State of California
The Resources Agency
Department of Water Resources
Division of Planning and Local Assistance

MUNICIPAL WATER QUALITY INVESTIGATIONS PROGRAM Annual Report

October 1995 - December 1996

December 1997

Pete Wilson
Governor
State of California

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

David N. Kennedy
Director
Department of Water Resources

State of California
The Resources Agency
Department of Water Resources
Division of Planning and Local Assistance

MUNICIPAL WATER QUALITY INVESTIGATIONS PROGRAM

October 1995 - December 1996

December 1997

Pete Wilson
Governor
State of California

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

David N. Kennedy
Director
Department of Water Resources

Cover photo of Delta waterway with Mt. Diablo in the background located in the Central Valley region.

Table of Contents

Appendices

Figures

Tables

STATE OF CALIFORNIA
Pete Wilson, Governor

THE RESOURCES AGENCY
Douglas P. Wheeler, Secretary for Resources

DEPARTMENT OF WATER RESOURCES
David N. Kennedy, Director

Raymond D. Hart Deputy Director	Robert G. Potter Chief Deputy Director	Stephen L. Kashiwada Deputy Director

L. Lucinda Chipponeri Assistant Director for Legislation	Susan N. Weber Chief Counsel

DIVISION OF PLANNING AND LOCAL ASSISTANCE

William J. Bennett . . . . Chief

Dennis Letl . . . . Deputy Division Chief

Phil Wendt . . . . Chief, Water Quality Assessment Branch

Raymond Tom . . . . Acting Chief, Technical Services Section

Richard S. Breuer . . . . Chief, Municipal Water Quality Investigations Unit

Prepared by

Collette Zemitis . . . . Environmental Specialist III
Richard Sapudar . . . . Environmental Specialist III
Marc Commandatore . . . . Environmental Specialist II
Erika Lovejoy . . . . Environmental Specialist I
Jim Hockenberry . . . . Environmental Specialist I
Marvin Jung . . . . Consultant
Dr. Barry Gump . . . . Consultant
Denise Webster . . . . Student Assistant
Quy Tran . . . . Student Assistant

Connie Clapton . . . . Student Assistant
Carrie Stephens . . . . Student Assistant
Dan Schreiner . . . . Student Assistant

Data Collection and Project Assistance - Technical Services Section Field Unit

Stephen Belluomini . . . . Chief, QA/QC and Field Units
David Gonzalez . . . . Environmental Specialist III
Ian Waters . . . . Associate Engineering Geologist
Lori Weisser . . . . Associate Water Resources Engineer
Walt Lambert . . . . Associate Water Resources Engineer
Diana Stoliker . . . . Junior Water Resources Engineer

With the assistance of

Lynda D. Herren . . . . Supervisor of Division Publications
Liz Kanter . . . . Editorial Technician
Rose Luna . . . . Office Technician

Municipal Water Quality Investigations
Technical Advisory Committee

John Coburn	State Water Contractors
Bill Brennan	Central Coast Water Agency
Richard Denton	Contra Costa Water District
K.T. Shum	Contra Costa Water District
Frank Maitski	Santa Clara Valley Water District
Roy Wolfe	Metropolitan Water District of Southern California
Stuart Krasner	Metropolitan Water District of Southern California
Bruce Macler	U.S. Environmental Protection Agency
S. Kusum Perera	California Department of Health Services
Jim Beck	Kern County Water Agency
Russ Fuller	Antelope Valley-East Kern Water Agency
Doug Chun	Alameda County Water District
Michael Lanier	Alameda County Water District
David Okita	Solano County Water Agency
Francis Chung	California Department of Water Resources
Marvin Jung	Marvin Jung & Associates, Inc.

Municipal Water Quality Investigations Program
Participating Agencies

Alameda County Flood Control and Water Conservation District, Zone 7
Alameda County Water District
Antelope Valley - East Kern Water Agency
California Urban Water Agencies
Central Valley Regional Water Quality Control Board
California Department of Health Services
California Department of Water Resources
Castaic Lake Water Agency
Central Coast Water Agency
Contra Costa Water District
Crestline - Lake Arrowhead Water Agency
Kern County Water Agency
Metropolitan Water District of Southern California
Mojave Water Agency
Napa County Flood and Water Conservation District
Palmdale Water District
San Luis Obispo County Flood Control and Water Conservation District
San Bernardino Valley Municipal Water District
Santa Clara Valley Water District
Solano County Water Agency
State Water Contractors
State Water Resources Control Board
U. S. Environmental Protection Agency

Chapter 1. Executive Summary

Characterization of Dissolved Organic Carbon from Delta Island Soils

This Study, evaluating the water quality of drainage in an agricultural field in the Sacramento-San Joaquin Delta, was conducted during the 1996-97 Municipal Water Quality Investigations Program Year. Water and soil samples were collected from a 40-acre field on Twitchell Island during different agricultural periods: leaching, irrigation, fallowing. The data are being evaluated and a report is being prepared by U.S. Geological Survey staff, cooperators in this Study.

Delta Alternatives Water Treatment and Costs Computer Modeling

To predict water conditions with changes in the physical configuration of the Delta, two computer models were developed by the Department of Water Resources' Modeling Branch. These computer models are the Delta Trihalomethane Formation Potential model and the Delta Island Consumptive Use model.

A project to estimate the finished water quality and costs of treating Delta waters withdrawn from different Delta locations was requested by the MWQI Committee in 1994. Conceptually, this project will use the DWR's Delta THMFP and Delta Island Consumptive Use models to establish boundary conditions representing influent water quality to the U.S. Environmental Protection Agency model. The USEPA model will predict the effects of modifying Delta conditions on distribution system water quality. This application is intended to improve the ability to quantify costs and savings associated with Delta action alternatives, as related to the use of Delta waters for municipal purposes.

Through the Request for Qualifications process, Malcolm Pirnie, Inc., was selected as the most qualified firm to conduct this project. DOP's staff will work with Malcolm Pirnie, Inc., with oversight from MWQI Unit staff. Work on this project began on February 1, 1997, with a projected completion date of August 1997.

Treatment of Delta Island Drainage to Reduce Total Organic Carbon Loads

Approximately 260 agricultural drains discharge into the Delta and contribute high TOC loadings because of the leaching of Delta peat soil. Higher TOC levels make it more difficult for water retailers to treat the water because it leads to higher Disinfection Byproduct concentrations. There is concern among water suppliers regarding the need to comply with Phase I of the Disinfectant/Disinfection Byproducts Rule and the Enhanced Surface Water Treatment Rule since the former may require lesser levels of disinfection (to minimize THM production) and the latter may require greater levels of disinfection (to control pathogenic organisms).

The cost to comply with the D/DBP and ESWT Rule will be significant and has lead to consideration of alternatives for minimizing TOC and other DBP precursor loadings to Delta water. The MWQI TOC Workplan Subcommittee developed the Study plan to evaluate applying source control within the Delta islands system to minimize the TOC loading from these islands.

This project was initiated in January 1997 and was completed by July 1997. The project was conducted by Brown and Caldwell. The University of Colorado, Boulder conducted bench-scale testing, under the supervision of Dr. Gary Amy. The project tasks were:

Task 1. Conduct literature review

Task 2. Conduct preliminary evaluation of treatment processes considered for bench-scale testing

Task 3. Produce Technical Memorandum 1--Treatment Alternatives for Bench-Scale Testing

Task 4. Develop sampling and experimental plans for bench-scale testing

Task 5. Conduct bench-scale testing

Work product: Technical Memorandum 2--Summary of the Bench-Scale Testing Results.

Task 6. Conduct feasibility and cost analyses for full-scale treatment facilities

Work product: Technical Memorandum 3--Preliminary Feasibility and Cost Analyses of Full-Scale Treatment of Delta Agricultural Drainage.

Task 7. Develop conceptual design of a pilot facility for the next phase of testing

Work product: Technical Memorandum 4--Conceptual Design of a Delta Agricultural Drainage Treatment Pilot Facility.

Task 8. Prepare final report.

This chapter is the final report and work product of the final task, Task 8. In this final report, the results from all the tasks are summarized and presented.

Organic Carbon and DBPs Precursors from Flooded Delta Islands

The MWQI Program has initiated a Study to determine organic carbon changes in water crossing permanently flooded Delta islands. The Study, which arose in part from a request by the California Urban Water Agencies, is important to determine any water quality impacts from flooding Delta islands. The Study will provide data that will be useful to CALFED in its analysis of Delta alternatives.

A workplan for the Study was developed and approved by the MWQI Committee in April 1997. The workplan involves taking water quality samples from a demonstration wetland of approximately 11 acres flooded to 1-foot depth. Surface water and soil water samples will be analyzed for potential to form trihalomethanes, ultraviolet absorbance (which indicates humic material), DOC, nitrate, bromide and other mineral parameters. The water quality results will be compared to samples taken from an adjacent agricultural field. In addition, a pipe placed in the demonstration wetland will test the effects of a deep-flooded wetland (depth- approximately 5 feet). The wetland is under construction and sampling was scheduled to begin July 1997.

North Bay Aqueduct Watershed Study (Sanitary Survey)

Sanitary Survey follow-up activities for the NBA began on July 1, 1996 in accordance with Phase I monitoring as specified by the *Workplan for the Barker Slough Watershed* (Appendix B). This Study of raw water quality of surface waters entering the NBA from Barker Slough resulted from recommendations reported in the *Sanitary Survey Update Report 1996*. The 1996 Sanitary Survey report identified the NBA as having several water quality issues which concern the State Water Contractors by using it as a source of drinking water.

Several water quality issues have been identified which require additional investigation to characterize the nature and extent of the problem, and means of addressing them. These water quality issues include elevated levels of organic carbon, THMFP, metals, and coliforms in the Barker Slough watershed.

This Study was designed to investigate these problems, identify their sources, and to identify potential measures to improve water quality in the watershed. The Study also seeks to link field data with operational data at the various water treatment plants using Barker Slough as a source for drinking water.

The Study was divided into two phases. The first of two phases began on July 1, 1996. The second phase began after all sampling for Phase I (July 1, 1996 through June 30, 1997) was completed and reviewed by DWR and the NBA Technical Advisory Committee. Phase I was designed to quantify water quality constituents at the screening level. Phase II will investigate specific pollutants and identify mitigation measures for those pollutants.

The first six months of data collected for this Study indicate that Lindsey Slough has better water quality than the other sampling sites, with the lowest water quality found at the Barker Slough/Cook Lane sampling site. In general, the highest levels of DOC, THMFP, and UVA are seen at the Barker Slough/Cook Lane sampling site, and the lowest levels are seen at Lindsey Slough. Results for *Escherichia coli* show that Lindsey Slough consistently had lower *E. coli* levels than the other sites. A complete year of sampling results will be reported in the final report for the Study as specified in the *Workplan for the Barker Slough Watershed.*

Coordinated Pathogen Monitoring Program for the State Water Project (Sanitary Survey)

The CPMP project was developed to use the recommendations made in the sanitary survey update report, and to augment the data which will be collected by the microbiological monitoring required by the USEPA's Information Collection Rule Study. The monitoring program links and enhances the current and proposed monitoring programs of Metropolitan Water District of Southern California, both DWR's Operations and Maintenance, and Division of Planning and Local Assistance's MWQI Program. Project oversight and review are provided by the Sanitary Survey Action Committee. The project design incorporates three sample types: routine monthly samples, storm event samples, and contingency samples.

Sampling locations were selected to include the source waters of the SWP, the Delta, the SWP's California Aqueduct, and the major reservoirs comprising the SWP system. Flood event samples were collected from January 6-10, 1997. Samples collected were analyzed for *Giardia* and *Cryptosporidium,* total and fecal coliforms/*E. coli*, and *Clostridium perfringens.*

The results of the 51 samples collected and analyzed through January 9, 1997 are included in this discussion. Approximately 200 samples will be collected when this Study is completed. Only general trends are discernable at this early stage in the CPMP Study. Concentrations and detection frequencies for the protozoans *Giardia* and *Cryptosporidium* generally decrease from the Delta source waters, through the Aqueduct, to the terminal reservoirs on the east and west branches. While *C. perfringens* results do not display a trend, the concentrations of total/fecal coliforms and *E. coli* show a trend similar to the protozoans.

New Parameters Study

The purpose of the New Parameter Study determined the present concentrations of newly or soon-to-be regulated constituents in Delta water, and determined if it was necessary to add additional parameters to the routine MWQI monitoring schedule. The Study was conducted from June 1995 through March 1997.

The Phase II and Phase V rules under the USEPA's drinking water regulations establish limits for several organic and inorganic chemicals. California has established new Maximum Contaminant Levels for a number of constituents. The New Parameter Study gathered information for the newly regulated constituents, for which little historical data was available.

The samples were from sites of diversion from the Delta: Barker Slough Pumping Plant, Contra Costa Pumping Plant, Delta-Mendota Canal, and Banks Pumping Plant. Old River near Byron was added as a sampling site in June 1996.

Arsenic was consistently present at all of the sample sites at levels well below the State and federal MCLs. The herbicide *2,4-D* was detected at most of the sampling sites in June 1995 and again at Barker Slough and Contra Costa Pumping Plant in September 1995. Levels were in the range of 0.001 to 0.002 mg/L, well below the State and federal MCL's of 1.0 and 0.07 mg/L, respectively. *Bis(2-ethylhexyl) phthalate* (also known as DEHP) is a manufactured chemical found in plastics and sometimes in pesticides. DEHP was detected in September 1996 at Barker Slough at a level of 0.004 mg/L and at Contra Costa Pumping Plant at a level of 0.007 mg/L. Levels of DEHP at Barker Slough are equal to the State MCL of 0.004 mg/L, but less than the federal MCL of 0.006 mg/L. September DEHP levels at Contra Costa Pumping Plant exceeded both the State and federal MCL's. In June 1996, the insecticide *formetenate hydrochloride* (also known as Carzol) was detected at the reporting limit of 0.001 mg/L at Barker Slough. There is no federal or State MCL which regulates it. The herbicide *Simazine* was detected at Barker Slough and Contra Costa Pumping Plant in March 1996 at a level of 0.001 mg/L, below the MCL of 0.004 mg/L. *Zinc* was detected regularly at all of the sampling sites at low levels, with one exception. In June 1996, the Zinc level at Banks Pumping Plant was measured at 4.33 mg/L. The current MCL for Zinc is 5 mg/L.

The pesticide *2,4,5-T* was detected at Contra Costa Pumping Plant at a level of 0.001 mg/L. There are no MCL's set for this constituent, however it is on USEPA's Priority Pollutant List. *Dalapon* was detected at Banks Pumping Plant in December 1996 at a level of 0.002 mg/, which is below the MCL of 0.2 mg/L. Dalapon is a chlorinated herbicide commonly used in citrus grove ditches and drainage ditches. Sometimes it is used in combination with 2,4-D. *Selenium* was detected at the Delta-Mendota Canal in September of 1995 and 1996 (at 0.001mg/L and 0.002 mg/L, respectively). The MCL for Selenium is 0.05 mg/L. The insecticide *aminomethyl-phosphoric acid* was detected at Old River near Byron at a level of 0.1 mg/L. The pesticide *Glyphosate* was detected in September 1996 at Old River near Byron at a level of 0.1 mg/L, well below the MCL of 0.07 mg/L. *Diquat* was detected at Old River at 0.01 mg/L. The MCL for Diquat is 0.02 mg/L. In March 1997, MTBE was detected at the Contra Costa Pumping Plant at a level of 0.002 mg/L. The Department of Health Services Action Level for MTBE is 0.035 mg/L.

Overall, the Barker Slough and Contra Costa Pumping Plant Sampling Sites had the greatest occurrence of pesticides. The pesticide detected most often was 2,4-D. This parameter was consistently detected during the months of June and September. There were several isolated occurrences of different pesticides at all of the sites, with the exception of the Delta-Mendota Canal, where no pesticides were detected. The only pesticide that exceeded MCLs was DEHP in September 1996 at the Contra Costa Pumping Plant and at Barker Slough.

Simulated Distribution System Testing for DBPs and *E. coli* Data for Delta Waters

Simulated distribution system total halomethane, haloacetic acid(5), and haloacetic acid(6) results from the monitoring of drinking water quality in the American, Sacramento, and San Joaquin Rivers and the Delta from April 1996 through January 1997 are reported. The SDS THM results are being compared to those from the traditional DWR THMFP analyses. Plots of the SDS TTHM and SDS HAA5 concentrations (μg/L) versus date grouped by sampling station are provided. On these plots the MCLs and proposed Stage 1 and Stage 2 MCLs values are marked. While some stations provided water that meets the proposed TTHM and HAA5 MCLs during parts of the year, other stations did not.

DWR has a database of THMFP results at various sampling locations. DWR performs the SDS method THM and HAA analyses. We have attempted to correlate the traditional DWR THMFP analysis results with those from SDS TTHM analyses. Combining data from all stations (n = 126) on a mass concentration basis (μg/L) provides a correlation R(squared) of 0.72; this correlation is weakened by the data from the Sacramento River at Mallard Island, a sampling station that produces higher concentrations of the brominated halomethanes. A recalculation of the SDS TTHM data in terms of a molar concentration basis (μmol/L), which eliminates the weighing factor of bromine versus chlorine, provides a correlation R(squared) value of 0.82. The result of these comparisons indicates that the historical DWR database of THMFP values can be used to estimate what historical SDS THM and HAA values would have been.

A similar correlation of results between the SDS HAA5 and SDS TTHM has been prepared. Combining data from all stations on a mol/L:mol/L concentration basis (μmol/L) provides only a correlation R(squared) of 0.83.

It has been suggested that the SDS TTHM/HAA5 ratio should be somewhat constant with an average value of approximately two. Plots of these ratios for the various groups of sampling stations versus date are presented along with overlays (right-hand axis) of average values at these stations for DOC, UVA, and Specific UVA . During the time studied, the averaged ratios varied from slightly greater than 1.84 to 2.82. Seasonal variations in the ratio appears to move most obviously with the average DOC values.

Water Quality in the Delta and Its Tributaries During the Floods of January 1997

On January 6, 7, 8 and 9, 1997, water quality samples were collected from the American River, Sacramento River, San Joaquin River, Delta channels, and water intakes or diversion facilities. These samples were collected to obtain water quality information during the January 1997 flooding. Based on the analytical results of these samples, water quality at all sampling sites during the flooding was good.

Delta Monitoring

The MWQI Program continues to monitor the drinking water quality of major channels and agricultural drains in the Sacramento-San Joaquin Delta. Thirteen major channel stations and six agricultural drains were monitored during the 1996 water year and the first quarter of the 1997 water year (Table 1-1 and Figure 1-1). These stations were selected because they represented the major intakes and diversions of the Delta and were representative of the major regions within the Delta.

Synoptic sampling of major stations in the North and South Delta was conducted monthly. Autosamplers were used to obtain more frequent data (three times a week) at selected stations in the Delta. Water quality samples were analyzed for DBP precursors, minerals, nutrients, ultraviolet absorbance, minor elements and other parameters. SDS testing for trihalomethanes and haloacetic acids was also conducted on samples from thirteen channel locations. The SDS data were analyzed to provide information on realistic DBP levels which may be produced by using Delta waters as source water.

Proposed changes in the MWQI Delta monitoring program for the 1997 water year include use of the reactivity-based trihalomethane analytical method to provide data comparable to other researchers and the use of a DOC autoanalyzer to obtain near real-time DOC data.

Water year 1996 and the first quarter of the 1997 water year were classified as wet. The water quality data had similar seasonal and regional patterns to data in other water year types. Seasonal variation of the data reflect increased irrigation and precipitation of salts on agricultural lands and increased pumping at Delta export stations during the summer. High precipitation and flows during the winter are responsible for increased nonpoint source runoff and leaching agricultural lands, as well as dilution of some constituents in Delta channels.

