F above natural receiving water temperatures.

"Natural receiving water temperature" is that temperature regime that would occur in the absence of human alteration of those factors, including flow, which can affect stream temperature. The Fish Flows Project EIR must demonstrate to the satisfaction of the Regional Water Board that the Project does not contribute to violation of the temperature objective. We recommend the use of a water quality model to evaluate temperatures representing baseline, with-project, and natural conditions. The natural condition representation should evaluate temperatures that would be expected to occur without flow augmentation from reservoirs. The model should be capable of predicting hourly temperatures so that the 5°F restriction can be properly evaluated.

Sediment: The Basin Plan contains the following four sediment-related water quality objectives:

Sediment: The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Turbidity: Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

Suspended Material: Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Settleable Material: Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.

Flow is a factor that could affect in-stream sediment loads. One potential mechanism for increases in sediment discharges from the Project is a drop is the water table which might lead to loss of riparian vegetation and subsequent bank erosion.

Water Quality Monitoring and Assessment

As stated above, the Fish Flow Project EIR must ensure that the Project complies with the water quality standards within the Project area. This assessment should be based on not only available water quality data, but also new water quality data, the collection of which should be designed specifically to evaluate potential impacts to water quality standards from reduced flows.

The stated objectives of the Russian River Water Quality Monitoring Plan for the Sonoma County Water Agency 2010 Temporary Urgency Change (2010 Monitoring Plan) were, "to provide information to evaluate potential changes to water quality and availability of aquatic habitat for salmonids resulting from the proposed permanent changes to Decision 1610… and provide information to support the development of a CEQA document required for permanent changes to Decision 1610." We support these objectives, and expect the Water Agency to meet them through additional monitoring and assessment efforts in 2011 and beyond. We believe that the assessment of changes in water quality should involve statistical analysis. Statistical analysis of water quality data for trends often requires an adequate time period to detect a statistical change in constituent concentration. The amount of time required to detect a trend is dependent on the sample variability. Constituents like bacterial indicators have a high ambient variability and therefore require longer monitoring time periods before a trend can be detected.

As mentioned previously, Regional Water Board staff are conducting water quality monitoring and assessment in development of an indicator bacteria TMDL for the Russian River within the Project area. In addition, in 2011 Regional Water Board's Surface Water Ambient Monitoring Program will conduct monitoring and assessment of nutrient/biostimulatory conditions within the Project area. Regional Water Board staff will make our data from these projects available to Water Agency staff for your use in

preparing the Fish Flow Project EIR. In addition, Regional Water Board staff are available to work with Water Agency staff to design additional monitoring to support the preparation of the EIR. Finally, Regional Water Board staff are available to consult Water Agency staff on appropriate statistical analyses to conduct on relevant water quality data in order to meet the stated monitoring and assessment objectives of the 2010 Monitoring Plan.

Impacts to Estuary

The Project has the potential to cause elevated water levels within the Russian River estuary. The Fish Flow Project EIR should evaluate the potential for elevated water levels to inundate residential septic systems located near the estuary shore and cause system failures, which could lead to discharges in violation of the Basin Plan.

Though Regional Water Board staff recognize that this Project NOP does not address breaching of the barrier beach between the ocean and the Russian River estuary, we provide the following comments for your consideration. Past activities to artificially breach the barrier beach between the ocean and Russian River Estuary have been covered by a Clean Water Act Section 401 Certification (certification). The current certification (WDID No. 1B04001WNSO) and its amendment expire on December 31, 2010. On September 24, 2008, the National Marine Fisheries Service issued the Biological Opinion entitled "*Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed*," (File No. 151422SWR2000SR150).

A new certification will need to be applied for and issued for new methods of creating the outlet channel and breaching the estuary that will be more protective of salmonids and the estuarine habitat by providing deeper, cooler, and less saline water for improved rearing habitat for salmonids within the estuary. Flow will be a critical factor to evaluate and include within the certification application. Information on our certification program may be found on our website at: http://www.swrcb.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml.

Concluding Comments

Regional Water Board staff recognize the potential conflicts between compliance with the National Marine Fisheries Service Biological Opinion and the Basin Plan water quality standards that the Fish Flow Project poses. As summarized above, we are concerned that the Project may contribute to violations of some water quality standards that apply to the Project area. Further, Regional Water Board staff expect the Fish Flow Project EIR to include qualitative and quantitative (i.e. statistical) assessment of whether the Project will cause violations of water quality standards and to include appropriate measures, as necessary, to mitigate identified impacts to these water quality standards.

Regional Water Board staff are available to consult with Water Agency staff in identifying appropriate measures to mitigate potential water quality violations caused by the Project.

Again, we thank you for the opportunity to comment. We look forward to continuing to work with Water Agency staff on this Project in our efforts to protect water quality. If you have any questions regarding these comments, you may contact me or Matt St. John at (707) 570-3762 or MStJohn@waterboards.ca.gov.

Sincerely,

Original signed by

Catherine Kuhlman
Executive Officer

101115_MSJ_FishFlowProject_EIRCommentLetter

cc: Scott Morgan, State Clearinghouse, P.O. Box, 3044, Sacramento, CA 95812
Re: SCH No. 2010092087

Barbara Evoy, Division of Water Rights, State Water Resources Control Board, P.O. Box 2000, Sacramento, CA 95812

Attachment 1
Assessment of Fecal Indicator Bacteria in the Lower Russian River

Regional Water Board staff assessed fecal indicator bacteria (FIB) samples collected from the Russian River for possible effects from variation in stream flow. FIB data for total coliform, E. coli, and enterococcus were compiled from several sources for the assessment.

SCWA conducted water quality monitoring at fifteen (15) sampling locations along the mainstem of the Russian River from May 28, 2009 through October 1, 2009. Samples were also collected by Regional Water Board staff at these same locations during 2009 for the routine beach assessment program. Regional Water Board staff also assessed historical FIB data (1995-2008) collected at six (6) sample locations within the Project area. Nearly 2,000 FIB data samples were available for this assessment (Table 1).

Table 1. Number of Fecal Indicator Bacteria data samples assessed

Location	Total Coliform		E. coli		Enterococcus	
	1995-2008	2009	1995-2008	2009	1995-2008	2009
Camp Rose	177	27	95	27	41	27
Healdsburg Memorial Beach	211	27	103	27	66	27
Steelhead Beach	83	27	81	27	30	27
Forestville Beach	10	27	10	27	10	27
Johnson's Beach	166	27	87	27	30	27
Monte Rio Beach	166	14	88	14	30	14

Data Assessment

The purpose of the Water Agency 2009 sampling was to assess whether the ambient FIB concentrations changed due to the reduction in flow resulting from the minimum flow requirement variance. Regional Water Board staff's assessment includes: (1) visual comparison of 2009 FIB concentration data to historical data, (2) linear regression between stream flow and FIB concentration, (3) FIB load durations curves, and (4) trend analysis.