Electrical Conductivity, total dissolved solids and organic carbon concentrations were lowest in the Sacramento and American River inflow stations to the Delta. Concentrations of these constituents were relatively high in San Joaquin River inflow to the Delta. Delta export stations, Banks Pumping Plant and Contra Costa Pumping

Table 1-1. Monitoring Stations

Program Station	DWR Station Code	Station Location	Station Name*	Type
1	A0714010	American River at Water Treatment Plant	AMERICAN	HF
2	B9D82071327	Sacramento River at Greene's Landing	GREENES	HF
11	B9C74901336	DMC Intake @ Lindemann Rd.	DMC	HF
12	KA000331	Delta P.P. Headworks	BANKS	HF
13	B9D75351293	Middle R. @ Borden Hwy.	MIDDLER	HF
14	B0702000	San Joaquin R. nr. Vernalis	VERNALIS	HF
17	E0B80261551	Sacramento River @ Mallard Island	MALLARDIS	HF
44	B9V74811246	Ag Drain on Pescadero Tr., PP. No. 1	PESCADERO01	AD
78	B9V80661391	Ag Drain on Twitchell Isl., PP. No. 1	TWITCHELLPP01	AD
87	KG000000	Barker Slough Pumping Plant at North Bay Aqueduct	BARKERNOBAY	HF
103	B9D75351342	Old R. nr. Byron (St 9)	STATION09	HF
128	B9V75881342	Ag Drain on Bacon Island, PP. No. 1	BACON01	AD
133	B9591000	Contra Costa Pumping Plant Number 01	CONCOSPP1	HF
141	B9V80751335	Ag Drain on Staten Island PP. No. 2	STATENPP02	AD
142	B9V80481319	Ag Drain on Venice Island	VENICE	AD
171	B9D75811344	Old River at Bacon Island	OLDRIVBACISL	HF
534	A02104.51	Sacramento River at W. Sac Intake Structure	SACWSACINT	HF
535	B9D80271415	Ag Drain on Jersey Island (CP-1)	JERSEYPP01	AD
602	B9D74711184	San Joaquin R. @ Mossdale Bridge	SJRMOSSDALE	HF

Type Code:

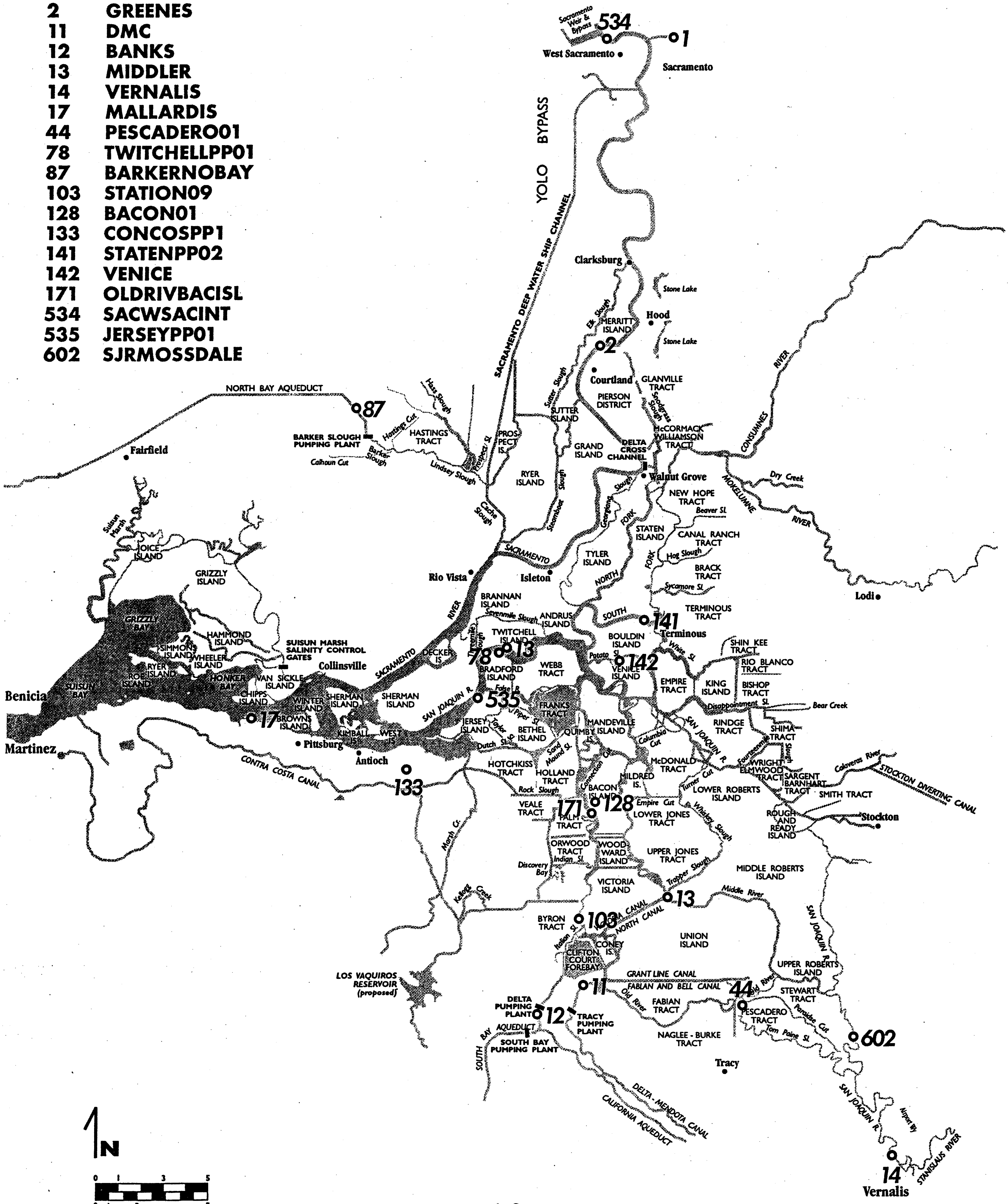
AD refers to agricultural drain.

HF refers to nondrainage station. H code referred to Interagency Health Aspects Monitoring Program station and F for freshwater sample type.

*Station name is used as an acronym to identify station locations throughout this report.

Figure 1-1 Monitored Channel and Agriculture Drainage Pump Stations

1	AMERICAN
2	GREENES
11	DMC
12	BANKS
13	MIDDLER
14	VERNALIS
17	MALLARDIS
44	PESCADERO01
78	TWITCHELLPP01
87	BARKERNOBAY
103	STATION09
128	BACON01
133	CONCOSPP1
141	STATENPP02
142	VENICE
171	OLDRIVBACISL
534	SACWSACINT
535	JERSEYPP01
602	SJRMOSSDALE



Plant, had EC, TDS and organic carbon concentrations intermediate between the low Sacramento and American River Delta inflow station concentrations and the higher San Joaquin River inflow station concentrations. Barker Slough Pumping Plant had the highest organic carbon concentrations observed of all the channel stations monitored.

EC, TDS and organic carbon compounds in agricultural drainage from Delta islands were many times greater than concentrations in adjacent channel water. Islands high in peat content, such as Venice Tract and Staten Island, contributed higher DOC than more mineral islands such as Pescadero Tract.

Arsenic, copper and selenium were monitored on a monthly in many of the channel stations and agricultural drains. Most of the concentrations were below reporting limits of 0.05 mg/L for arsenic, 0.0005 mg/L for copper and 0.001 mg/L for selenium. Of the concentrations detected above the reporting limit, all the concentrations were below MCLs for finished drinking water.

The water quality in the Delta with respect to minor elements appears to be good. The concentrations of organic compounds, however, are increased in Delta waters above concentrations in USEPA's proposed Stage 1 Rule for Disinfectants/ Disinfection Byproducts in finished drinking water. Although Delta water will be treated before being distributed as drinking water, elevated organic carbon compound concentrations in Delta water represent increased drinking water treatment costs. Therefore, quantification and determination of the sources of organic carbon in Delta waters is important to the MWQI Program.

Quality Assurance/Quality Control

In assessing MWQI data available for October 1, 1995 through December 31, 1996, QA/QC Unit staff used four main sources of data which had been recorded either on hard copy or electronically. These sources included DWR's Bryte Chemical Laboratory and contract laboratory analysis sheets, laboratory QC reports, the database developed for the Water Quality Assessment Branch of the Division of Local Assistance (now called Division of Planning and Local Assistance), and QC reports written by QA/QC Unit staff. Five quality control parameters were assessed in this report which include holding times, matrix spikes, laboratory control samples, method blanks, and field duplicates. It is evident from the low percentages of analyses which exceeded QC standards that the MWQI data for water year 1996 are of high quality.

Delta Island Water Use Study

The Delta Island Water Use Study was collaborative effort between DWR and USGS. The goal of this Study was to obtain quantitative and qualitative information on Delta Island water use and drainage water quality. Water quality data for this Study were presented in the MWQI Program Annual Report Water Year 1995. USGS published the data on drainage surface water withdrawals, and land use on Twitchell Island in a report entitled *Drainage-Return, Surface-Water Withdrawal, and the Land-Use Data for the Sacramento-San Joaquin Delta, with Emphasis on Twitchell Island, California*, USGS Open File Report 97-350. A copy of the USGS report is included in this report in Chapter 14.

Chapter 2. Introduction

The 1996 program year (October 1, 1995 through September 30, 1996) was the second year of work under the three-year workplan. Initiating special projects and conducting drinking water quality monitoring continued to be the program's focus. Contracts for the DWR/USEPA Modeling Project and the Flocculation Study were awarded, and the work started accordingly. For the 1996 Annual Report, monitoring and special project data through December 1996, and data from the early storms of January 1997 provided data from of a historically significant storm event and its effect on the various water quality parameters. The final reports for the Flocculation Study and the new Parameters Study are included in the report, though the projects were not completed until May 1997.

Recent concerns regarding water-born pathogens led the MWQI Committee to initiate the CPMP in November 1996. The continuing emergence of the CALFED process elevated concern about increased organic carbon generation from proposed Delta alternatives. The MWQI Program participated in the CALFED process by attending the Water Quality Committee meetings and providing input into drinking water concerns.

Studies were also launched to find solutions to water quality problems associated with Delta water and land management practices and to assess water quality impacts of alternative water transfer and storage facilities in the Delta. Planning for the Flooded Island Study began in June 1996 to evaluate potential organic carbon generation of proposed flooding of peat soils. A technical advisory committee convened in January of 1997 to review the Study plans. Based on their input, the Study plan evolved into an investigation of DOC generation from subsidence control test ponds in the Delta, and from various proposed Delta alternatives that propose deep flooding of peat soils. The results of these new studies will lead to the development and assessment of water resources management alternatives for protecting drinking water supplies from the Delta.

Collectively, MWQI studies and activities are designed and conducted to address the major water quality and water supply issues such as: (1) the ability of the Delta to meet everyone's needs, (2) meeting stricter State and federal regulations, and (3) obtaining reliable clean water supplies. Each Study or activity serves as an important step toward discovering, testing, and assessing possible solutions to problems in the Delta and other watersheds of SWP, and ensuring that future demands for safe potable water supplies can be met.

This report summarizes the objectives and progress of the MWQI studies during program year 1996 and those that have been carried into program year 1997.

The established program goals were to:

1. ***Identify factors that affect the availability of DOC and DBP precursor formation in soil organic matter and DOC in agricultural drain water.*** The description of the Soil TOC Study is presented in Chapter 3. All field work was completed in January 1997, with a draft report delivered from the USGS in September 1997. This information will be used to develop land and water management practices to reduce DBP precursor availability in soils and drain water. These practices will be tested in the field to Study the relationship between land practices and water quality.

2. ***Improve computer modeling capabilities in quantifying source water quality, treated water quality, and treatment costs associated with Delta water transfer and storage alternatives.*** This will be accomplished by developing a Delta Alternatives Water Treatment and Costs Model based on the USEPA Water Treatment Plant Model and a proprietary model named WATERCO$T. The models will be used to predict water treatment quality and costs based on source water quality. Chapter 4 outlines the tasks involved in the Study. DWR's Modeling Branch staff and the outside consulting firm, Malcolm-Pirnie Inc., are involved with the development of this model, which was delivered in the Fall of 1997. DWR's Modeling Branch continues to provide modeling support through improvements and enhancements of models used for simulation of DBP precursors and THM formation from treatment of Delta waters.

3. ***Determine the feasibility of installing treatment facilities (e.g., flocculation basins) on the Delta islands to reduce TOC loads in agricultural drains.*** In this Study, a contract was established with the engineering consulting firm, Brown and Caldwell, to assess available water treatment technologies and to develop a proposed pilot treatment plant Study for possible future testing. Chapter 5 presents the final results of the Treatment of Island Drainage to Reduce TOC Loads Study.

4. ***Assess the organic carbon contribution from flooded Delta island soils to evaluate proposed land and water management alternatives in the Delta.*** In coordination with the CUWA and CALFED, the MWQI Program developed plans to investigate the contribution of TOC from the various proposed Delta alternatives which call for the flooding of Delta soils for water storage or through Delta conveyance. Chapter 6 details Phase I of the Flooded Island Study, which focuses on the organic carbon generation from a shallow flooded pond on peat soils in the Delta.

5. ***Identify and assess the significance of actual or potential sources of contamination in watersheds of SWP.*** This will be accomplished through the completion of ongoing studies and investigations in response to recommendations of the Sanitary Survey of the SWP. Phase I of the NBA Study will assess and identify the sources of problem constituents in the watershed and potential solutions to reduce contaminant loads in the aqueduct. Phase I sampling was completed in June 1997 with a draft report issued in September 1997. Chapter 7 discusses results to date for the Study. Chapter 8 discusses the CPMP which, when completed, will assess the seasonal and spatial concentrations of *Cryptosporidium*, *Giardia*, *Clostridium perfringens*, and coliform bacteria in the SWP. Sampling will continue until November 1997, with a draft report issued in February 1998.

6. ***Assess the vulnerability of Delta exported and diverted waters used for drinking purposes to contamination by newly regulated contaminants and those which were proposed to be regulated.*** Quarterly monitoring for these constituents at locations near water intakes and diversions was implemented as the New Parameters Study in 1995. The results of this monitoring are presented in Chapter 9 of this report.

7. ***SDS Testing and Reactivity Based THMFP.*** SDS testing for trihalomethanes and haloacetic acids was implemented on Delta channel waters to provide more realistic values which may be expected at treatment plants. Chapter 10 discusses SDS testing on Delta source waters and E. Coli sampling data.

8. ***Report on the status and trends of Delta water quality under different hydrologies.*** Delta water quality monitoring will continue at key locations with emphasis on using automated samplers and new instrumentation, and by employing remote-sensing capabilities for real-time data collection. In addition to routine monitoring, special monitoring projects will be carried out. Some of the greatest runoff in California's history occurred in January 1997. The MWQI Program responded with other organizations to capture important water quality data during this record peak runoff. Chapter 11 reports the monitoring results from that event. Chapter 12 reports on the results from the routine monitoring efforts of the Program. The continuing effort to document and validate the results of the MWQI Program's monitoring and studies is supported by DWR's QA/QC Program. Chapter 13 presents the QA/QC review of the MWQI Program's data.

9. ***Develop a real-time monitoring network for TOC/DOC in the Delta.*** Compact state-of-the-art TOC analyzers will be tested for on-site remote monitoring in the Delta. This capability will allow near instantaneous and continuous monitoring of river and drainage TOC/DOC levels. These data will be collected along with flow

data to correlate changes with events such as upstream releases, storms, and drainage discharges. The results may lead to developing recommended actions to reduce TOC/DOC concentrations in the Delta. A pilot autoanalyzer will be installed at a new monitoring facility at Hood on the Sacramento River with the development of the Environmental Services Office's remote monitoring facility.

A two-year program workplan was developed, as required in the MWQI Program agreement, to describe the course of activities, expenditures and schedule. A summary of the April 1996 workplan Study elements and budget for October 1, 1994 - September 30, 1997 is shown in Table 2-1.

Table 2-1. Original Workplan for Program Years 1995-97

Study Element	Program Year 1995	Program Year 1996	Program Year 1997
SWP Sanitary Survey Updates	$ 75,000	$ 25,000	$ 0
Delta Water Quality Monitoring	$ 275,000	$ 250,000	$ 250,000
New Parameters Monitoring	$ 70,000	$ 50,000	$ 50,000
Delta Island Water Use Study	$ 330,000	$ 300,000	$ 100,000
Water Quality Management Project	$ 300,000	$ 350,000	$ 500,000
Rice Field Drainage Study	$ 100,000	$ 50,000	$ 30,000
DWR DOP Modeling Support	$ 75,000	$ 75,000	$ 75,000
Delta Alternatives Water Treatment & Costs Model	$ 70,000	$ 30,000	$ 0
Real-Time DOC Monitoring	$ 50,000	$ 50,000	$ 50,000
Undesignated New Studies	$ 0	$ 100,000	$ 225,000
Contingencies/ Emergency Response	$ 40,000	$ 120,000	$ 120,000
Consultants Technical & Management Support	$ 165,000	$ 150,000	$ 150,000
Subtotal of Studies	$1,550,000	$1,550,000	$1,550,000
Program Management	$ 300,000	$ 300,000	$ 300,000
TOTAL	$1,850,000	$1,850,000	$1,850,000

Some of the planned Program Year 1995 studies were not started or completed until the following Program Year (1996) or were postponed to Program Year 1997 due to a reprioritization of tasks by the MWQI Committee. Other studies, such as the

Delta Island Water Use Study, that were multi-year contingent upon the first year results, were terminated. Revisions to the workplans were expected, because of new and pending drinking water regulations and CALFED Bay Delta Program issues regarding potential solutions for the Delta. A summary of the revised workplan schedule and budget for April 1, 1996 to September 30, 1997 is shown in Table 2-2.

Table 2-2. Revised Workplan for Program Years 1996-97

Study Element	Program Year 1996	Program Year 1997
SWP Sanitary Survey Five-Year Update	$ 25,000	$ 0
SWP Sanitary Survey Annual Update	$ 20,000	$ 50,000
Survey Follow-up Activities	$ 20,000	$ 0
Pathogen Monitoring	$ 25,000	$ 202,500
North Bay Aqueduct Study	$ 15,000	$ 130,000
Delta Water Quality Monitoring	$ 250,000	$ 275,000
New Parameters Monitoring	$ 50,000	$ 60,000
Delta Island Water Use Study	$ 75,000	$ 0
Water Quality Management Project	$ 150,000	$ 500,000
Rice Field Drainage Study	$ 75,000	$ 0
DWR DOP Modeling Support	$ 75,000	$ 75,000
Delta Alternatives Water Treatment & Costs Model	$ 0	$ 83,000
Real-Time DOC Monitoring	$ 50,000	$ 50,000
Undesignated New Studies	$ 100,000	$ 125,000
Contingencies/ Emergency Response	$ 45,000	$ 57,500
Consultant- Technical & Management Support	$ 125,000	$ 75,000
Characterize Soil TOC Study	$ 100,000	$ 150,000
Treatment to Reduce Ag Drainage TOC Study	$ 0	$ 50,000
Subtotal of Studies	$1,217,000	$1,883,000
Program Management	$ 300,000	$ 300,000
TOTAL	$1,517,000	$2,183,000

The workplan for Program Year 1997 reflects a major redirection of work towards SWP Sanitary Survey related studies, such as the NBA Study, and the

Coordinated Pathogen Monitoring Study. In addition, delays in the contract process, as well as a revision of the Water Quality Management Projects, led to a redirection of funds from 1996 to 1997. The total for both years reflects an annual average budget of $1,850,000.

Chapter 3. Characterization of Dissolved Organic Carbon from Delta Island Soils

The purpose of this Study is to evaluate the water quality of drainage in an agricultural field in the Sacramento-San Joaquin Delta. When water comes into contact with the rich, organic peat soils of the Delta islands and tracts, during irrigation and soil leaching, the resulting water is high in total and DOC. The Study was conducted from January 1996 through January 1997. It was a cooperative Study between DWR and USGS. The final report for the Study is being prepared by USGS.

Agricultural drainage in the Delta enriches water that feeds into the SWP with organic carbon compounds. These organics are a problem for drinking water facilities. Organic carbon reacts with disinfectants, such as chlorine and ozone to form trihalomethanes and other carcinogenic DBPs. New USEPA regulations (the Disinfectants/Disinfection Byproducts Rule) lower the MCL for THMs from 0.100 mg/L to 0.080 mg/L by June 1988, and possibly to 0.040 mg/L by January 2002. Furthermore, the regulations will require additional studies and optimized water treatment when the intake water has more than 2 mg/L TOC. Currently, DOC concentrations in the Delta channels range from about 2 mg/L to 8 mg/L depending upon the season and the location. In addition, agricultural drainage discharged into the Delta channels can have DOC concentrations as high as 100 mg/L and TOC concentrations as high as 120 mg/L.

To assess the impact of proposed management options for the Sacramento-San Joaquin Delta, it is important to identify and characterize the nature of organic matter in Delta soils that potentially form THMs and to determine how some of the proposed options (e.g., seasonal and permanent wetlands, altered irrigation practices) affect THM formation and availability. The Study's objective is to determine the quantity of THM-forming DOC that is leached from an irrigated field. The field is an approximately 40-acre corn field on Twitchell Island. Lysimeters and piezometers were installed in the agricultural field at depths of 0.5 feet to 6.5 feet, respectively, in order to collect soil pore water samples. Soil and water samples were collected from the field during winter flooding (leaching of salts) period, during the spring wetting/drying period, during the summer growing season (corn), and during the winter pre-flooding period.

Chapter 4. Delta Alternatives Water Treatment and Costs Computer Modeling

To predict water conditions after changes in the physical configuration of the Delta, two computer models were developed by the DWR's DOP. These computer models are the Delta THMFP model and the DICU model.

Under contract with USEPA, a model was developed to predict the concentrations of various DBPs resulting from the application of various treatment processes on influent waters of varying qualities.

A project estimating the finished water quality and costs of treating Delta waters withdrawn from different Delta locations was requested by the MWQI Committee in 1994. Conceptually, this project will use the DWR's Delta THMFP and DICU models to establish boundary conditions representing influent water quality to the USEPA model. The USEPA model will predict the effects of modifying Delta conditions on distribution system water quality. This application is intended to improve the ability to quantify costs and savings associated with Delta action alternatives, related to the use of Delta waters for municipal purposes.

Through the RFQ process, Malcolm Pirnie, Inc., was selected as the most qualified firm to conduct this project. DOP's staff will work with Malcolm Pirnie, Inc., with oversight from MWQI Program staff.

Work on this project began on February 1, 1997. To complete this project, Malcolm Pirnie, Inc., will perform the following tasks:

Task 1: Develop a Modified Model

Modify the source code of the USEPA's Water Treatment Plant model to include the following changes:

a) Incorporate a neural network module developed by Paul Hutton of DWR to predict DBPs concentrations as a function of water quality parameters such as concentration of natural organic matter, bromide, temperature, chlorine dose, and pH.

b) Modify the output (or add to the current output) of the Water Treatment Plant model so that the output file from the Water Treatment Plant model can be used as input to the Culp Wesner Culp Water Cost model. Some functionality of the CWC Water Cost model such as cost curves will be incorporated into a new subroutine for the USEPA's Water Treatment Plant model.

Task 2: **Develop Costs for Delta Management Alternatives**

Work with DWR to estimate costs of construction, operation, and maintenance of alternative water conveyance and storage facilities for SWP. Develop the estimated costs in 1996 dollars.

Task 3: **Operate Modified Model to Develop Cost of Alternative Scenarios**

Run the modified Water Treatment Plant model (as described in Task 1) which includes the generalized cost curves to develop the relationships between the cost of downstream water treatment and the cost of various Delta management alternatives. Sixty different combinations of raw water TOC and bromide concentrations representing three Delta water transfer and storage facility alternatives under two different hydrologies will be used in developing the cost relationships. DWR will provide the source water quality conditions and select the alternatives to be simulated.

Task 4: **Prepare Report**

Prepare and submit a draft and a final report of the results of work in Tasks 1 - 3 within 30 days of completing Task 3. Provide five sets of program documentation, source codes, diskettes, and instructions on the use and modification procedures of the merged model. These were specifically developed in this Study to compare the costs of water treatment under different Delta water transfer and storage facility alternatives.

Task 5: **Provide a Training Workshop**

Provide one training workshop in Sacramento to designated DWR staff of the MWQI Program and the Modeling Support Branch within 30 days of completion of the above tasks.

Task 6: **Provide Software Support for One Year**

Provide telephone technical support for up to one year after the completion date of the training workshop to designated DWR staff. Up to 96 hours of software support shall be provided.

Provide DWR with any software and documentation revisions and instructions attributed to the contractor's programming errors for up to one year after the completion date of the training workshop.

Based on the schedule for the project, it is anticipated that development and demonstration of the modified model using three different Delta water transfer and storage facility alternatives will be completed by Spring of 1998.

Chapter 5. Treatment of Delta Island Drainage to Reduce Total Organic Carbon Loads

Introduction

The MWQI program is conducting a project to examine the feasibility of treating Delta agricultural drainage to remove TOC. Studies conducted on the Delta by DWR and others have found that flows from approximately 260 agricultural drains discharging into the Delta represent the greatest individual source of TOC loading to the Delta. These agricultural discharges contribute high TOC loadings because of the leaching of Delta peat soil, and its high organic content.

Water retailers supplied by the Delta are concerned with the high TOC levels in Delta water. Higher TOC levels make it difficult for them to treat the water because it leads to higher DBP concentrations. Some retailers have already made treatment facility modifications to control DBP formation and others are preparing for the operational and physical changes they will need to comply with Phase I of the D/DBP Rule and the ESWT Rule. Phase II of the D/DBP Rule will likely contain even more stringent DBP limits and compliance requirements than Phase I, which will further challenge water retailers.

The cost to Delta water retailers to comply with the D/DBP and ESWT Rule will be significant. This has lead to consideration of alternatives for minimizing TOC and other DBP precursor loadings to Delta water. The MWQI TOC Workplan Subcommittee developed the Study plan for this project to evaluate applying source control within the Delta island system to minimize the TOC loading from these islands.

This project was initiated in January 1997 and is expected to be completed by July 1997. The project was conducted by Brown and Caldwell as the prime consultant. The University of Colorado, Boulder conducted bench-scale testing, under the supervision of Dr. Gary Amy. The project's final report is presented here.

Project Scope

The project's scope was developed by Brown and Caldwell, with input from the DWR MWQI program staff. The project tasks are below:

Task 1: Conduct literature review

Task 2: Conduct preliminary evaluation of treatment processes considered for bench-scale testing

Task 3: **Produce Technical Memorandum 1--Treatment Alternatives for Bench-Scale Testing**

Task 4: **Develop sampling and experimental plans for bench-scale testing**

Task 5: **Conduct bench-scale testing**

Work product: Technical Memorandum 2--Summary of the Bench-Scale Testing Results.

Task 6: **Conduct feasibility and cost analyses for full-scale treatment facilities**

Work product: Technical Memorandum 3--Preliminary Feasibility and Cost Analyses of Full-Scale Treatment of Delta Agricultural Drainage.

Task 7: **Develop conceptual design of a pilot facility for the next phase of testing**

Work product: Technical Memorandum 4--Conceptual Design of a Delta Agricultural Drainage Treatment Pilot Facility.

Task 8: **Prepare final report**

Tasks 1 through 7 have been completed. This is the final report and work product of the final task, Task 8. In this final report, the results from all the tasks are summarized and presented. More detailed information can be obtained from the individual work products associated with Tasks 3, 4, 5, 6, and 7.

Literature Survey Results

The findings from Task 1, the literature survey, were consolidated into a technical memorandum and three treatment alternative summary sheets. The treatment methods which were evaluated in the literature review have all been successfully used for TOC removal. The three basic TOC treatment methods considered were:

1. Chemical coagulation
2. Membrane treatment
3. Biofiltration

More specific types of treatment methods are included within each of these TOC removal methods. For example, there are a number of variations of aluminum and iron coagulation included in "chemical coagulation." In addition, combinations of treatment processes were considered.

As part of the literature survey, 22 references were reviewed. These references related to the three basic treatment alternatives considered and to the characterization of organic carbon in Delta waters. The information from each of these references relevant to this Study was summarized on a literature review form.

The use of wetlands for TOC removal was considered by the project team but was determined not to be a feasible or effective TOC-removal method. Wetlands might be used with different treatment alternatives to achieve other water treatment objectives such as sediment removal. In fact, some of the agricultural drainage treatment alternatives might benefit from flow equalization basins upstream of the treatment facilities. The flow-equalization basins might tend to convert to wetlands over time and provide some incidental TOC removal.

The treatment alternative summary sheets are organized into the basic categories of information to evaluate the advantages and disadvantages of each alternative (e.g., effectiveness in removing organic carbon, life cycle costs, etc.).

Significant issues identified for the three treatment alternatives are summarized below. These are the major factors which may establish whether a treatment method is feasible for treating Delta agricultural drains.

<u>Significant Issues Associated with Coagulation</u>

- Sludge storage, handling and disposal
- Transportation, storage and handling of treatment chemicals
- Higher level of operator attention relative to other types of treatment. May not lend itself as easily to automation
- Treatment may increase total dissolved salt concentrations of the water, and possibly increase the concentrations of residual iron, aluminum, and heavy metals

<u>Significant Issues Associated With Membrane Treatment</u>

- Disposal of process waste streams (also known as residues), which can constitute 10 to 15 percent of the total influent flow

- High-cost pretreatment requirements (coagulation/sedimentation or microfiltration) for some membranes

- Ease of automation. Membrane treatment facilities can be highly automated requiring minimal operator attention (e.g., operator visits once daily to once every few days)

Significant Issues Associated With Biofiltration

- Effective only for removal of biodegradable organic carbon (also known as assimilable organic carbon which typically represents a fraction of the TOC (e.g., 5 to 20 percent). Therefore, biofiltration may be an effective means of removing AOC but not TOC

- Biofiltration requires formation of a biofilm on the filter media. It may be difficult to maintain a biofilm with start-and-stop treatment

- Ozone pretreatment may be required. Ozone treatment is costly

Sampling Plan

Two sampling events from two locations in the Delta were conducted for this Study as follows:

Delta Sampling Locations

1. Twitchell Island--representing high-peat soil drainage
2. Bacon Island--representing medium-peat soil drainage

Sampling Dates

1. January 30, 1997--samples taken during period of severe flooding in Delta
2. March 12, 1997--samples taken during relatively dry winter period

DWR staff collected the samples. The following measurements were made:

1. Field measurements:

    - Turbidity
    - Temperature
    - Electroconductivity
    - Dissolved oxygen

2. Analyses by DWR's Bryte Laboratory:

- DWR-modified THMFP
- Reactivity THM and HAA6
- TOC, DOC, and UVA_{254}
- Calcium, magnesium, and total hardness
- Sodium and potassium
- Alkalinity
- Sulfate and chloride
- TDS
- Ammonia and nitrate
- Bromide

Thirty gallons of each sample water were shipped to CU-Boulder for bench-scale testing.

CU-Boulder also analyzed the samples for:

- TOC, DOC, UV_{254}, and color
- pH and turbidity
- Electroconductivity
- Alkalinity

TOC and DOC values reported by both Bryte Laboratory and CU-Boulder were very similar with DOC making up about 90 to 95 percent of the TOC.

Experimental Plan

Two treatment methods were evaluated in the CU-Boulder bench-scale tests. These treatment methods were:

1. Coagulation using alum ($Al_2(SO_4)_3 \bullet 14H_2O$) and ferric chloride ($FeCl_3 \bullet 6H_2O$).

2. Membrane treatment with nanofiltration and ultrafiltration membranes.

The coagulation Study was conducted using jar tests.

<u>Jar Testing Experiments</u>

One-liter square jars were used in a six-jar gang stirrer. Each jar was filled with 500 mL of sample. The initial mixing speed for chemical addition and the 2-minute rapid mix was 100 revolutions per minute. For flocculation, the mixing speed was stepped down to 60 rpm, 40 rpm, and 20 rpm for 10 minutes each. After flocculation, the floc was allowed to settle for 30 minutes. Then the supernatant was sampled.

The settled water produced from the jar testing was analyzed for DOC, UVA_{254}, zeta potential, and turbidity. Analysis of DOC rather than TOC was made because:

1. Measurement of both parameters is too expensive.

2. DOC is the more important parameter. DOC represents the lowest TOC value that can be obtained under the given treatment condition. Therefore residual DOC identifies the limits of treatment.

3. In certain circumstances (when DOC and TOC are nearly equal in raw and treated waters), DOC removals and TOC removals are nearly identical.

The goal of jar testing determined the coagulant type, coagulant dose, and pH that promoted best DOC removal from each water. The steps followed by CU-Boulder in conducting the coagulant jar testing are outlined below.

Step 1. Determining Preliminary Coagulant Dose

Step 1 testing identified a coagulant dose that produced a condition where DOC removal was sensitive to changes in process chemistry. The coagulant dose that was determined was used in subsequent Step 2 testing to determine the effect of pH changes on DOC removal.

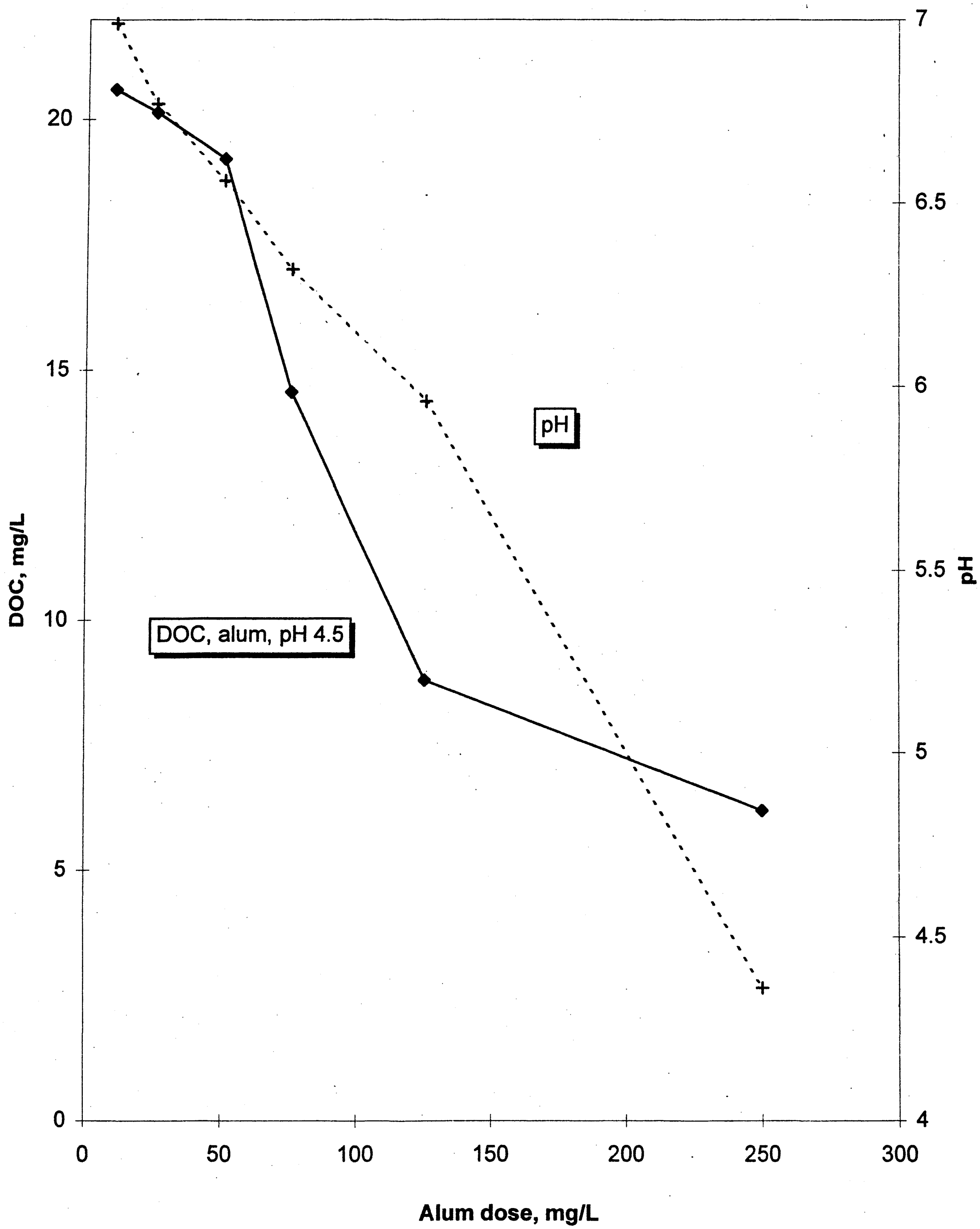
In Step 1, successive jars were treated with increasing coagulant doses. The pH was not controlled. That is, the pH was allowed to settle to the value caused by hydrolysis of the coagulant. The following equation illustrates the hydrolysis of alum. Approximately six moles of hydrogen ion are liberated for each mole of alum added. The hydrogen ion depresses the pH.

$$Al_2(SO_4)_3{\cdot}14H_2O + 6H_2O \rightarrow 2Al(OH)_3 + 6H^+ + 3SO_4^{-2} + 14H_2O$$

This type of coagulation (coagulant addition <u>without</u> addition of external acid for pH control) will be called "enhanced coagulation" in this report.

Figure 5-1 shows results from Step 1 testing of Twitchell Island drain water from Sampling Event 2 with alum. A dosage of 75 mg/L alum produces a condition where DOC removal is sensitive to process chemistry, as indicated by the data point's position on the steep part of the DOC-removal curve. Figure 5-1 also shows the pH depression created by alum hydrolysis.

Figure 5-1. Step 1 -- Determine Preliminary Coagulant Dose, Twitchell Island Drainage, Sampling Event 2



Step 2. Determining Optimum pH

Jar tests were performed at a constant coagulant dose (the dose selected in Step 1). While the pH in each jar was varied in increments of 0.5 units from 2.5 to 7.0. pH, adjustments were made using sulfuric acid. Figure 5-2 shows the effect of pH on alum-treated Twitchell Island drain water (Sampling Event 1), when treated with the Step 1 alum dose (75 mg/L). The optimum pH (about 4.5) is taken as the pH producing the lowest DOC residual. Note that turbidity is also low, indicating treatment at pH 4.5 produces a floc that settles well.

Step 3. Determining Optimum Coagulant Dose

Successive jars were treated with increasing coagulant doses, but pH was controlled with sulfuric acid at the optimum pH value determined in Step 2 testing. Figure 5-3 shows the effect of alum dose on DOC residuals for Twitchell Island drain water (Sampling Event 1) when the pH was controlled about 4.5. The optimum dose (100 mg/L alum) occurs when further chemical addition produces little or no decrease (or even an increase) in the DOC residual. Turbidity is low at the optimum dose, indicating that floc can be readily removed by settling.

Membrane Testing Experiments

For the bench-scale membrane testing, CU-Boulder used a cross-flow flat-sheet membrane testing apparatus, a schematic of which is presented on Figure 5-4. The system uses 154.8 cm^2 (24 $inch^2$) flat-sheet membranes under feed-flow conditions of approximately 300 to 500 millimeters per minute (mL/min) and cross-flow velocities of 0.1 to 0.2 meters per second (m/sec), equal to 0.33 to 0.67 feet per second. This system simulates tangential flow that would occur in a full-scale unit. The bench-scale system recycled 100 percent of the permeate and waste/retentate, thus maintaining a constant feed water DOC concentration. The waste/retentate is also known as the residue.