While there is considerable variability in observed FIB concentrations, both spatially and temporally, within the Project area, Regional Water Board staff's assessment detailed below indicates that some of this variability is correlated with flow conditions. Lower flows appear to result in higher FIB concentrations, and violations of bacteria objectives and beach posting thresholds, in some instances.

Visual Comparisons

Box plots of the FIB data collected in 2009 are visually compared to box plots of all years of historical data collected at each site (Figures 1 – 6). Box plots show data set medians, quartiles, and outliers. The visual comparison suggests that with a few exceptions there is no large apparent difference between FIB concentrations collected in 2009 as compared to past samples collected at each location.

Figure 1. Comparison of the Distribution of FIB Concentrations Measured at Camp Rose.

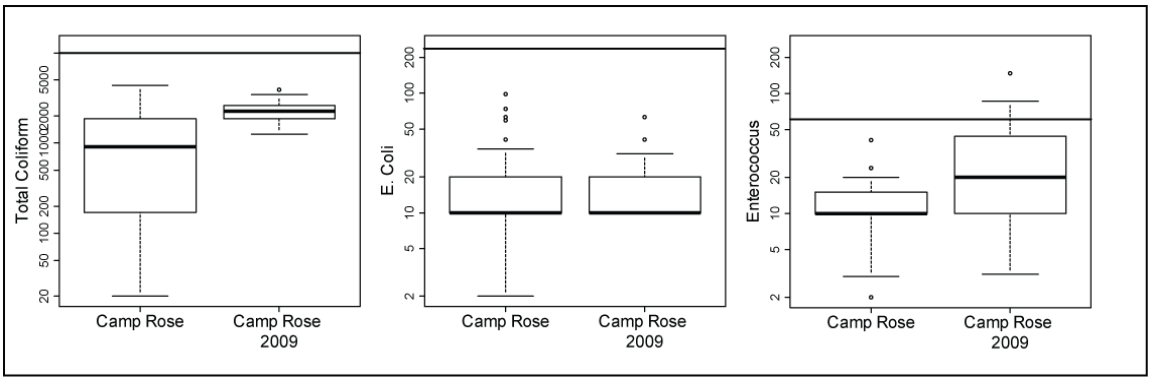


Figure 2. Comparison of the Distribution of FIB Concentrations Measured at Healdsburg Memorial Beach.

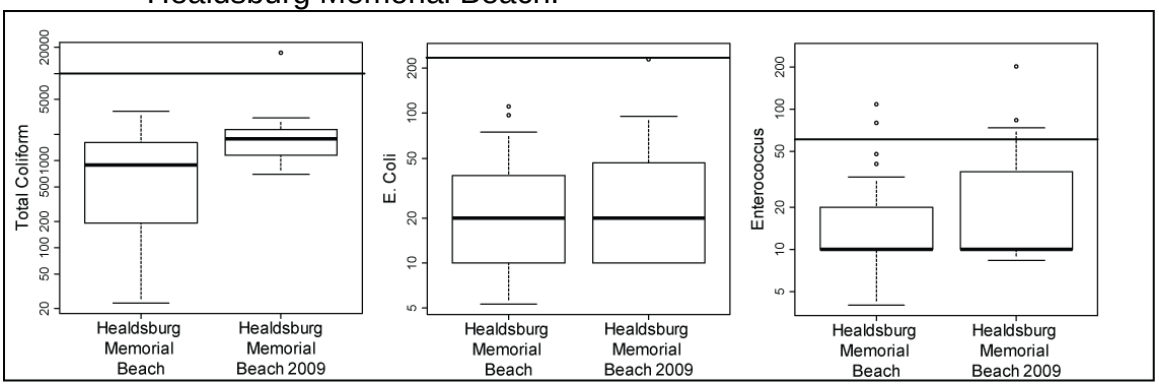


Figure 3. Comparison of the Distribution of FIB Concentrations Measured at Steelhead Beach.

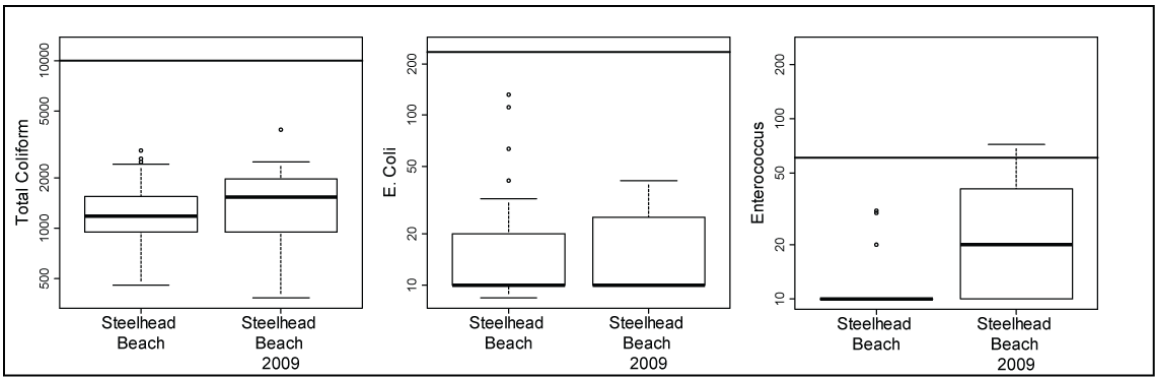


Figure 4. Comparison of the Distribution of FIB Concentrations Measured at Forestville Access Beach.

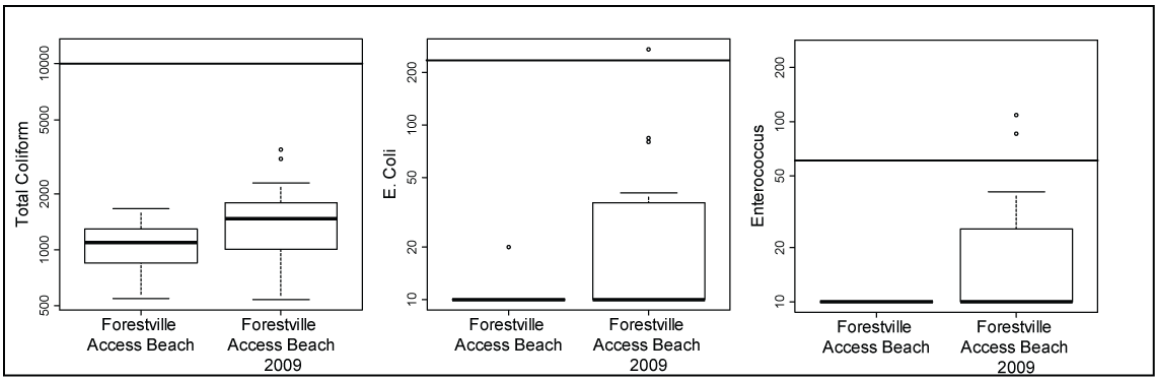


Figure 5. Comparison of the Distribution of FIB Concentrations Measured at Johnson's Beach.