The four types of membranes evaluated in membrane testing were:

1. F45--A nanofiltration membrane, thin-film composite, MWCO[a] = 300 daltons[b], MTCw[c] = 0.3 gfd/psi, manufacturer: Film Tech

2. YM3--An ultrafiltration membrane, regenerated cellulose, MWCO = 3,000 daltons, MTCw = 1.02 gfd/psi, manufacturer: Amicon

3. GM--An ultrafiltration membrane, polyamide, MWCO = 8,000 daltons, MTCw = 0.74 gfd/psi, manufacturer: Desal

Figure 5-2. Step 2 -- Determine Optimum pH, Twitchell Island Drainage, Sampling Event 2

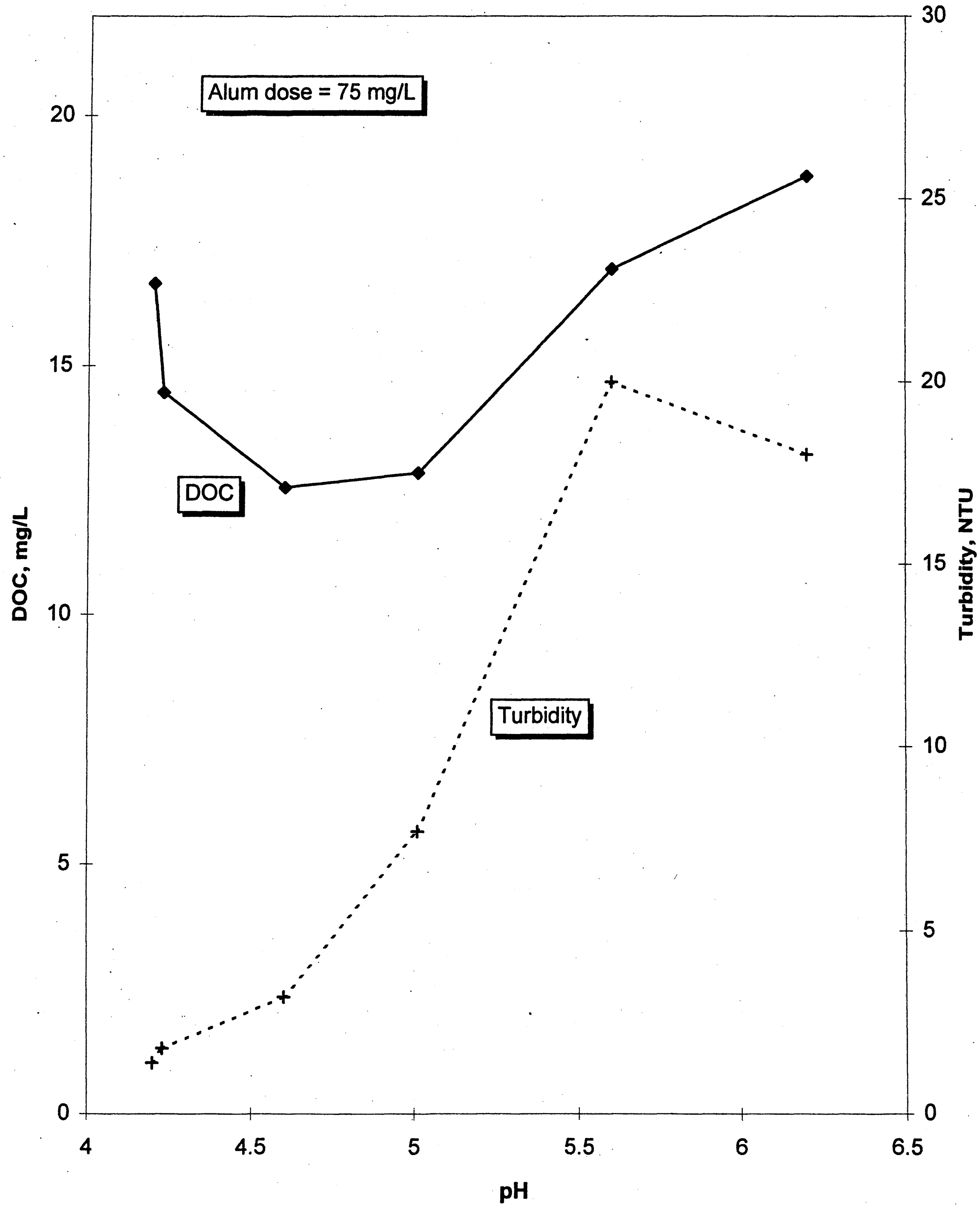


Figure 5-3. Step 3--Optimized Coagulation of Twitchell Island Drainage with Alum, Sampling Event 2

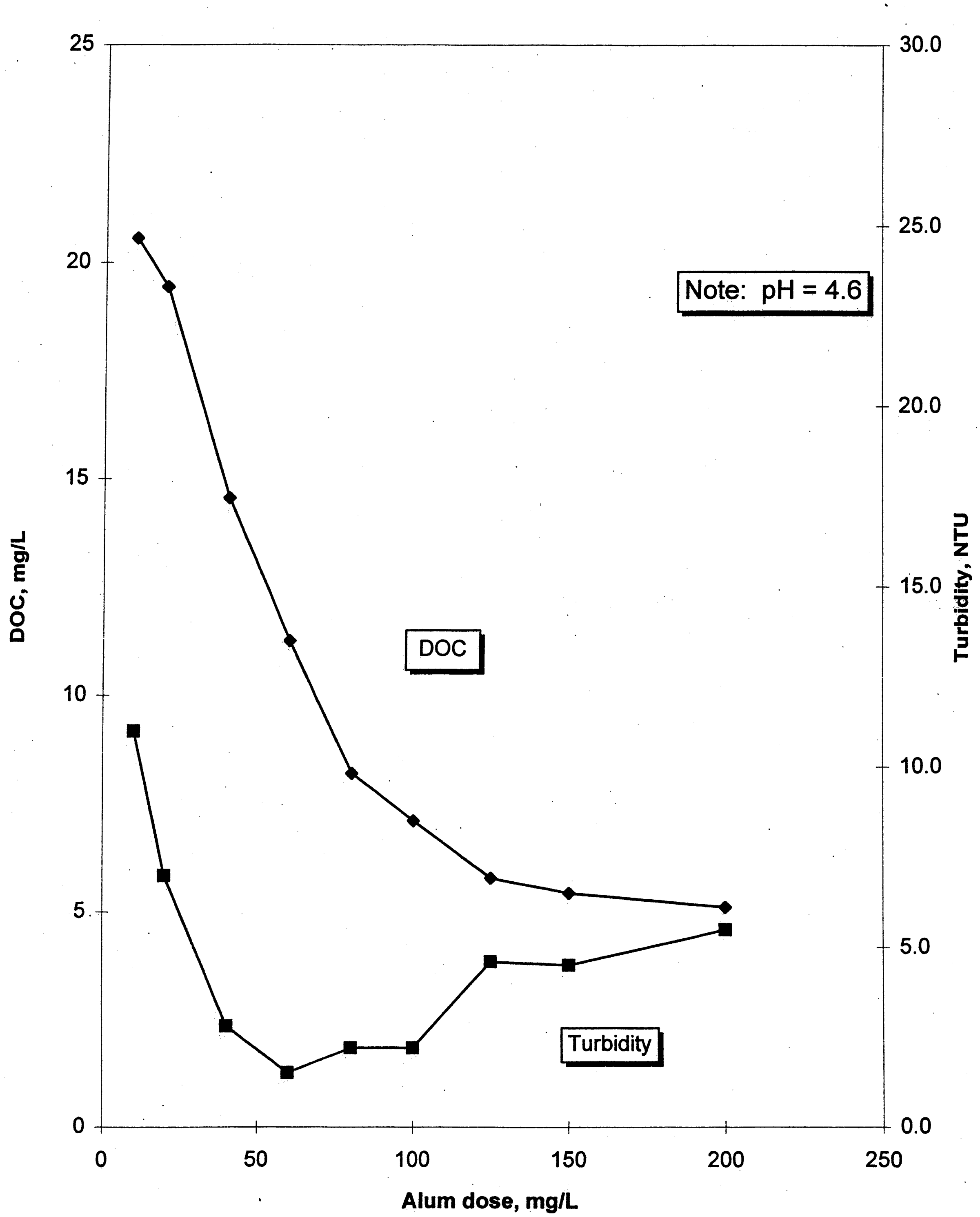
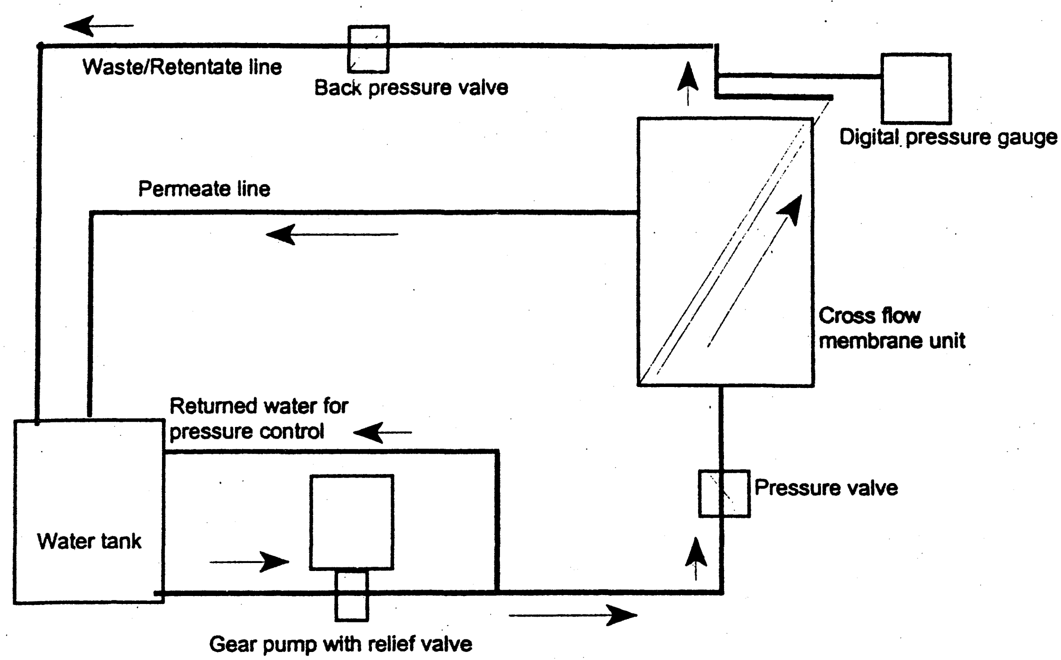


Figure 5-4. Membrane Bench-Scale Testing Apparatus



4. PM10--An ultrafiltration membrane, polysulfone, MWCO = 10,000 daltons, MTCw = 5 to 20 gfd/psi, manufacturer: Amicon

[a]MWCO = molecular weight cutoff. The membrane removes approximately 95 percent of the macromolecules larger than the MWCO.
[b]daltons = equal to the molecular weight of hydrogen.
[c]MTCw = mass transfer coefficient, which is the same as specific flux.

Selection of the types of membranes to test was based upon the characteristics of the organic matter in the drainage water tested (e.g., hydrophobicity and charge density). The two key membrane performance parameters evaluated were membrane fouling rate and DOC rejection.

Because of the limited scope of this project, and the length of time required to perform the membrane tests, membrane testing was conducted on water from the first sampling event and two water samples were tested. The project team determined that this limited membrane testing was acceptable because membrane filtration tends to be consistent. Similar results are expected with other waters.

The first water tested was Twitchell Island drainage from Sampling Event 1 that had been pretreated by filtering it through an 0.45 micron membrane filter. Filtration with an 0.45 micron filter was intended to simulate pretreatment by a microfiltration process. Pretreatment of agricultural drainage water prior to ultrafiltration or nanofiltration may be necessary to remove large particles which could damage the membrane filter. Pretreatment may also be needed to achieve economic flux rates and recovery ratios.

The second water tested was Twitchell Island water from Sampling Event 1 that had been pretreated with ferric chloride at the optimized coagulation condition. An optimized coagulation sample was tested to determine if coagulation/flocculation/sedimentation is a viable pretreatment for membrane filtration.

The steps taken in conducting the bench-scale membrane testing were as follows.

Preparing Membrane Apparatus and Sample

1. Filter the sample through an 0.45-μm filter or coagulate and settle the sample to remove particulate material.

2. Clean the membrane system with deionized water.

3. Select an appropriate membrane based upon raw water characteristics--UV_{254}, DOC, and specific ultraviolet absorbance.

4. Pass deionized water through the membrane until a constant flux is achieved.

Conducting Membrane Tests

1. Begin passing the drainage sample through the membrane.

2. Adjust the transmembrane pressure (30 - 80 psi) and feed flow rate based upon the properties of the selected membrane.

3. Monitor the permeate flow, DOC and UV_{254} over time.

4. Stop the run when both the permeate flow rates and DOC concentrations are stable.

Results from Sampling Event 1

Agricultural drain samples were collected from Twitchell Island and Bacon Island on January 30, 1997, following extreme flooding in the Delta. The flooding significantly influenced the raw water quality in the agricultural drainage water causing higher than normal organic carbon levels. The results from the raw water analyses are presented in Table 5-1.

Table 5-1. Sampling Event 1--Raw Water Quality

Sample source	TOC, mg/L	DOC, mg/L	UVA_{254}, abs/cm	THMFP,[a] μg/L	THMs,[a] μg/L	HAA6,[a] μg/L	Alkalinity, mg/L $CaCO_3$
Twitchell Island drainage	42.9	40.2	1.79	3940	3280	2900	80
Bacon Island drainage	26.2	24.2	0.997	2550	1950	1696	60

[a]THMFP: total trihalomethane formation potential as determined by the DWR modified THMFP method (chlorine dose at 120 mg/L, pH 8.5, hold for 7 days). THMs: total trihalomethanes by the DWR "reactivity method". HAA6: formation of 6 haloacetic acids by the DWR "reactivity method" [chlorine dose = (3 x DOC mg/L) + (7.6xNH_3-N, mg/L), hold for 7 days].

Bench-scale testing of these agricultural drainage samples included jar testing to test alum and ferric chloride coagulation and flat-sheet membrane testing to evaluate the performance of ultrafiltration and nanofiltration membranes.

Jar Testing Results

The data discussed here are the results from the final stage of optimized coagulation testing (Step 3) for both alum and ferric chloride. A complete set of results, including results from the intermediate stages of the bench-scale testing, are presented in the technical memorandum prepared by CU-Boulder, Technical Memorandum 2--Treatment of Delta Water by Coagulation and Membranes.

Note that alum dosages are expressed in this report as $Al_2(SO_4)_3 \bullet 14H_2O$ and ferric chloride dosages as $FeCl_3 \bullet 6H_2O$.

Twitchell Island Drainage Results

Of the two water samples, the percent DOC removal was greatest for Twitchell Island drainage samples. The Twitchell Island samples had the greatest initial DOC concentrations. Figures 5-5 and 5-6 present the dose-response curves for optimized alum and ferric chloride coagulation of Twitchell Island samples, respectively. The selection of the coagulant dose for the optimized coagulation conditions is based upon obtaining maximum DOC and turbidity removals with minimum coagulant doses.

For alum coagulation, the optimized condition occurs when the alum dose is 100 mg/L and the pH is 4.5. For ferric chloride coagulation, the optimized condition occurs when the ferric chloride dose is 95 mg/L and the pH is 3.5. Additional data generated from the optimized coagulation stage of testing on Twitchell Island drainage water are presented in Tables 5-2 and 5-3.

Figure 5-7 compares DOC and turbidity removal from Twitchell Island drainage by alum and ferric chloride optimized coagulation for Sampling Event 1. Ferric chloride reduces DOC more completely than alum over the entire range of chemical dose. Ferric chloride also removes turbidity better.

Enhanced Coagulation Compared to Optimized Coagulation

To compare the impact that independent pH adjustment has on coagulant dose required and DOC removal, optimized coagulation results for Twitchell Island drainage samples are compared with the enhanced coagulation results on Figure 5-8. Recall that enhanced coagulation involves controlling only coagulant dose. Optimized coagulation involves controlling both coagulant dose and pH levels. Typically a lower coagulant dose is required when the pH can be controlled at its optimum value.

When the ferric chloride dose is 125 mg/L and the pH is not controlled (enhanced coagulation), the DOC concentration is reduced from 41 to 16 mg/L. Nearly identical DOC removal is obtained when the pH is controlled (optimized coagulation) at a ferric chloride dose of only 75 mg/L.

Figure 5-5. Optimized Coagulation of Twitchell Island Drainage with Alum, Sampling Event 1

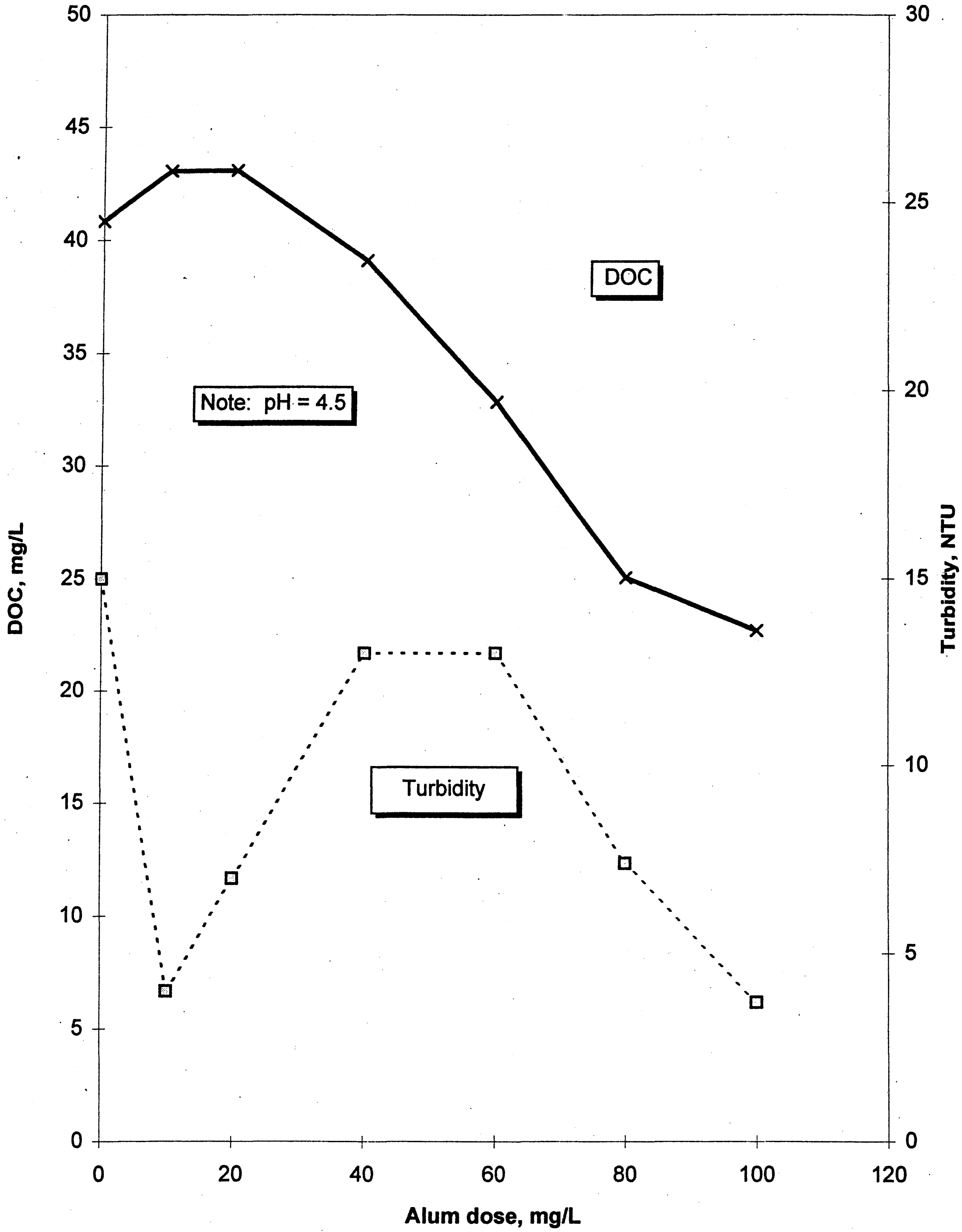


Figure 5-6. Optimized Coagulation of Twitchell Island Drainage with Ferric Chloride, Sampling Event 1