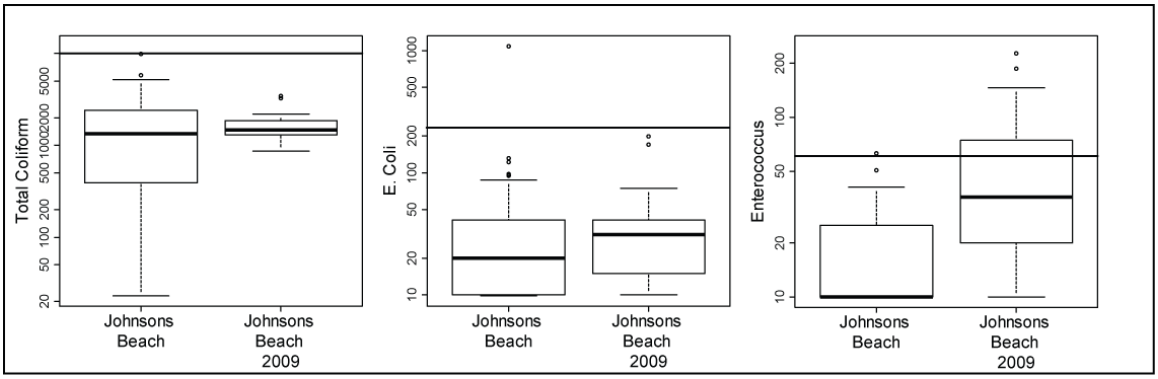
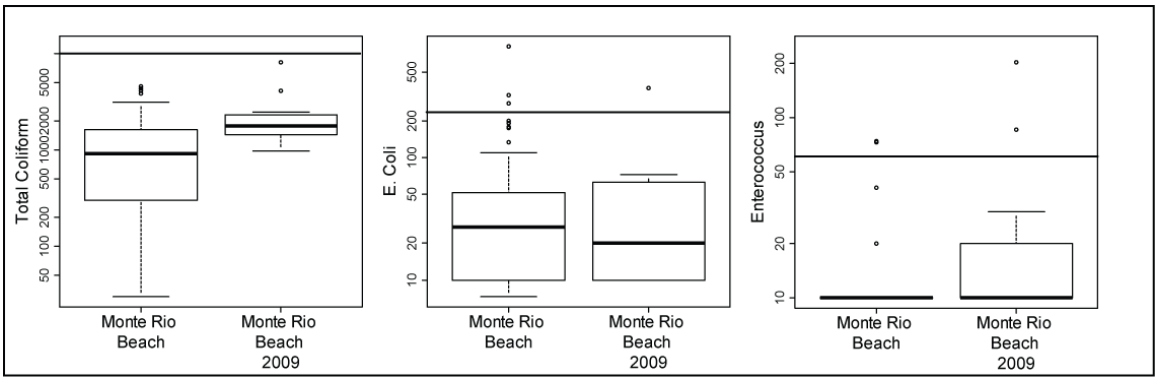


Figure 6. Comparison of the Distribution of FIB Concentrations Measured at Monte Rio Beach.



Linear Regression

The relationship between stream flow and FIB concentrations was assessed using linear regression. Daily stream flow data from the nearby U.S. Geological Survey (USGS) gauging station were matched with each FIB sample. FIB data from Camp Rose and Healdsburg Memorial Beach were compared to daily flows recorded at the USGS gauge near Healdsburg (#11464000). FIB data collected at the other four locations were compared to daily flow recorded at USGS gage near Guerneville (#11467000).

Data were log-transformed to address the normality distribution requirement of regression analysis. Visual inspection of the frequency distribution histograms show that log-transformation of the FIB data resulted in a distributions more normally distributed (Figures 7-10).

Figure 7. Frequency Distribution of Russian River Stream Flow Measurements at USGS Gauges near Healdsburg and Guerneville.

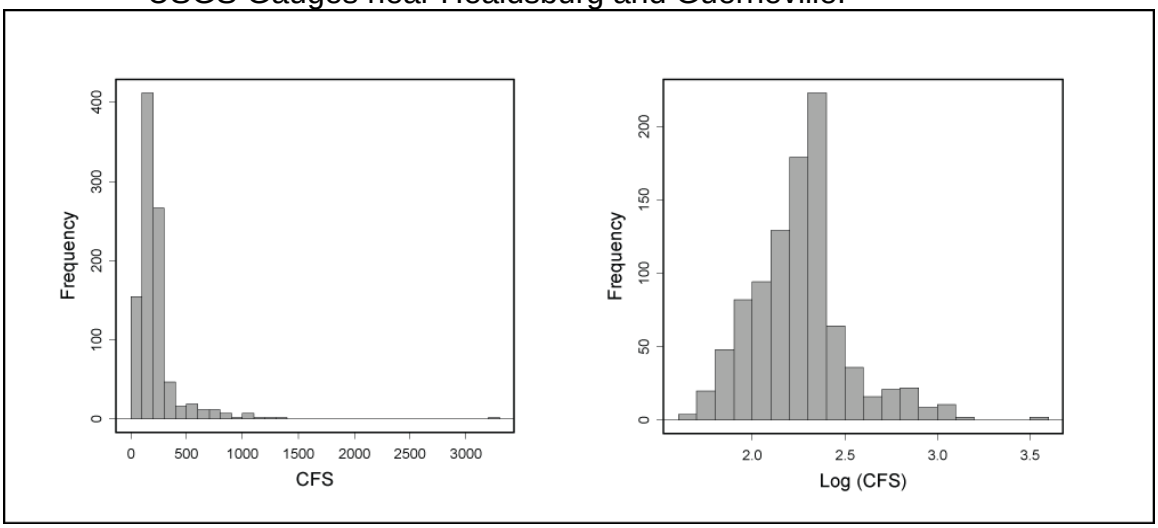


Figure 8. Frequency Distribution of Total Coliform Concentrations at all 6 Sites

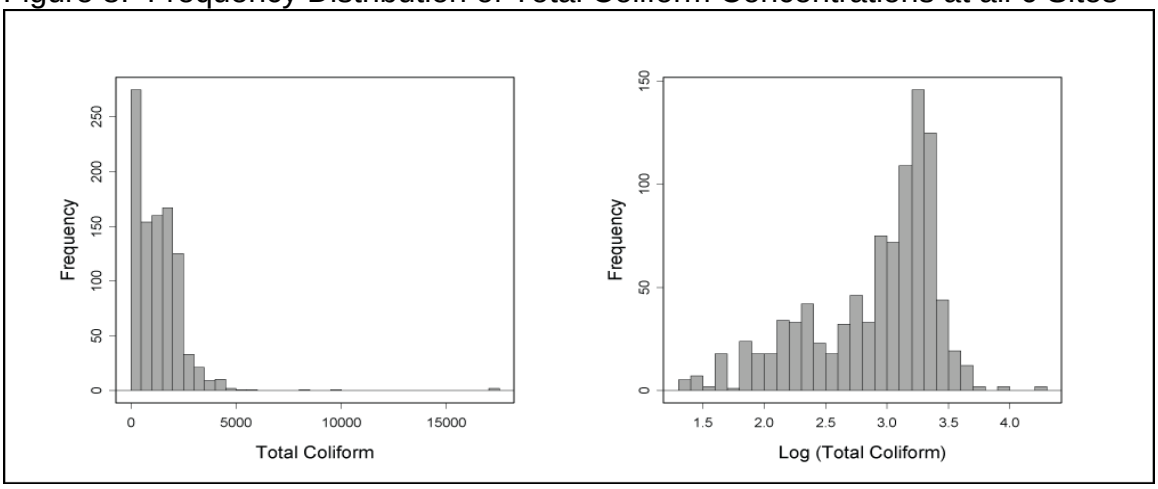


Figure 9. Frequency Distribution of E. coli Concentrations at all 6 Sites

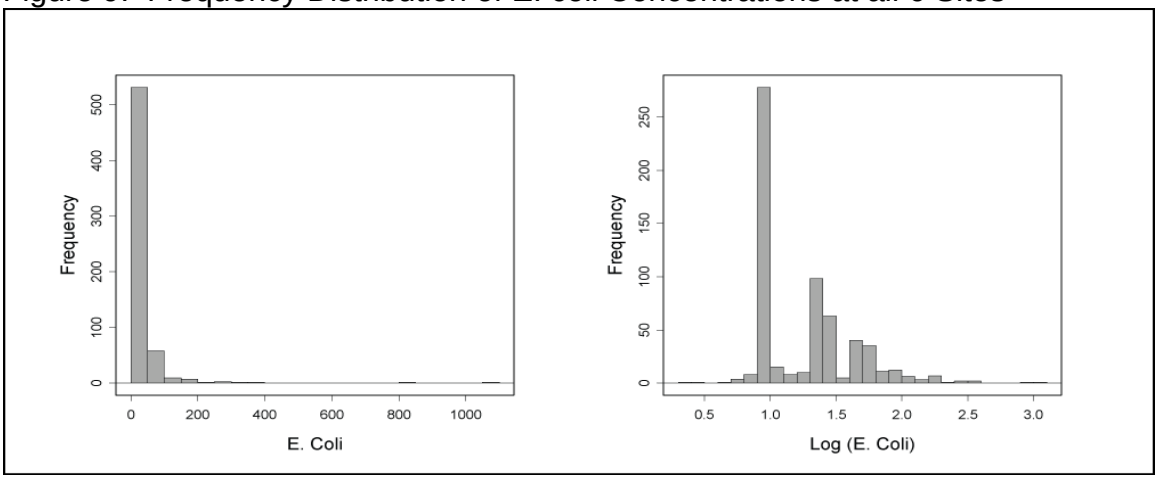
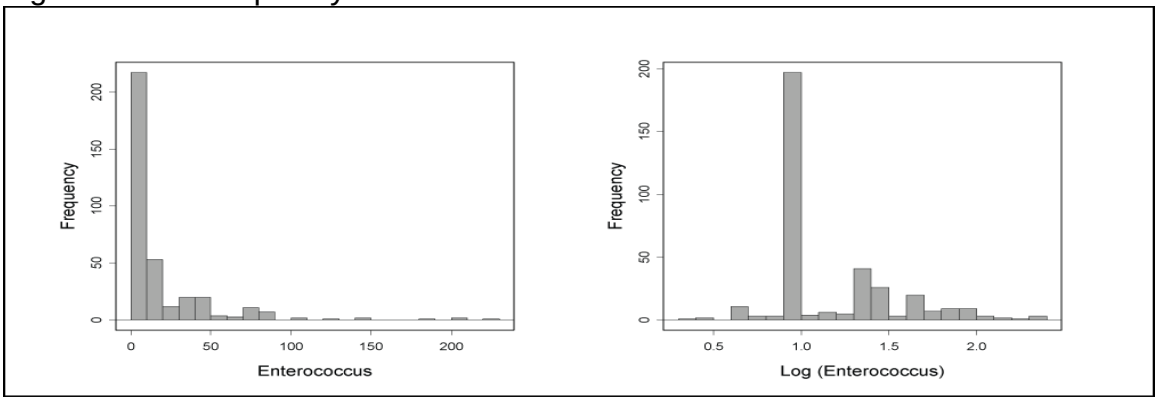


Figure 10. Frequency Distribution of Enterococcus Concentrations at all 6 Sites



Linear regression models were fitted using the Pearson least squares approach with the log-transformed FIB and flow data. Several of the regression analyses show a statistically significant relationship between flow and FIB concentration (Table 2). Most of these significant relationships explain less than 10% of the variance between the variables. However, several locations show a larger influence of flow on FIB concentrations. For example, analysis of enterococcus concentrations collected at Camp Rose show that flow explains nearly half of the variation. The negative slope of the regression line indicates that lower flows result in higher ambient concentrations.

Table 2. Relationship between Stream Flow and Fecal Indicator Bacteria Concentration. **Bold** font indicates a statistically significant regression.

FIB	Site	Explained Variance (%)	Probability	Slope
Total Coliform	Camp Rose	**3%**	**0.02**	-0.37
	Forestville Access Beach	**27%**	**0.00**	0.52
	Healdsburg Memorial Beach	0%	0.67	0.00
	Johnson's Beach	**4%**	**0.00**	-0.42
	Monte Rio Beach	1%	0.17	-0.21
	Steelhead Beach	**4%**	**0.04**	0.14
E. coli	Camp Rose	**4%**	**0.02**	0.19
	Forestville Access Beach	0%	0.71	0.11
	Healdsburg Memorial Beach	1%	0.21	0.13
	Johnson's Beach	0%	0.86	-0.02
	Monte Rio Beach	2%	0.16	0.24
	Steelhead Beach	0%	0.60	0.04
Enterococcus	Camp Rose	**46%**	**0.00**	-1.06
	Forestville Access Beach	1%	0.57	-0.14
	Healdsburg Memorial Beach	**6%**	**0.02**	-0.36
	Johnson's Beach	4%	0.13	-0.33
	Monte Rio Beach	0%	0.90	0.03
	Steelhead Beach	**15%**	**0.00**	-0.41

Load Duration Curves

Load duration curves are a useful tool identifying pollutant problems over the entire flow regime of a river (USEPA, 2007). A load duration curve provides a visual display of the relationship between flow and pollutants, like FIB. The load duration curve presents the frequency and magnitude of FIB measurements along with the allowable loads derived from water quality standards and stream flow data.

First, *flow* duration curves were generated for USGS Russian river flow gauging stations, near Healdsburg (#11464000) and near Guerneville (#11467000). The flow durations curves for the two USGS gauges were developed using daily flow measurements recorded from 1939 to present (Figures 11 & 12).