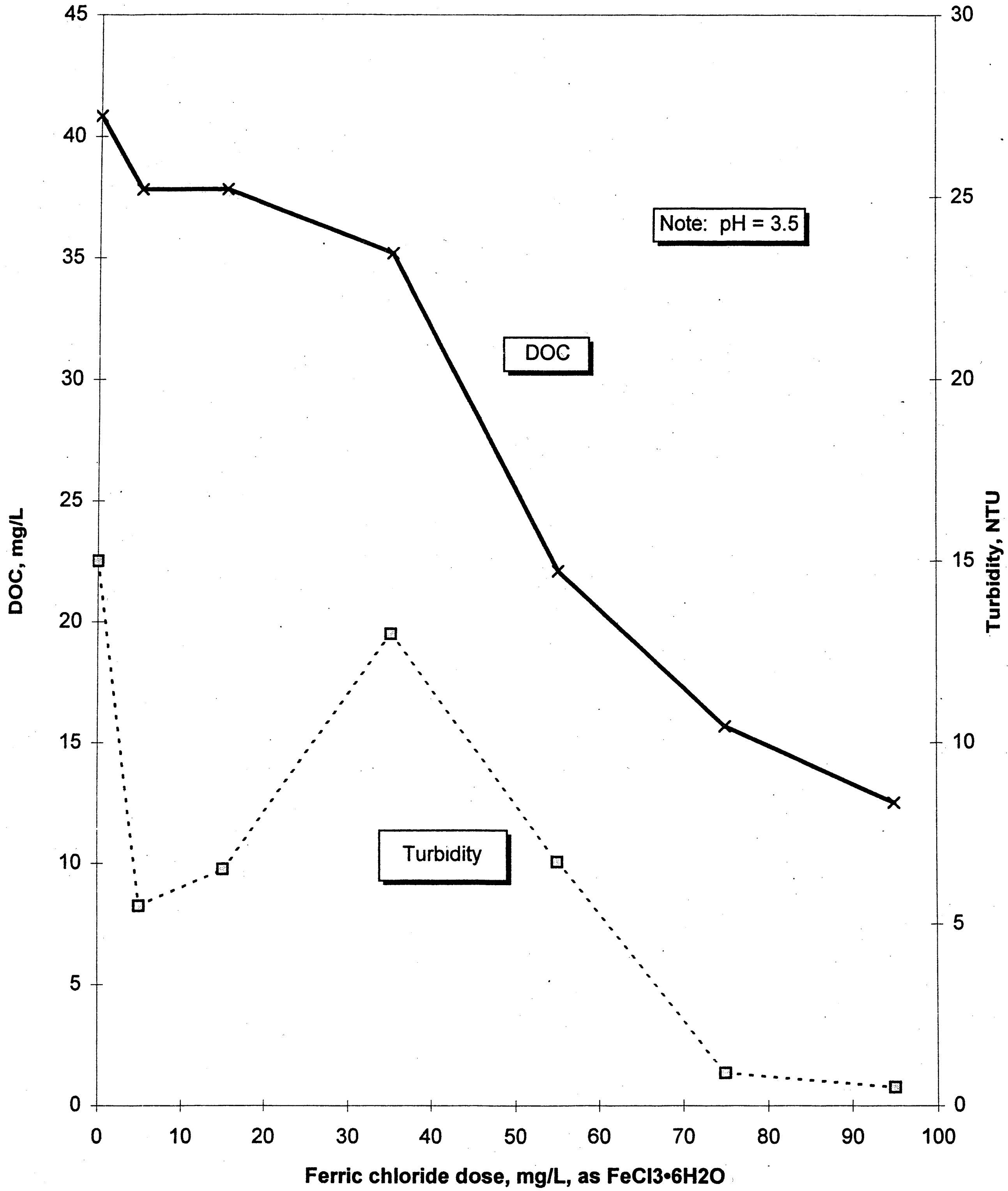


Table 5-2. Sampling Event 1, Alum--Optimized Coagulation of Twitchell Island Water

Alum dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
10	4.81	43.04	-6	1.742	4.0	-14.77
20	4.37	43.08	-6	1.594	7.0	-10.77
40	4.51	39.10	4	1.155	13.0	-20.71
60	4.49	32.82	19	0.827	13.0	-13.95
80	4.55	25.04	38	0.826	7.4	-1.66
100	4.45	22.68	44	0.593	3.7	-10.63

[a]Alum expressed as $Al_2(SO_4)_3 \bullet 14H_2O$
[b]Target pH = 4.5
Raw water: UVA_{254}= 1.811 Abs/cm
DOC = 40.84 mg/L
turbidity = 15 NTU

Table 5-3. Sampling Event 1, Ferric Chloride--Optimized Coagulation of Twitchell Island Water

Ferric chloride dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
5	3.11	37.80	7	1.778	5.5	-15.6
15	3.08	37.80	7	1.877	6.5	-7.87
35	3.05	35.18	13	1.684	13.0	-8.42
55	3.14	22.08	46	0.798	6.7	-19.63
75	3.18	15.68	61	0.569	0.9	46.74
95	3.21	12.51	69	0.439	0.5	6.41

[a]Ferric chloride expressed as $FeCl_3 \bullet 6H_2O$
[b]Target pH = 3.5
Raw water: UVA_{254}= 1.811 Abs/cm
DOC = 40.84 mg/L
turbidity = 15 NTU

Figure 5-7. Comparing Optimized Alum and Ferric Chloride Coagulation for DOC and Turbidity Removal, Twitchell Island Drainage, Sampling Event 1

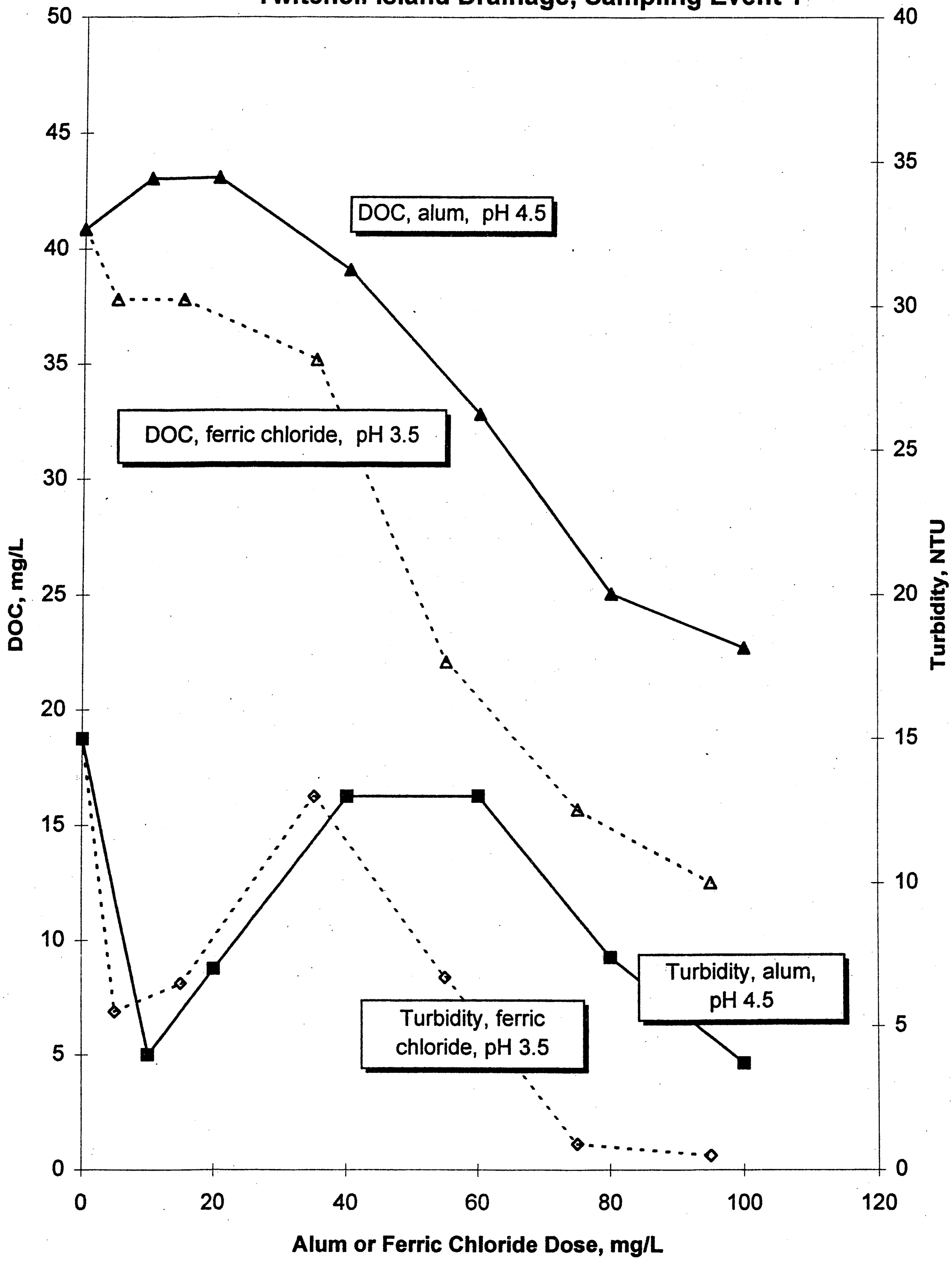
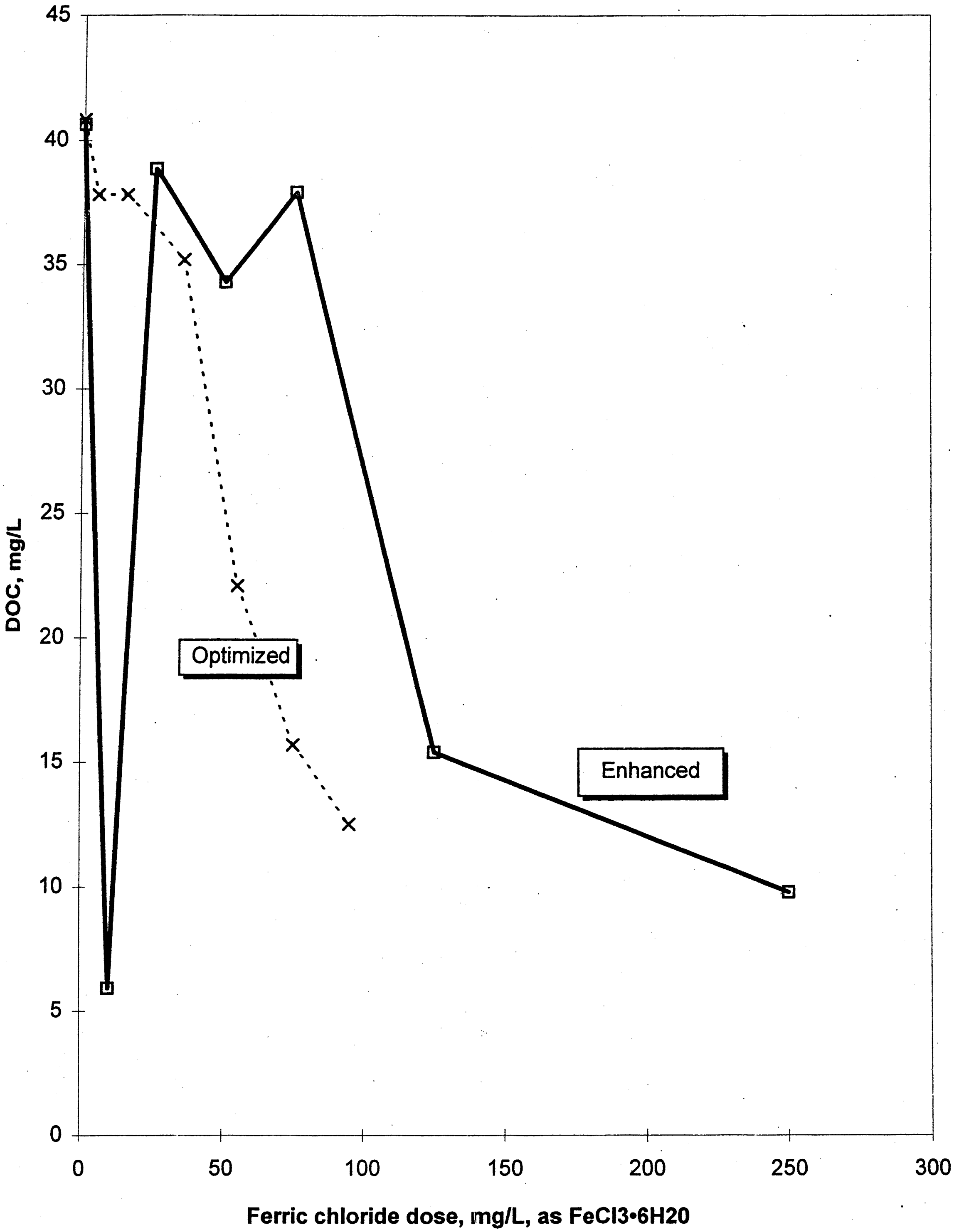


Figure 5-8. Enhanced Coagulation vs. Optimized Coagulation, Ferric Chloride Treatment of Twitchell Island Drainage, Sampling Event 1



Bacon Island Drainage Results

Dose-response curves generated from the optimized coagulation testing for the Bacon Island drainage are presented on Figures 5-9 and 5-10. Additional data generated from the optimized coagulation stage of the jar testing are presented in Tables 5-4 and 5-5.

Figure 5-11 compares DOC and turbidity removal from Bacon Island drainage by alum and ferric chloride optimized coagulation for Sampling Event 1. Ferric chloride reduces DOC more completely than alum over nearly the entire range of chemical dose. However, alum generally provides better turbidity removal.

Based upon these results, the optimized coagulation condition for alum treatment of Bacon Island drainage was determined to be an alum dose of 100 mg/L at a target pH of 4.5 The optimized coagulation condition for ferric chloride was determined to be a ferric chloride dose of 75 mg/L and a target pH of 3.5.

Separate samples from Sampling Events 1 and 2 were treated at optimum conditions with alum and ferric chloride. The treated samples were sent to Bryte Laboratory for analyses of important components that were not routinely measured by CU-Boulder in the bench tests. Table 5-6 compares raw- and treated-water results for alum- and ferric chloride-treated Twitchell Island Drainage from Sampling Event 1. Appendix A contains results for Bacon Island, Sampling Event 1, and Bacon and Twitchell Island, Sampling Event 2.

Table 5-6 shows percentage removals of THMFP and haloacetic acid formation potential HAAFP. Percentage removal of the summed species corresponded approximately to percentage DOC removal. Ferric chloride coagulation removed more THMFP and HAAFP than did alum coagulation. This is not surprising, since the former has a better capability of removing DOC.

Treatment can increase sulfate, chloride, sodium, calcium, and iron or aluminum concentrations depending on the treatment chemicals used. The total dissolved salt concentration of the treated water was not much different than the TDS concentration of the raw water. Apparently, transfer of CO_2 from the water to atmosphere occurred during the low-pH coagulation process. The CO_2 loss nearly balanced TDS increases contributed by chemical treatment. Though treatment changed TDS little, the ionic makeup of the treated water is different from that of the raw water (more sulfate and chloride, less inorganic carbon). Inorganic carbon can be partially restored by using soda ash (Na_2CO_3) instead of lime ($Ca(OH)_2$) or caustic (NaOH) to neutralize the treated water prior to its discharge.

Figure 5-9 Optimized Coagulation of Bacon Island Drainage with Alum, Sample Event 1

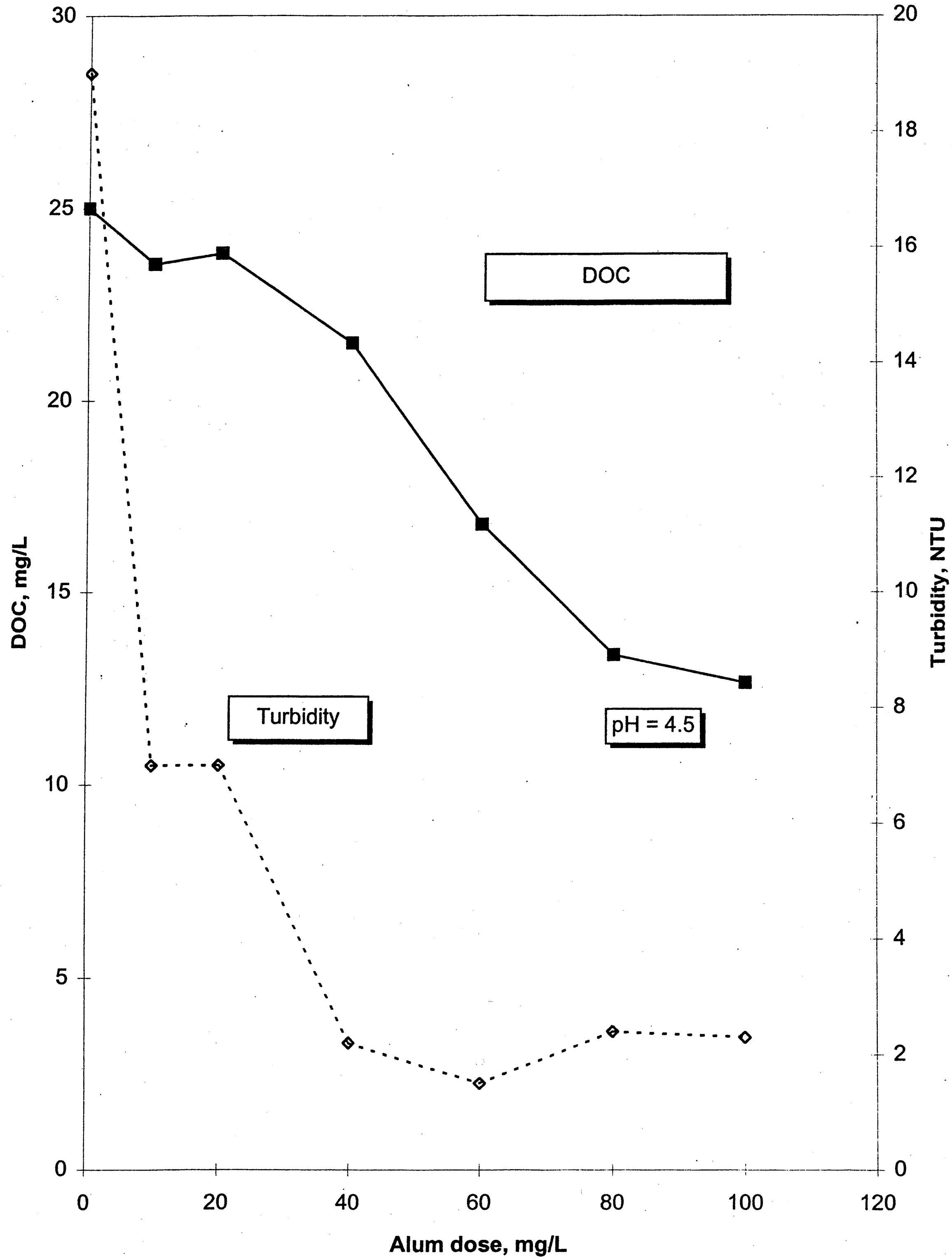


Figure 5-10 Optimized Coagulation of Bacon Island Drainage with Ferric Chloride, Sampling Event 1

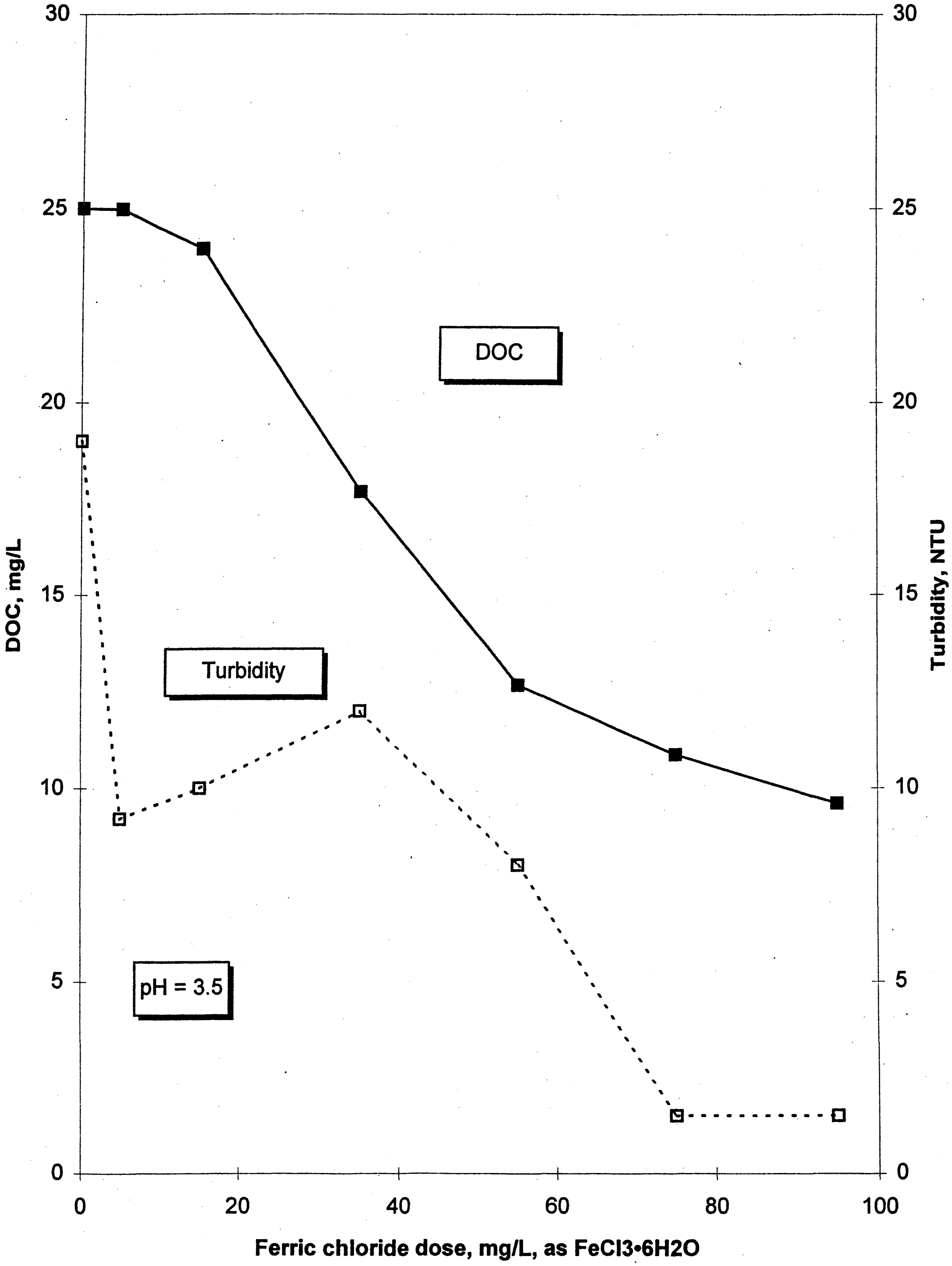


Table 5-4. Sampling Event 1, Alum--Optimized Coagulation of Bacon Island Water

Alum dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
10	4.77	23.55	3	0.948	7.0	-16.54
20	4.57	23.83	2	0.827	7.0	-18.83
40	4.43	21.49	12	0.682	2.2	-3.04
60	4.52	16.76	31	0.453	1.5	-12.23
80	4.83	13.36	45	0.335	2.4	-26.37
100	5.3	12.64	48	0.292	2.3	-2.35