Figure 11. Flow Duration Curve for Russian River near Healdsburg (#11464000)

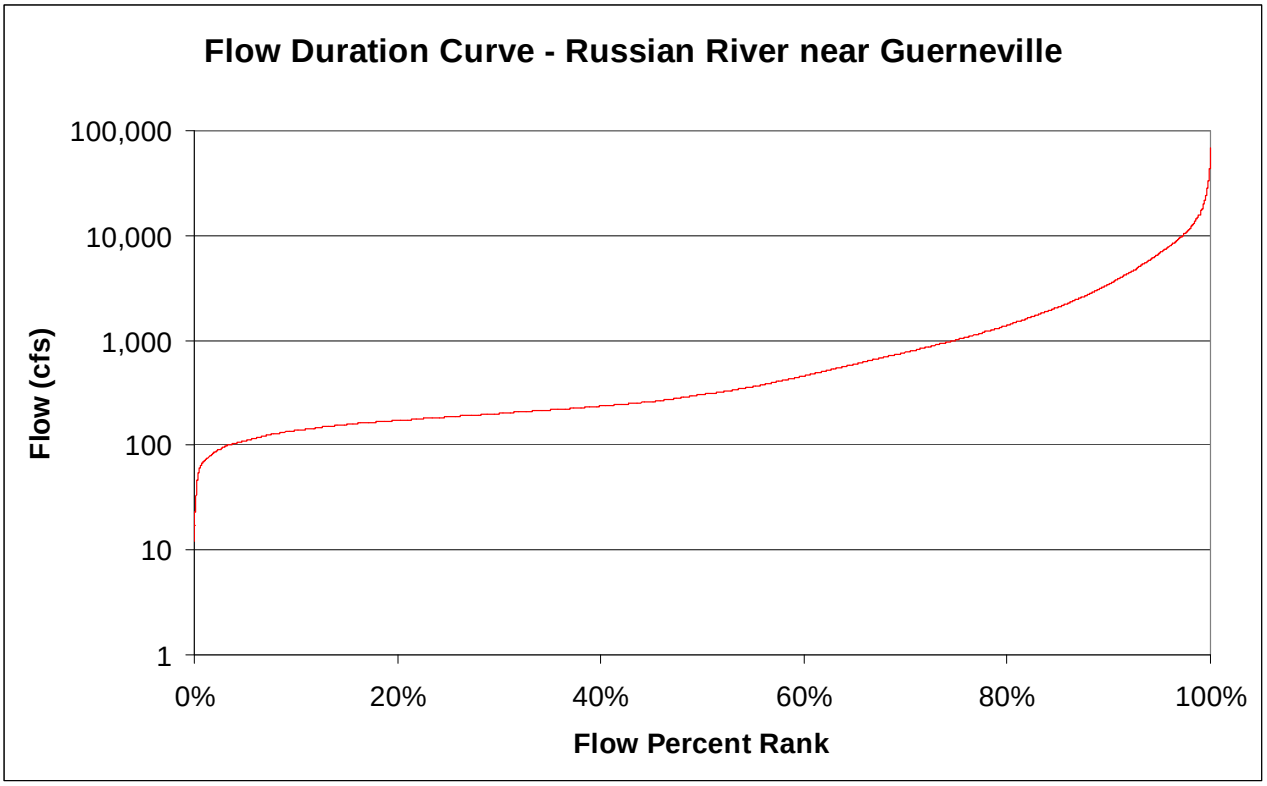
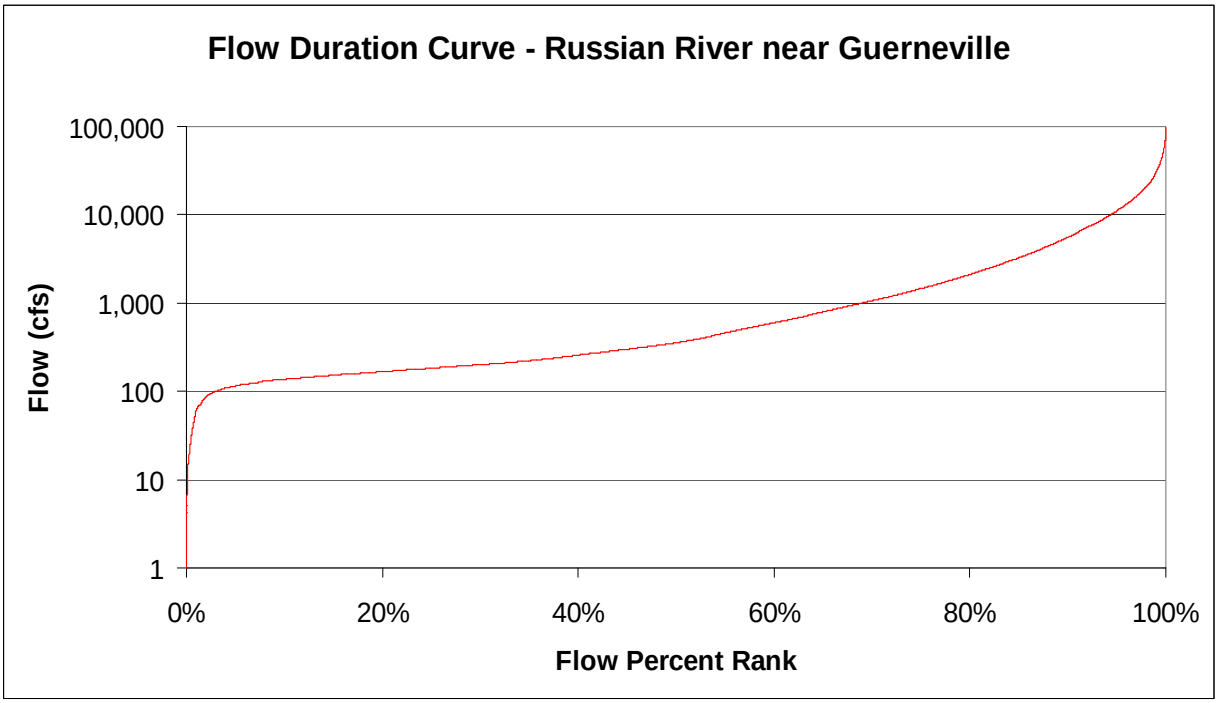


Figure 12. Flow Duration Curve for Russian River near Guerneville (#11467000)



Second, *load* duration curves were prepared for each sampling locations from the measured FIB data and the daily stream flow (Figures 13 - 18). FIB data from Camp Rose and Healdsburg Memorial Beach were compared to daily flows recorded at the USGS gauge near Healdsburg (#11464000). FIB data collected at the other four locations were compared to daily flow recorded at USGS gauge near Guerneville (#11467000). The allowable loads are shown as the solid curve lines; the allowable loads were derived from the water quality thresholds used for beach posting by Sonoma County Health Services (DHS, 2006): (1) Total coliforms not to exceed 10,000 MPN/100mL, (2) E. coli not to exceed 235 MPN/100mL, and (3) Enterococcus not to exceed 61 MPN/100 mL. The results show that exceedance of allowable loads within the Project area tend to occur during periods of lower flow.

Figure 13. Total Coliform Load Duration Curve for Russian River near Healdsburg

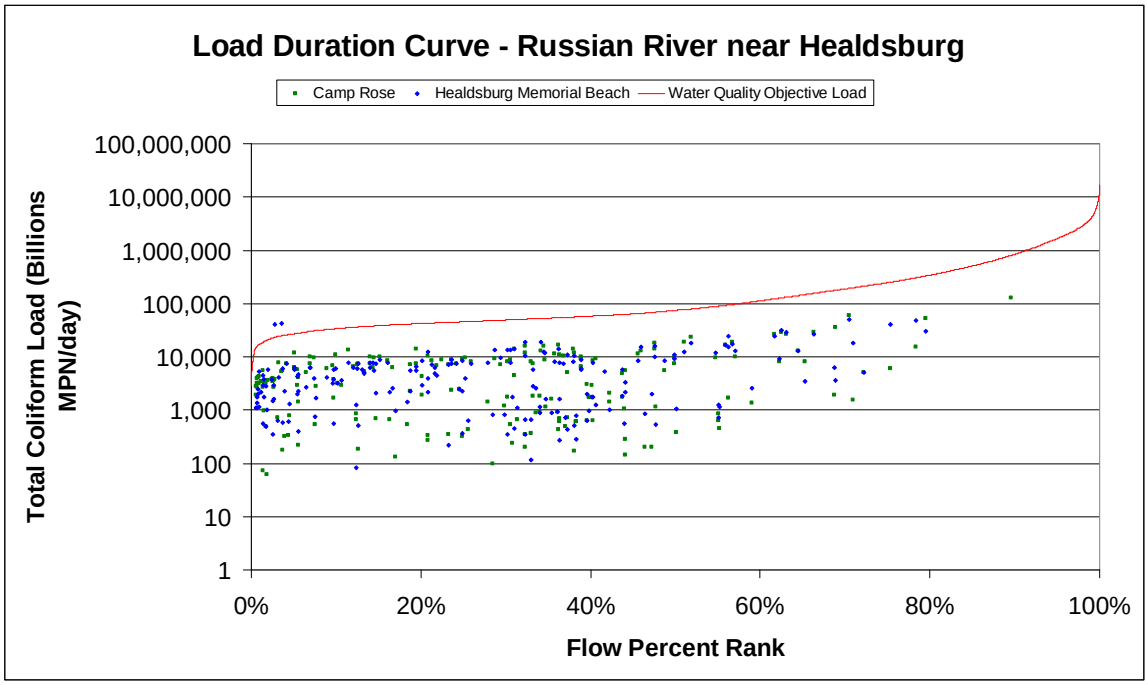


Figure 14. Total Coliform Load Duration Curve for Russian River near Guerneville

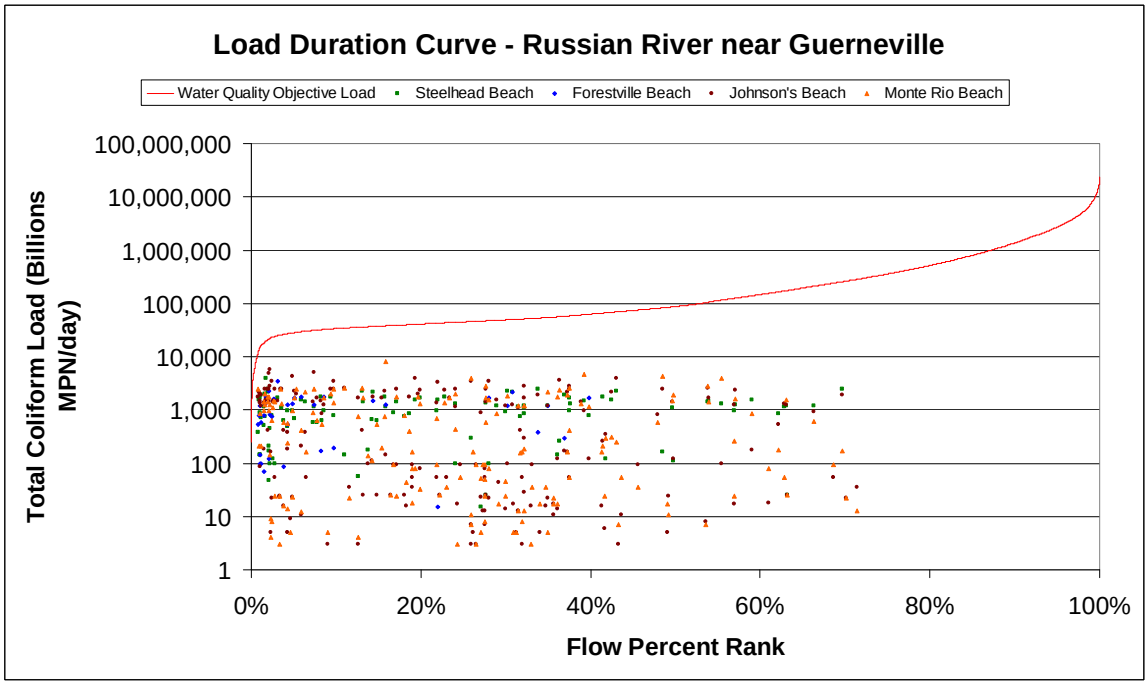


Figure 15. E.coli Load Duration Curve for Russian River near Healdsburg