[a]Alum expressed as $Al_2(SO_4)_3 \bullet 14H_2O$
[b]Target pH = 4.5
Raw water: UVA_{254}= 0.98 Abs/cm
DOC = 25.0 mg/L
turbidity = 19 NTU

Table 5-5. Sampling Event 1, Ferric Chloride--Optimized Coagulation of Bacon Island Water

Ferric chloride dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
5	3.95	24.98	- 3	1.013	9.2	-1.52
15	3.91	23.96	2	1.089	10.0	-8.01
35	3.57	17.67	27	0.708	12.0	-7.73
55	3.50	12.67	48	0.404	8.0	-4.69
75	3.45	10.87	55	0.314	1.5	-9.53
95	3.64	9.588	61	0.234	1.5	11.32

[a]Ferric chloride expressed as $FeCl_3 \bullet 6H_2O$
[b]Target pH = 3.5
Raw water: UVA_{254}= 0.98 Abs/cm
DOC = 25.0 mg/L
turbidity = 19 NTU

Figure 5-11. Comparing Optimized Alum and Ferric Chloride Coagulation for DOC and Turbidity Removal, Bacon Island Drainage, Sampling Event 1

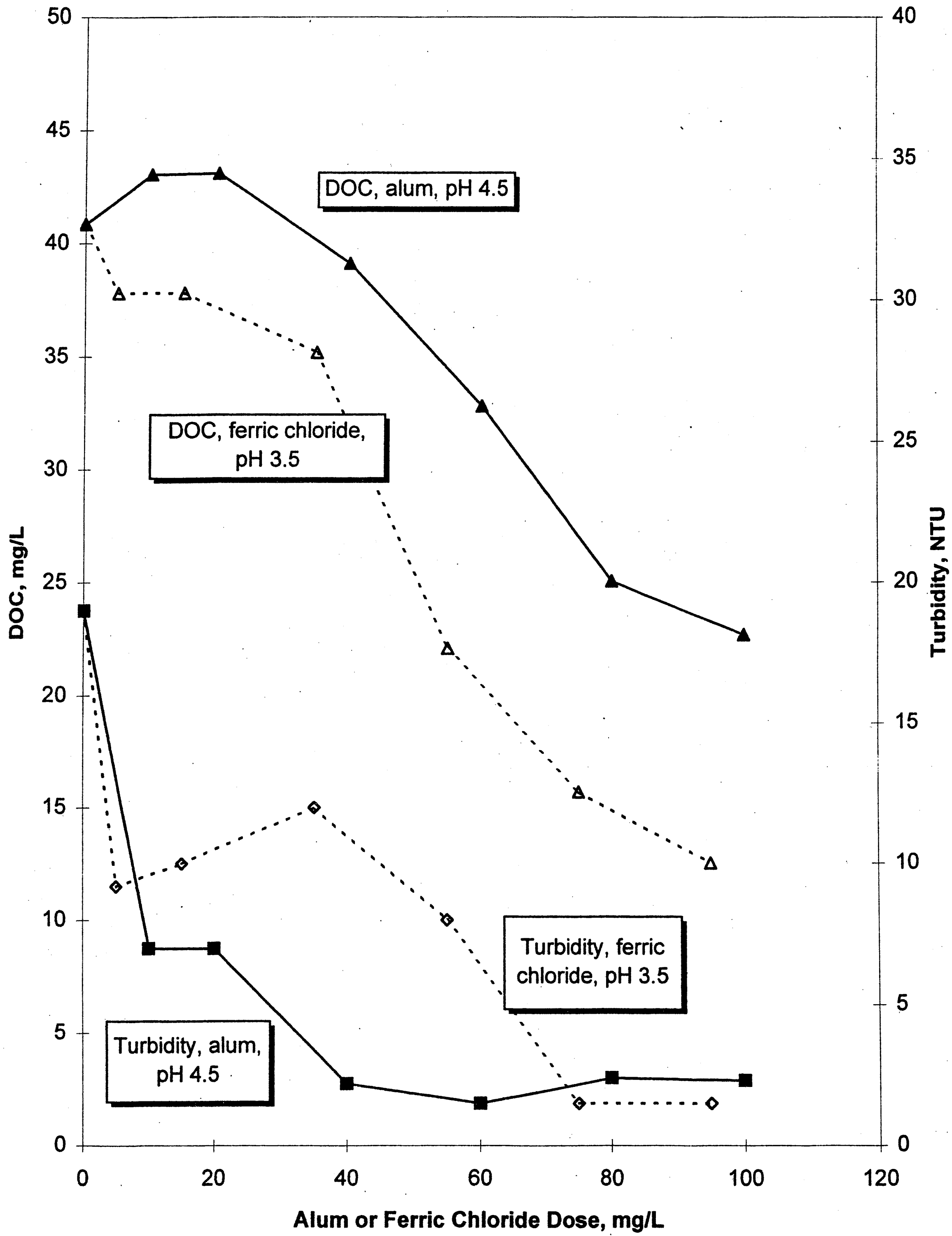


Table 5-6. Removal of Important Selected Water Quality Parameters from Twitchell Island Drainage, Sampling Event 1

Parameter[a]	Raw water concentration	Alum treated: Treated water concentration	Alum treated: Percent removal	Ferric chloride treated: Treated water concentration	Ferric chloride treated: Percent removal
TOC	42.9	---	---	---	---
DOC	40.2	19.5	46	10.7	73
UVA_{254}	1.79	0.625	65	0.355	80
THFMP (DWR modified), µg/L					
$CHCl_3$	3,600	1,900	47	1,100	69
BDCM	340	300	12	260	24
DBCM	<40	35	---	62	---
$CHBr_3$	<40	<20	---	<10	---
TTHM	3,640	2,235	39	1,422	61
THMFP (reactivity based), µg/L					
$CHCl_3$	2,900	1,400	52	700	76
BDCM	380	310	18	230	39
DBCM	<50	<40	---	77	---
$CHBr_3$	<50	<40	---	<20	---
$TTHM_{(R)}$	3,280	1,710	48	1,007	69
HAAFP (reactivity based), µg/L					
BAA	<20	<8	---	<4	---
BCAA	100	96	4	40	60
CAA	<20	<8	---	<4	---
DBAA	<20	<8	---	<4	---
DCAA	1,100	480	56	220	72
TCAA	1,700	600	65	220	87
THAA6	2,900	1,176	59	480	83

Table 5-6. Removal of Important Selected Water Quality Parameters from Twitchell Island Drainage, Sampling Event 1 (continued)

Parameter[a]	Raw water concentration	Alum treated: Treated water concentration	Alum treated: Percent removal	Ferric chloride treated: Treated water concentration	Ferric chloride treated: Percent removal
Sulfate	170	238	(40)[b]	205	(21)
Chloride	154	151	2	190	(23)
TDS	709	698	2	691	3
Bromide	0.36	0.37	(3)	0.37	(3)

[a]All concentrates in mg/L unless otherwise noted.
[b]( ) signifies negative percentage removal; i.e., treatment causes an increase in concentration.

Membrane Testing Results

Two membrane tests were conducted on two Twitchell Island source waters from the first round of bench-scale testing. Test 1 was conducted on prefiltered Twitchell Island raw water and Test 2 was conducted on Twitchell Island water that had been pretreated with optimized ferric chloride coagulation.

Test 1

Nanofiltration and ultrafiltration tests were performed on raw Twitchell Island water that had been filtered through a 0.45-μm filter. This prefiltration step simulates pretreatment with a microfiltration membrane.

The membranes were tested individually. DOC removals and flux rates were monitored over time. Once these parameters stabilized, the stabilized flux rate was noted and a full sample was collected for water quality analyses. Figure 5-12 presents removals achieved for DOC, UVA_{254}, and THMFP. Table 5-7 presents DOC and UVA_{254} removals and corresponding membrane flux rates.

Evaluating the results presented in Figure 5-12 and Table 5-7, show that nanofiltration membranes can achieve high DOC removals and their flux rates are significantly less than those of ultrafiltration membranes.

Test 2

Nanofiltration and ultrafiltration tests were performed on supernatant from Twitchell Island water that had been treated with optimized ferric chloride coagulation. Ferric chloride coagulation is a pretreatment step.

One nanofiltration and one ultrafiltration membrane were tested. The nanofiltration membrane tested was the nanofiltration membrane evaluated in Test 1 (NF 45). The ultrafiltration membrane tested was the one which performed the best in Test 1 (GM). Table 5-8 presents DOC and UVA removal data for the combined coagulation/membrane process and membrane flux rates.

The percent DOC and UVA removals achieved by the coagulation/NF and coagulation/UF treatments in Test 2 are closer to one another than the percent DOC and UVA_{254} removals achieved by prefiltration/NF and prefiltration/UF in Test 1. The smaller difference in removal efficiency in Test 2 is caused by coagulation pretreatment removing a high portion of DOC and UVA_{254} for both membranes. In Test 2, the nanofiltration membrane removed 86 and 95 percent of DOC and UVA_{254} remaining in the coagulated water. The ultrafiltration membrane removed 37 and 56 percent of the DOC and UVA_{254} remaining in the coagulated water. The ultrafiltration membrane shows much poorer DOC and UVA_{254} removal than the nanofiltration membrane.

Figure 5-12. Membrane Testing Results, Prefiltered Twitchell Island Water

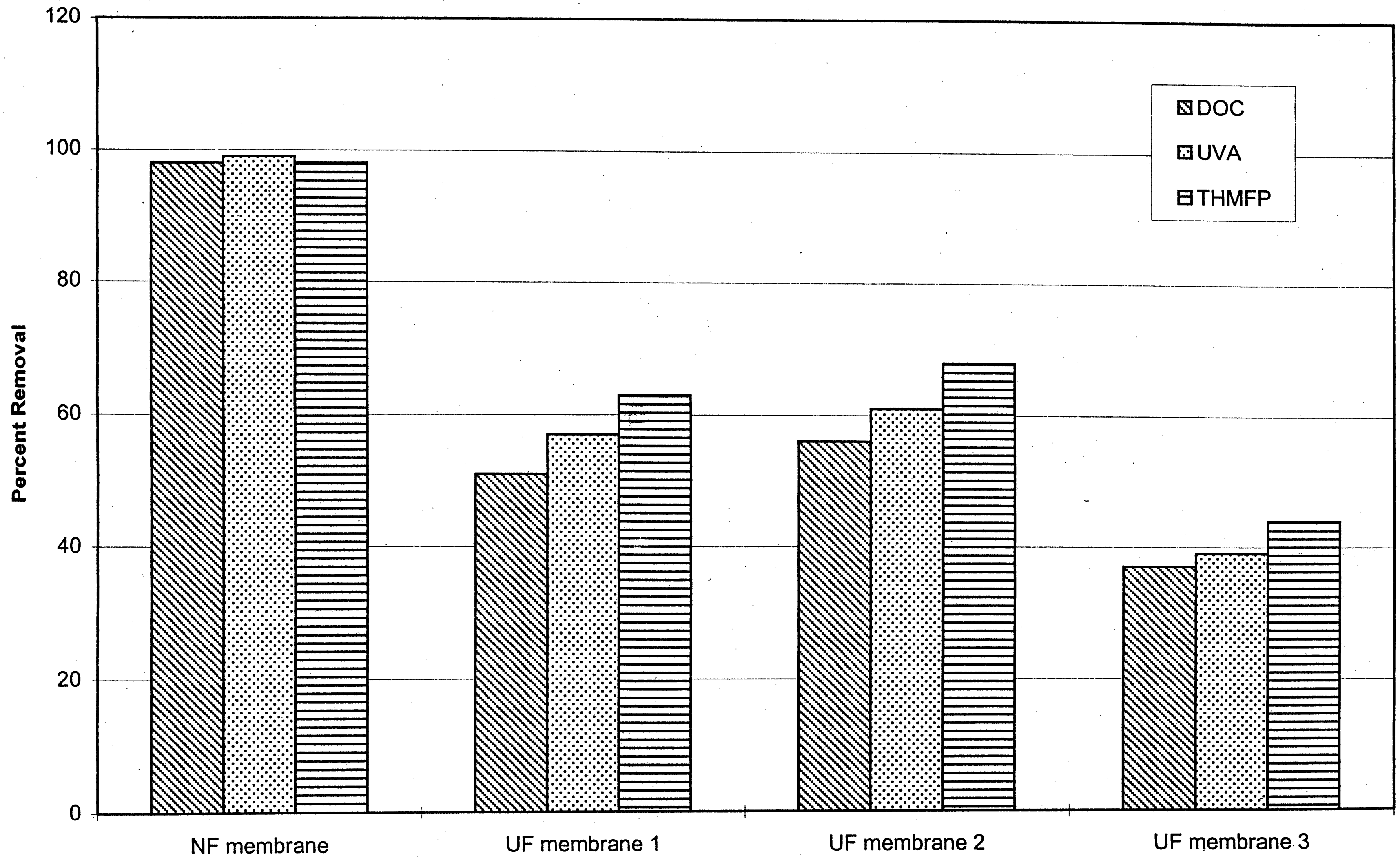


Table 5-7. Test 1, Prefiltration + Membranes--DOC Removals and Flux Rates

Membrane	Percent DOC removal	Percent UVA_{254} removal	Flux rate, gfd/psi[a]
NF membrane (NF 45)	98	99	0.3
UF membrane 1 (YM3)	51	57	0.8
UF membrane 2 (GM)	56	61	0.7
UF membrane 3 (PM10)	37	39	1.6

[a]gfd/psi: gallons per square foot per day/pounds per square inch

Table 5-8. Test 2, Coagulation + Membranes--DOC Removals and Flux Rates

Treatment	Percent DOC removal[a]	Percent UVA_{254} removal[a]	Flux rate, gfd/psi[b]
Coagulation + NF 45	96	99	0.34
Coagulation + UF (GM)	81	91	0.81

[a]Percent DOC and UVA removals are the combined removals from both the optimized ferric chloride coagulation and the membrane filtration.
[b]gfd/psi: gallons per square foot per day/pounds per square inch.

As in Test 1, the flux rate for the nanofiltration membrane is much lower than for the ultrafiltration membrane, with the nanofiltration flux rate approximately 42 percent of the ultrafiltration flux rate.

Comparison of Sampling Event 1 Treatment Methods

Table 5-9 compares results for each treatment method tested. Only the results from testing of Twitchell Island water are compared because that was the only water for which all treatment categories were tested. Those treatment methods which, based upon DOC and UV_{254} removal, performed the best for their category (e.g., coagulation, microfiltration + membrane filtration, and coagulation + membrane filtration) are shown in bold.

Table 5-9. Sampling Event 1, Twitchell Island--Comparison of Treatment Methods

Treatment method	DOC removal, percent	UV_{254} removal, percent
Optimized ferric chloride coagulation	**69**	**76**
Optimized alum coagulation	44	67
Microfiltration + ultrafiltration[a]	56	61
Microfiltration + nanofiltration	**98**	**99**
Ferric chloride coagulation + ultrafiltration[a]	81	91
Ferric chloride coagulation + nanofiltration	**96**	**99**

[a]Ultrafiltration Membrane 2 (GM).

To evaluate these best-performing treatment methods--optimized ferric chloride coagulation, microfiltration + nanofiltration, and coagulation + nanofiltration--cost information for full-scale treatment must be developed and compared. The cost of these treatments vary significantly impacting their practicality. These cost data and a cost comparison are presented later in this chapter.

Results from Sampling Event 2

Presented here are the jar test results from the second bench-scale testing which consisted of alum and ferric chloride coagulation testing. There was no membrane testing. Agricultural drain samples were collected from Twitchell Island and Bacon Island on March 12, 1997, following a relatively dry winter period with no significant rainfall events occurring since the flooding in early January 1997. The water quality from the second sampling event can be considered relatively normal winter drainage without influence from storm runoff. The results from the raw water analyses are presented in Table 5-10.

Table 5-10. Sampling Event 2--Raw Water Quality

Sample source	TOC, mg/L	DOC, mg/L	UVA_{254}, abs/cm	THMFP,[a] μg/L	THMs,[a] μg/L	HAA6,[a] μg/L	Alkalinity, mg/L as $CaCO_3$
Twitchell Island drainage	22.14	21.38	1.107	2,285	1,740	1,240	87
Bacon Island drainage	12.38	11.15	0.633	1,330	1,010	828	101

[a]THMFP: total trihalomethane formation potential as determined by the DWR modified THMFP method (chlorine dose at 120 mg/L, pH 8.5, hold for 7 days). THMs: total trihalomethanes by the DWR "reactivity method". HAA6: formation of 6 haloacetic acids by the DWR "reactivity method" [chlorine dose = (3 x DOC mg/L) + (7.6xNH_3-N, mg/L), hold for 7 days].

Similar to Sampling Event 1, the data presented are the results from the optimized coagulation testing. For this sampling event, similar DOC removals were achieved in both source waters, unlike the first sampling event where DOC removal was clearly greater for Twitchell Island water. A complete presentation and discussion of the results from Sampling Event 2 are presented in the CU-Boulder Technical Memorandum 2.

<u>Twitchell Island Drainage Results</u>

Figures 5-13 and 5-14 present the dose-response curves for optimized alum and ferric chloride coagulation of Twitchell Island samples, respectively. For alum coagulation, the optimized condition is when the alum dose is 100 mg/L and the target pH is 4.6. For ferric chloride coagulation, the optimized condition is when the ferric chloride dose is 95 mg/L and the target pH is 3.5. Additional data generated from the optimized coagulation stage of testing on Twitchell Island drainage water are presented in Tables 5-11 and 5-12.

Figure 5-13. Optimized Coagulation of Twitchell Island Drainage with Alum, Sampling Event 2

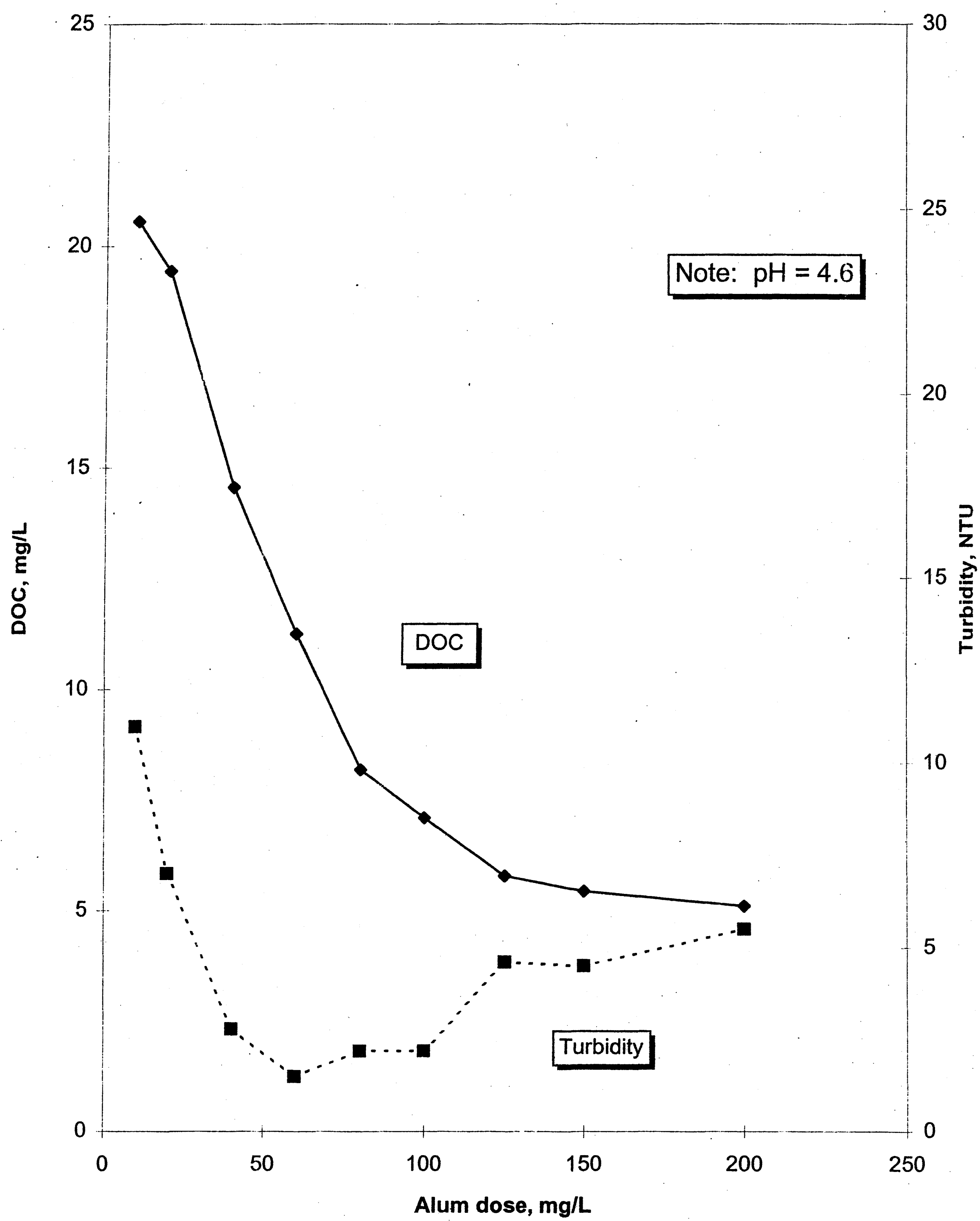


Figure 5-14. Optimized Coagulation of Twitchell Island Drainage with Ferric Chloride, Sampling Event 2

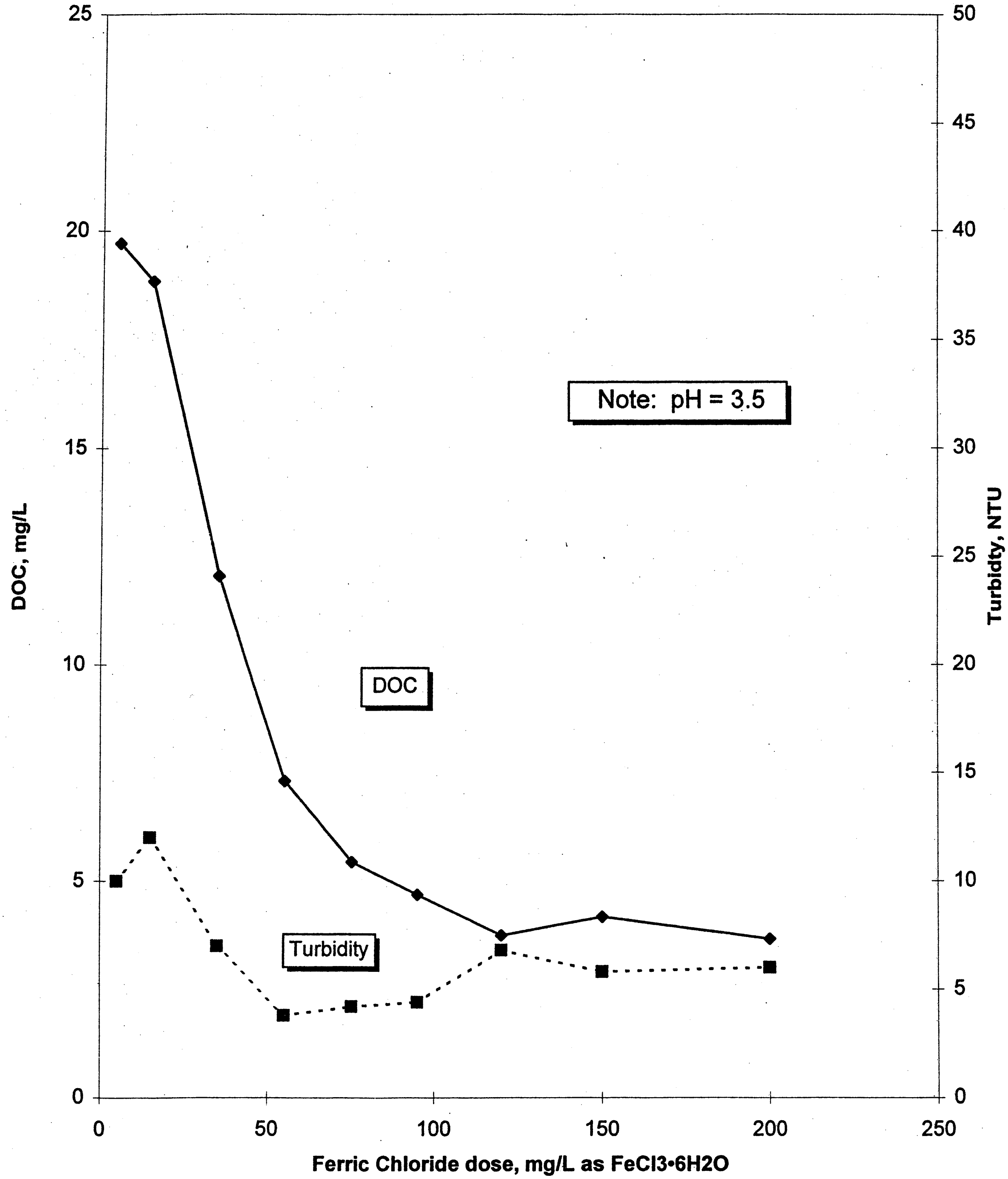


Table 5-11. Sampling Event 2, Alum--Optimized Coagulation of Twitchell Island Water

Alum dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
10	3.97	20.56	4	1.023	11.0	-20.57
20	4.17	19.43	9	0.792	7.0	-16.02
40	4.43	14.55	32	0.478	2.8	-9.39
60	4.44	11.25	47	0.326	1.5	-8.42
80	4.61	8.19	62	0.201	2.2	-5.94
100	4.55	7.10	67	0.161	2.2	-5.80
125	4.46	5.78	73	0.130	4.6	0
150	4.56	5.43	75	0.119	4.5	0.97
200	4.47	5.10	76	0.113	5.5	-6.64

[a]Alum expressed as $Al_2(SO_4)\bullet 14H_2O$.
[b]Target pH = 4.6.
Raw water: UVA_{254}= 1.107 Abs/cm
DOC = 21.38 mg/L
turbidity = 22 NTU

Table 5-12. Sampling Event 2, Ferric Chloride--Optimized Coagulation of Twitchell Island Water

Ferric chloride dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
5	3.24	19.71	8	1.021	10.0	-9.94
15	3.28	18.84	12	0.997	12.0	-6.77
35	3.36	12.04	44	0.542	7.0	-7.46
55	3.53	7.30	66	0.278	3.8	-22.32
75	3.57	5.43	75	0.161	4.2	-7.32
95	3.58	4.68	78	0.136	4.4	-14.89
120	3.61	3.74	83	0.104	6.8	1.52
150	3.64	4.17	80	0.084	5.8	-7.09
200	3.07	3.66	83	0.266	6.0	8.7

[a]Ferric chloride expressed as $FeCl_3 \bullet 6H_2O$.
[b]Target pH = 3.5.
Raw water: UVA_{254}= 1.107 Abs/cm
DOC = 21.38 mg/L
turbidity = 22 NTU

Figure 5-15 compares DOC and turbidity removal from Twitchell Island drainage by alum and ferric chloride optimized coagulation for Sampling Event 2. Ferric chloride reduces DOC more completely than alum over the entire range of chemical dose. However, alum removes turbidity better.

Bacon Island Drainage Results

Dose-response curves generated from the optimized alum and ferric chloride coagulation of Bacon Island drainage are presented on Figures 5-16 and 5-17, respectively. Additional data generated from the optimized coagulation stage of the jar testing are presented in Tables 5-13 and 5-14.

The optimized coagulation condition for alum treatment of Bacon Island drainage was determined to be an alum dose of 100 mg/L at a target pH of 4.5. The optimized coagulation condition for ferric chloride was determined to be a ferric chloride dose of 55 mg/L and a target pH of 3.5.

Figure 5-18 compares DOC and turbidity removal from Bacon Island drainage by alum and ferric chloride optimized coagulation for Sampling Event 2. Ferric chloride reduces DOC and turbidity more completely than alum over nearly the entire range of chemical doses.

Comparing Optimized Coagulation Results from Sampling Events 1 and 2

Ferric chloride produced lower DOC residuals than alum in all optimized coagulation tests, given equal dosages of both chemicals. These results are not surprising. Edwards (1997) indicates that ferric iron is superior to alum when the goal is to remove high percentages of DOC and the DOC has a high fraction that can be removed by coagulation. This description fits the Twitchell and Bacon Islands treatment scenarios very well. According to Edwards, alum is superior when the fraction of DOC that can be coagulated is low and only low DOC removals are needed. This description fits few Delta treatment scenarios; as a result we would expect that ferric chloride coagulation will usually be superior to alum coagulation in Delta processing scenarios.

The more relevant question is whether ferric chloride is more cost effective than alum, that is, will it cost less to produce a given TOC residual using ferric chloride than it will using alum? Cost analyses suggest that ferric chloride treatment is more cost effective. For example, the chemical cost to obtain 70 percent DOC removal by optimized coagulation of Sampling Event 2 Twitchell drainage is estimated to be about $96 million gallons of water treated for alum and about $70 million gallons of water treated for ferric chloride. Costs include the costs of the coagulant, the cost of sulfuric acid to attain the optimum pH, and the cost of lime to adjust the pH of the treated effluent to the neutral range. Since chemical costs are a high percentage of total

Figure 5-15. Comparing Optimized Alum and Ferric Chloride Coagulation for DOC and Turbidity Removal, Twitchell Island Drainage, Sampling Event 2

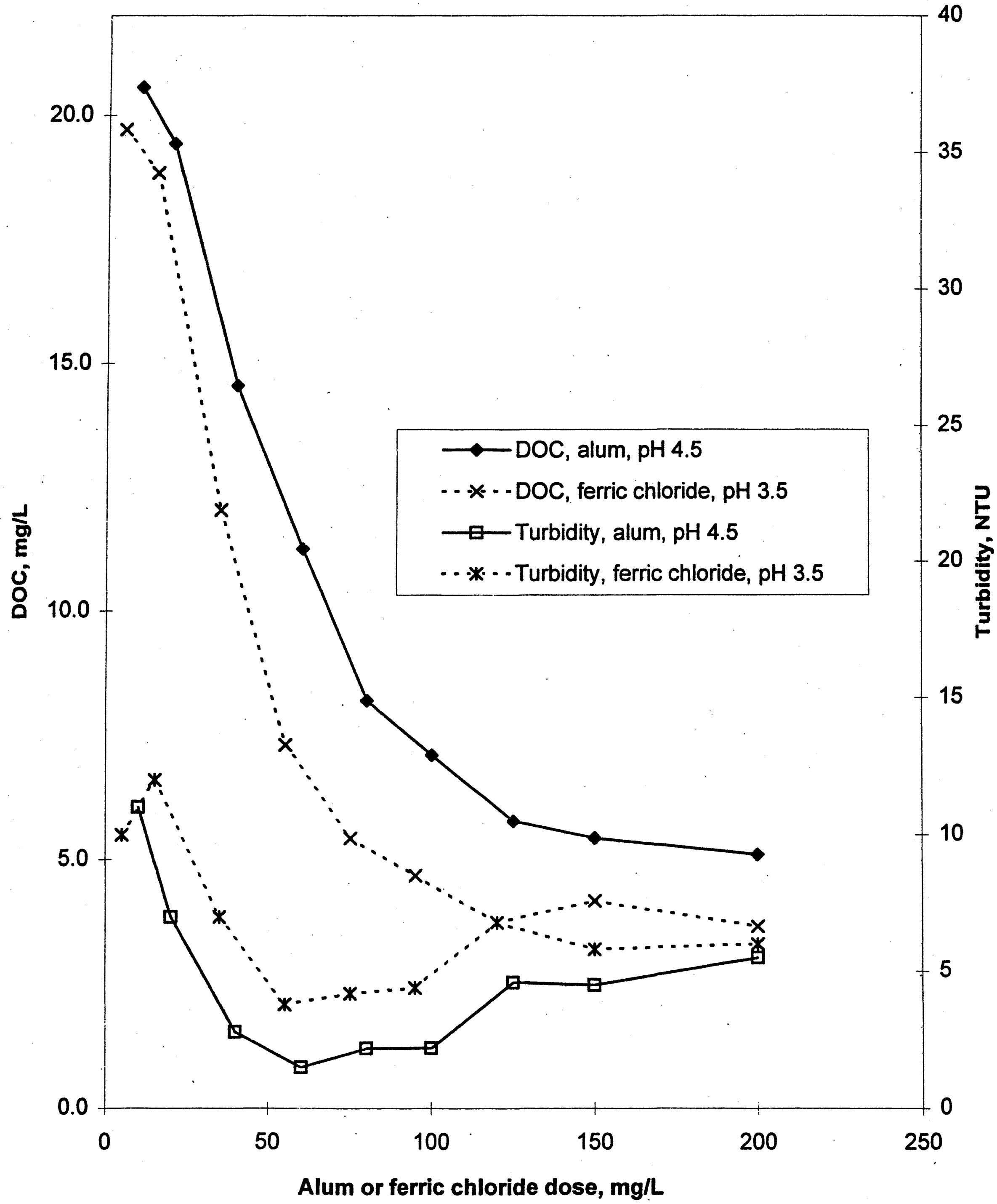


Figure 5-16. Optimized Coagulation of Bacon Island Drainage with Alum, Sampling Event 2

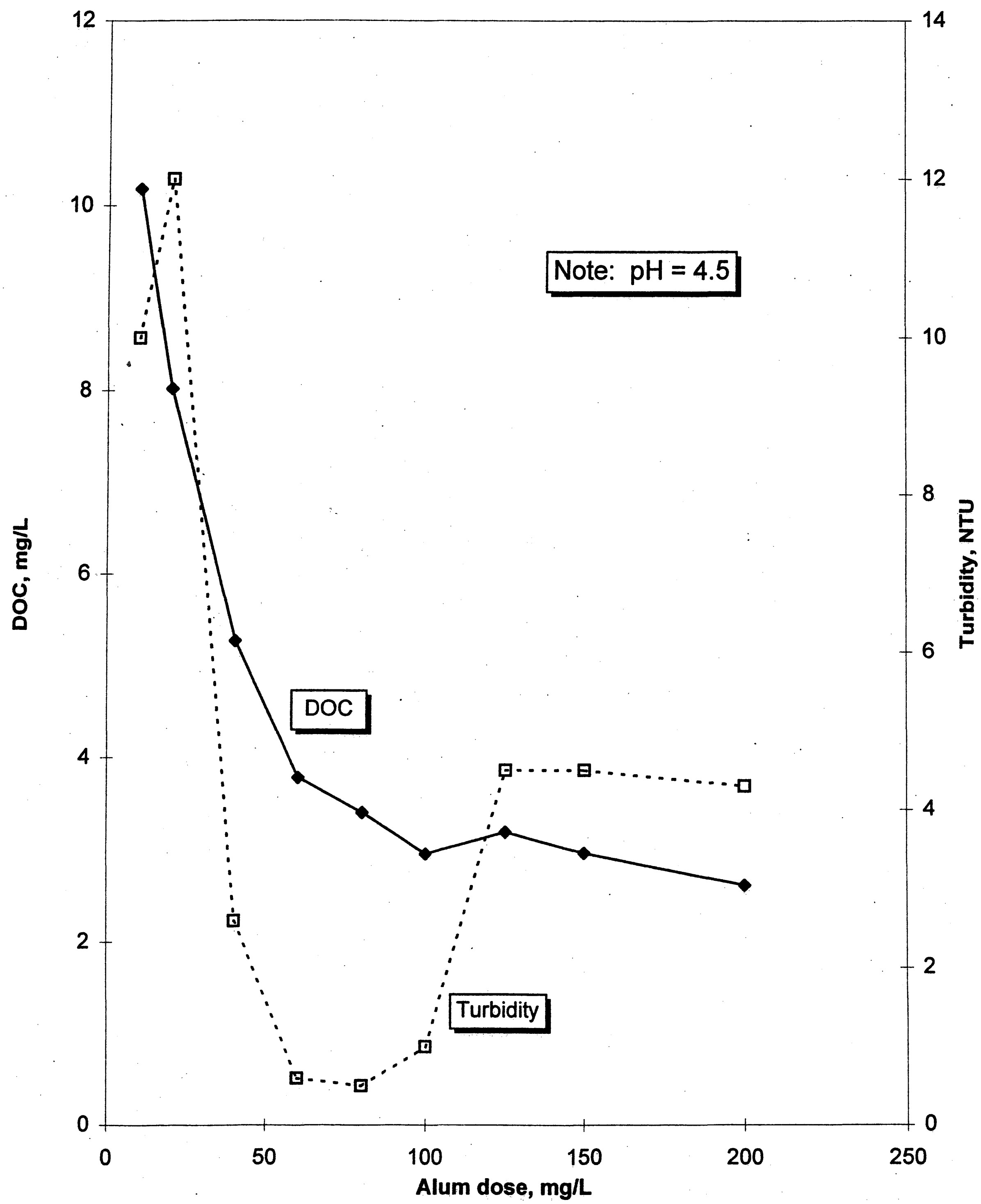


Figure 5-17. Optimized Coagulation of Bacon Island Drainage with Ferric Chloride, Sampling Event 2