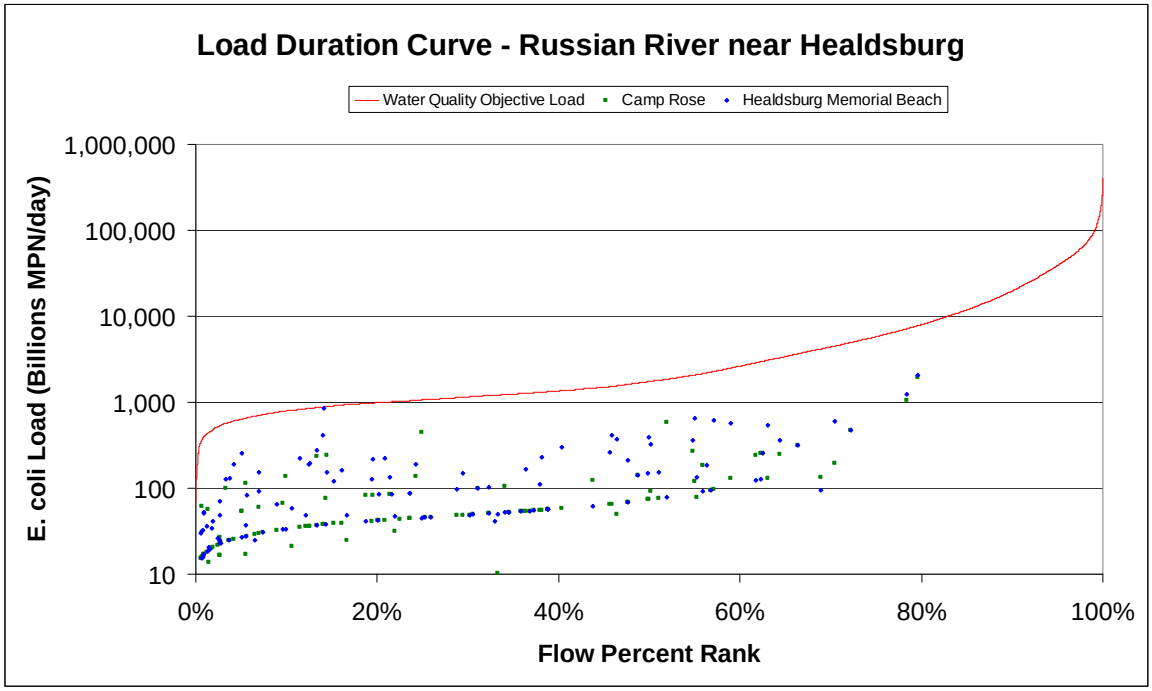


Figure 16. E. coli Load Duration Curve for Russian River near Guerneville

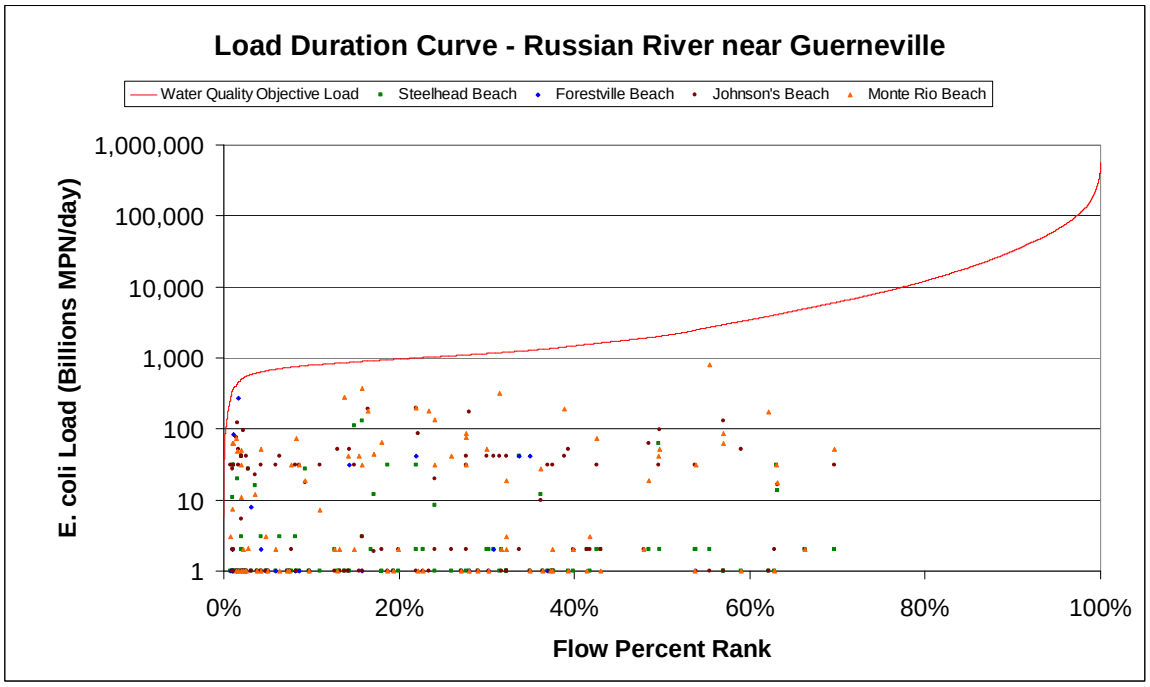


Figure 17. Enterococcus Load Duration Curve for Russian River near Healdsburg

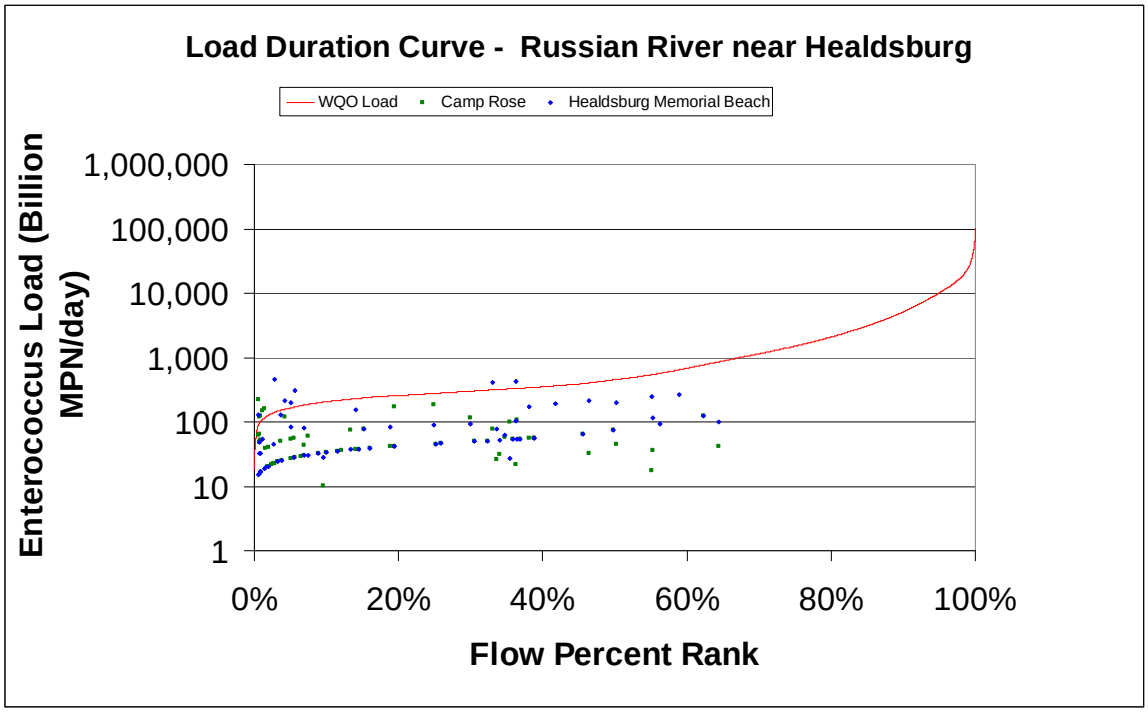
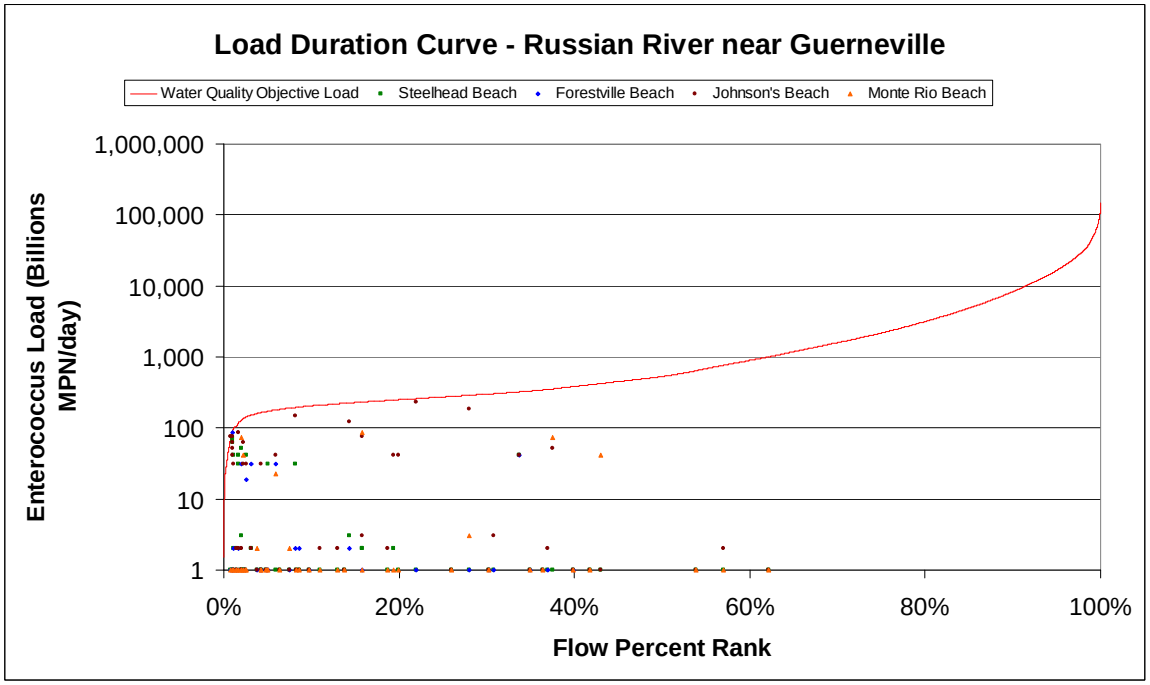


Figure 18. Enterococcus Load Duration Curve for Russian River near Guerneville



Trend Analysis

Trend analysis was conducted for FIB concentrations at each of the six monitoring stations within the Project area using current and historical data. Water quality data possess distributional characteristics that generally require specialized approaches to trend testing. Water quality data sets can contain censored (less than) values, outliers, multiple detection limits, missing values, and serial correlation. These characteristics commonly present problems in the use of conventional parametric statistics based on normally distributed data sets. The presence of censored data, non-negative values, and outliers generally lead to a non-normal data distribution which is common for many data sets. These skewed data sets require use of specific non-parametric statistical procedures for their analysis. Nonparametric statistical tests are more powerful when applied to non-normally distributed data, and almost as powerful as parametric tests when applied to normally distributed data (Helsel and Hirsch, 2002).

The nonparametric Mann-Kendall test for linear trend (Helsel et al. 2006) was used to evaluate whether FIB concentrations have increased or decreased significantly since the base year. The test is non-parametric, rank order based, and insensitive to missing values. Sen's slope estimator (Sen, 1968) was used to estimate the magnitude of change over time when a significant trend was observed. Sen's slope estimator is a non-parametric method that is insensitive to outliers and can be used to infer the magnitude of a trend in the data. Sen's slope estimator is not greatly affected by gross data error or outliers, and it can be computed when data are missing. Sen's slope estimator is closely related to the Mann-Kendall statistic in that all possible slopes are calculated between all possible data pairs and the resulting median slope is the Sen slope. The Sen's slope estimator was used to estimate the slope for the Mann-Kendall test.

The dataset contains FIB concentration measurements with levels below the detection limit of the analytical method. These values were assigned the value of the detection limit. Data sets having large numbers of values below detection limit (BDLs) may create statistical problems for trend analyses. The Mann-Kendall test for trend adjusts variance estimates upward for ties in magnitude. Since BDL values in the raw data set produce such ties, trend analyses of data sets with high percentages of BDLs will be based upon greater variances than those without BDLs. Thus, the power of the trend analyses for the data sets with BDLs are reduced compared to those without detection limits censoring. If the percentage of BDL observations is greater than 50, it is reported there are too many observations below the detection limit to determine the presence or absence of trend.

Trends in FIB concentrations were evaluated for the effect of flow (Table 3). Several of the sites show increasing trend in FIB concentrations. These trends may be due to natural trends in flow due to climate. For example, a trend may be observed if the last

few years in a set of data were collected during drought conditions with lower flows. The effect of the lower flows on the apparent trend can be addressed using the relationship observed between flow and FIB concentration. The regression equation resulting in statistically significant relationship between flow and FIB was applied to the data. The residuals resulting from the difference of the predicted values from the observed value were tested for trend. The results indicate a trend without the influence of flow.

Trends of FIB concentrations were also evaluated by removing the effect of flow from those sampling locations with a statistically significant relationship to flow. The residuals from the significant regression equations derived above were used to assess trend without the influence of flows. Only those locations with a relationship between a FIB and flow could be assessed for flow influence on FIB trend. Accounting for this flow effect did not change the detection of trend in the FIB data for most locations indicating that the flow did not influence observed trends. However, removing the flow effect did result in removing the observed trends for each FIB at Camp Rose.

Table 3. Trends Statistics for Fecal Indicator Bacteria Concentrations

FIB	Site	Probability	Trend Slope	Trend Inclination
Total Coliform	Camp Rose – with flow influence	<0.01	163.3	Increasing
	Camp Rose – without flow influence	<0.01	-0.001	Decreasing
	Forestville Access Beach – with flow influence	0.51	-61.7	None
	Forestville Access Beach – without flow influence	0.70	-38.4	None
	Healdsburg Memorial Beach	<0.01	105.2	Increasing
	Johnsons Beach – with flow influence	<0.01	158.4	Increasing
	Johnsons Beach – without flow influence	<0.01	62.0	Increasing
	Monte Rio Beach	<0.01	128.9	Increasing
	Steelhead Beach – with flow influence	0.56	14.5	None
	Steelhead Beach – without flow influence	0.29	25.4	None
E. coli	Camp Rose – with flow influence	0.34	0.0	None
	Camp Rose – without flow influence	<0.01	-0.001	Decreasing
	Forestville Access Beach	0.49	0.0	None
	Healdsburg Memorial Beach	0.06	0.0	None
	Johnsons Beach	0.59	0.0	None

FIB	Site	Probability	Trend Slope	Trend Inclination
	Monte Rio Beach	0.04	-0.7	Decreasing
	Steelhead Beach	0.53	0.0	None
Entero-coccus	Camp Rose – with flow influence	<0.01	0.6	Increasing
	Camp Rose – without flow influence	0.19	0.00	None
	Forestville Access Beach	0.08	0.0	None
	Healdsburg Memorial Beach – with flow influence	0.18	0.0	None
	Healdsburg Memorial Beach – without flow influence	0.01	0.0	None
	Johnsons Beach	0.01	3.3	Increasing
	Monte Rio Beach	0.95	0.0	None
	Steelhead Beach – with flow influence	<0.01	0.0	None
	Steelhead Beach - without flow influence	0.133	0.0	None

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