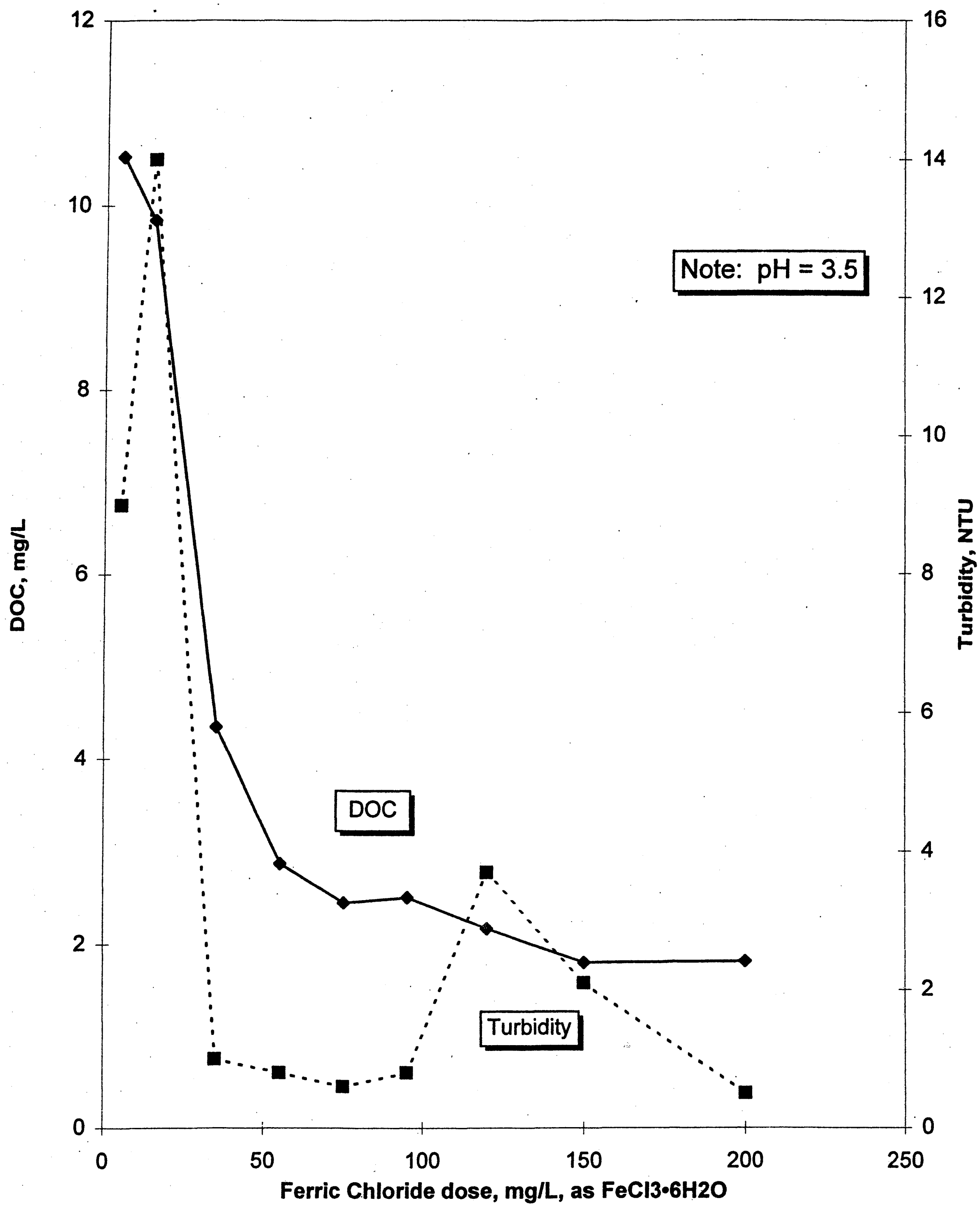


Table 5-13. Sampling Event 2, Alum--Optimized Coagulation of Bacon Island Water

Alum dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
10	4.5	10.18	9	0.591	10.0	-17.81
20	4.35	8.02	28	0.416	12.0	-16.98
40	4.31	5.27	53	0.200	2.6	-8.01
60	4.8	3.78	66	0.118	0.6	-19.11
80	4.3	3.40	70	0.093	0.5	7.04
100	4.32	2.95	74	0.081	1.0	-0.55
125	4.51	3.19	71	0.068	4.5	0
150	4.63	2.96	73	0.065	4.5	7.87
200	4.60	2.61	77	0.059	4.3	9.39

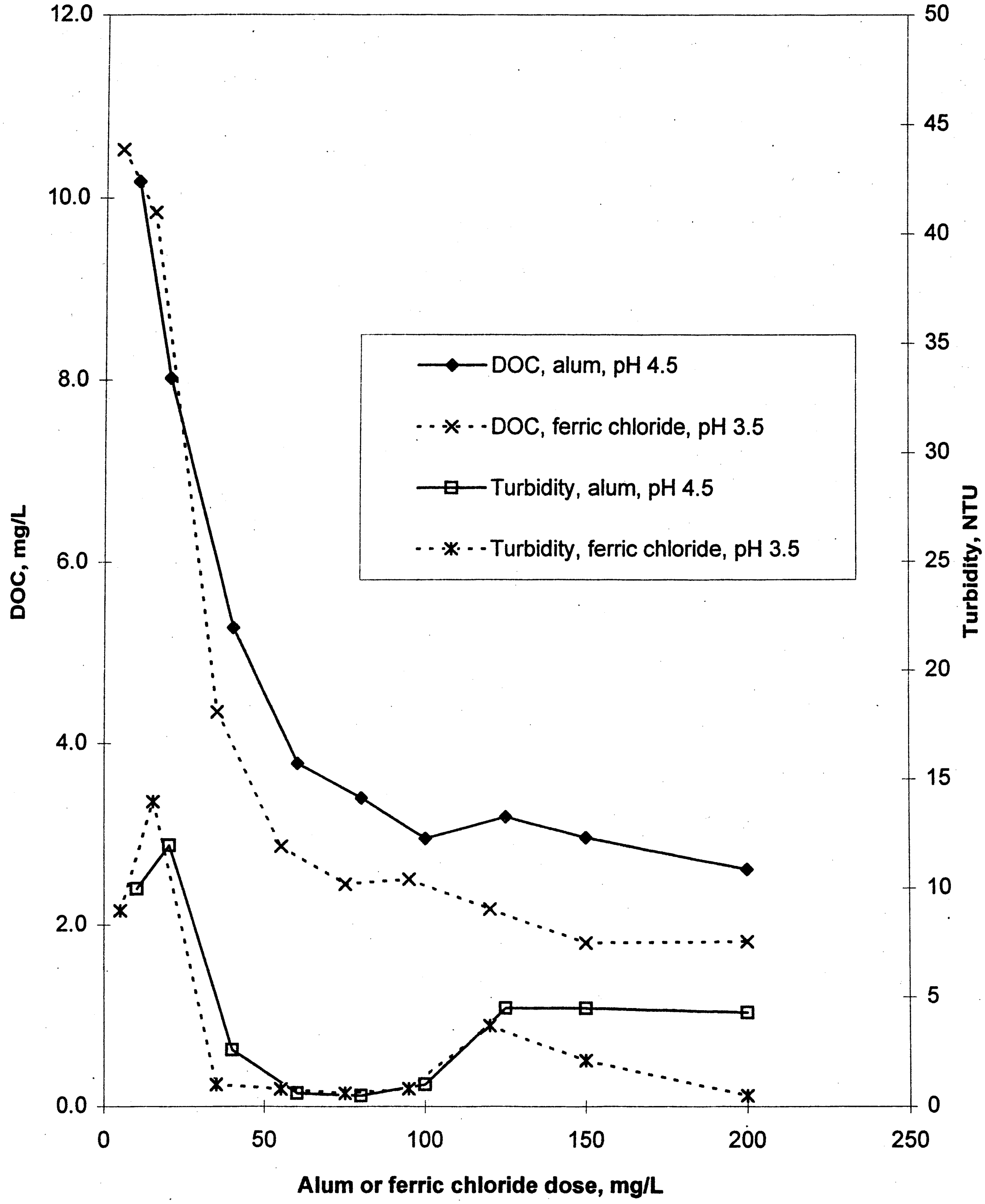
[a]Alum expressed as $Al_2(SO_4)_3 \bullet 14H_2O$.
[b]Target pH = 4.5.
Raw water: UVA_{254}= 0.633 Abs/cm
DOC = 11.15 mg/L
turbidity = 25 NTU

Table 5-14. Sampling Event 2, Ferric Chloride--Enhanced Coagulation of Bacon Island Water

Ferric chloride dose, mg/L[a]	Final pH[b]	DOC, mg/L	Percent DOC removal	UV_{254}, Abs/cm	Turbidity, NTU	Zeta potential, mV
5	3.73	10.53	6	0.644	9.0	-14.91
15	3.45	9.84	12	0.735	14.0	-36.84
35	3.40	4.34	61	0.142	1.0	-8.42
55	3.45	2.87	74	0.083	0.8	6.15
75	3.31	2.45	78	0.080	0.6	7.04
95	3.33	2.50	78	0.077	0.8	5.66
120	3.35	2.17	81	0.082	3.7	9.53
150	3.55	1.80	84	0.048	2.1	-6.49
200	3.51	1.81	84	0.042	0.5	11.32

[a]Alum expressed as $Al_2(SO_4)_3 \bullet 14H_2O$.
[b]Target pH = 3.5.
Raw water: UVA_{254}= 0.633 Abs/cm
DOC = 11.15 mg/L
turbidity = 25 NTU

Figure 5-18. Comparing Optimized Alum and Ferric Chloride Coagulation for DOC and Turbidity Removal, Bacon Island Drainage, Sampling Event 2



(life-cycle) costs, lower chemical costs provide ferric chloride with an inherent advantage. Additionally, sludge production is less for ferric chloride treatment. Sludge treatment and disposal costs will be less for ferric chloride, strengthening its advantage.

Cost Analyses

The cost analysis assumes Twitchell Island as the site of a hypothetical full-scale facility. Twitchell Island was chosen for this analyses since it is owned by DWR and substantial water quality and pumping data are available on its agricultural drainage. Treatment trains were designed to remove 60 percent of the TOC. The most cost-effective process is the one that can achieve this treatment goal at the lowest cost.

Processes with capability to remove more than 60 percent of the TOC were evaluated in the split-stream mode. That is, a fraction of the water was treated at the system's higher TOC-removal efficiency, with the remainder of the water bypassed around the treatment unit. The treated fraction was of sufficient magnitude that the blend of treated and bypassed fractions satisfied the overall goal of 60 percent TOC removal.

<u>Systems Considered</u>

We evaluated the following treatment systems.

- Ferric chloride coagulation, which includes chemical addition, rapid mixing, flocculation, and sedimentation

- Ferric chloride coagulation + granular-media filtration. The granular-media add-on enhances TOC removal by removing POC carried over from the sedimentation tank. Microorganisms attached to the media may also remove biodegradable DOC. Microbially mediated DOC removal is called biofiltration

- Ultrafiltration (UF) with GM membranes

- Ferric chloride coagulation followed by UF with GM membranes

- Microfiltration (MF) followed by nanofiltration (NF) with NF 45 membranes

- Ferric chloride coagulation + ozonation + biofiltration. This process is the same process described in the second bulleted item, except the water is ozone treated prior to biofiltration. Ozonation tends to increase the fraction of DOC that can be biodegraded

Treatment plants were designed with capability to remove 60 percent of the TOC during peak week flows and loadings (i.e., average daily flows and loads sustained during the week of maximum flows and loads). The peak week flow (developed from DWR flow records) from Twitchell Island was assumed to be about 26 million gallons per day (mgd). The peak week TOC loading was about 8,500 lb/day. The TOC was essentially all dissolved material (i.e., TOC and DOC were nearly identical).

Operating costs were based primarily on average flows and loads. The average flow (developed from DWR flow records) was assumed to be about 11 mgd. The average TOC loading was about 2,100 lb/day.

Preliminary calculations suggested that the capacities required for treatment plants could be reduced by providing flow-equalization basins prior to the treatment plants. However, it was not clear that there is sufficient land available on Twitchell Island for a flow-equalization basin. Our calculations assumed that no land is available for flow equalization basins, which provides a high estimate of capital costs.

Our cost analyses assumed sludge from coagulation processes would be stored and thickened in a pond, with subsequent removal of the thickened sludge by dredge during dry weather, and immediate sludge disposal on dedicated land by subsurface injection. Burying sludge a few inches below the earth's surface minimizes odor potential. The storage/thickening pond is sized to hold all the sludge produced during the wet season. The dedicated land disposal site is sized so that dry-season evaporation removes nearly all water associated with a year's production of thickened sludge. This minimizes movement of sludge water to groundwater or back to the Delta.

Alternatively, sludge could be dewatered by filter press to solids concentrations (> 50 percent solids) satisfying California landfill regulations. This option is more expensive than the first option. It might be used if there were technical or regulatory objections to dedicated land disposal. Also, it is not subject to vagaries of weather.

We assumed that residues from membrane processes would be treated by ferric chloride coagulation, and the sludge produced by this coagulation treated and disposed of as discussed above. Coagulation was selected for treatment of membrane residues because of the lack of viable alternative residue treatment and disposal alternatives (see Technical Memorandum 3).

<u>Cost Results</u>

Table 5-15 summarizes cost calculations for the six treatment options processing Twitchell Island drain water, assuming 60 percent overall TOC removals, peak week and average flows of 26 and 11 mgd, respectively. Cost information was obtained from Brown and Caldwell files, the general literature, and vendor quotes.

The amount of money needed now to fund the project over its life was calculated as follows:

$$PW = CC + f\,(O\&M) \qquad (2)$$

where:

PW	=	present worth, dollars,
CC	=	capital cost, 1997 dollars
f	=	O&M cost factor
O&M	=	annual operating and maintenance costs, 1997 dollars

Table 5-15. Cost Summary for Treatment Alternatives

Alternative	Fraction of water treated	Capital cost, $ million[a]	O&M cost, $ million/year[a]	Present worth, $ million[a]	Cost, $ per lb TOC removed
1. Coagulation[b]	1.00	4.5	0.7	14.6	1.73
2. Coagulation + filtration[b]	0.86	6.4	0.8	17.6	2.09
3. Ultrafiltration[b]	1.00	10.6	1.5	33.1	3.93
4. Coagulation + ultrafiltration[b,c]	0.73	9.4	1.5	30.5	3.61
5. Microfiltration + nanofiltration[b]	0.62	21.9	2.0	51.6	6.12
6. Coagulation + ozonation + biofiltration[b]	0.73	11.7	1.1	28.4	3.37

[a]1997 dollars.
[b]Assumes disposal of sludge by subsurface injection on dedicated land. If sludge is mechanically dewatered instead and disposed of in a landfill, add approximately $2.5 million to present worth.
[c]Coagulation does not include flocculation and sedimentation steps.

Processes with lowest present worths are the most cost effective.

The O&M cost factor was calculated as follows:

$$f = \frac{(1+i)^n - 1}{i(1+i)^n} \qquad (3)$$

where:

I = interest rate minus inflation rate, expressed as a fraction (0.03 in this calculation).

n = project life (20 years in this calculation).

For Twitchell Island, coagulation was the lowest-cost option (present worth $14.6 million). This cost equates to $1.73 per pound of TOC removed. The other treatments are considerably more expensive. Chemical purchase and capital expense were the major cost centers for coagulation processes, representing about 70 percent of project present worth.

Table 5-15 cost figures were generated assuming sludge is disposed of by subsurface injection on dedicated land. Add about $2.5 million to Table 5-15 present worth values if sludge must be dewatered by filter press and disposed of in landfill.

Differences between the costs of coagulation and membrane treatments diminish as the plants become smaller. Membrane treatment may be cost competitive for small systems. Additionally, rapid development of membrane technology is reducing membrane system operating and capital costs.

Treatment costs depend on raw water composition and flow rates. Composition and flow rates vary between locations and seasonally. Therefore, it should be recognized that blanket applications of Twitchell Island cost factors (e. g., $1.73/lb TOC removed) to all treatment scenarios and time frames will provide only rough approximations of true total Delta treatment costs.

Conceptual Pilot Facility Design

Cost analyses showed ferric chloride coagulation to be the least costly method of removing TOC from Delta agricultural drainage. Technical Memorandum 4 describes a pilot program designed to confirm the economic viability of ferric chloride coagulation at one site in the Delta. It also discusses jar tests to determine the applicability of ferric chloride coagulation at other sites in the Delta. Pilot tests and jar tests could be carried out in the next phase of Study, called Phase 2 studies hereafter.

Phase 2 pilot studies have the following objectives:

- Confirm the effectiveness of ferric chloride coagulation to remove DBP precursors i.e., TOC) via continuous operation under field conditions

- Determine the degree to which granular-media filtration can improve TOC removal through removal of particulate organic carbon and by biofiltration

- Develop design parameters for full-scale treatment systems

- Develop operating strategies and

- Refine process costs

The objective of Phase 2 jar tests determines the relevance of ferric chloride coagulation at other sites in the Delta. Drainage from other sites may be more or less susceptible than Twitchell or Bacon Islands drainage to ferric chloride coagulation. Jar tests can identify those waters which are good candidates for coagulation treatment.

<u>Pilot Plant Description</u>

Figure 5-19 is a schematic drawing of the pilot plant. The pilot system includes facilities for chemical addition, rapid mixing, flocculation, sedimentation, filtration, and sludge treatment and disposal. Table 1 in Technical Memorandum 4 (not shown here) provides additional pilot plant information, including water and chemical flow rates, equipment characteristics, and equipment sizes. Table 2 in Technical Memorandum 4 (not shown here) describes recommended measurements for pilot testing.

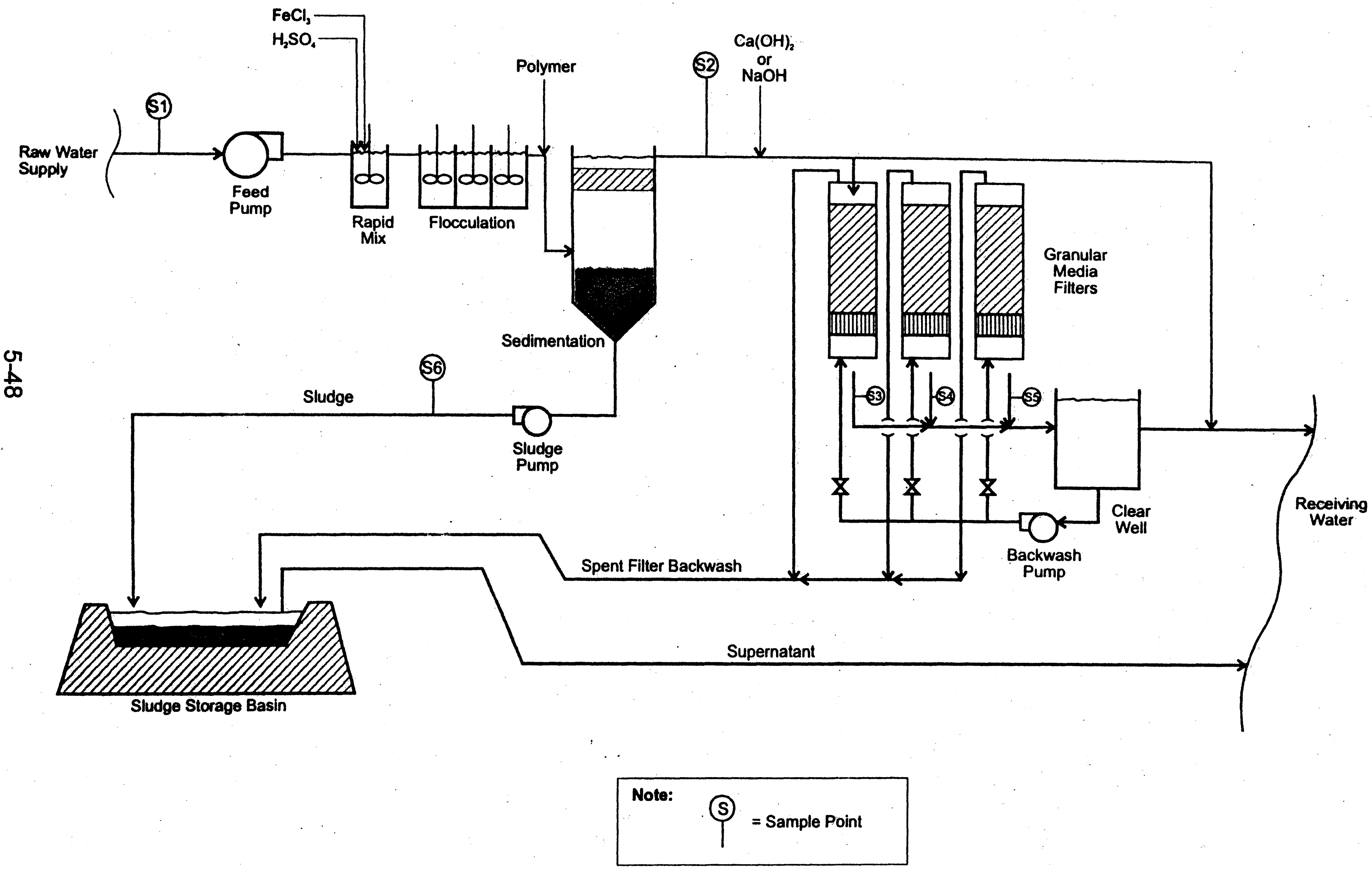
Filtration is included in the pilot plant schematic because it can remove POC not captured in the sedimentation tank. If the DOC in sedimentation tank effluent is partly biodegradable, microorganisms growing on the filter media may be able to remove a portion of the biodegradable fraction. This process is known as biofiltration. How much of the TOC in sedimentation tank effluent is biodegradable was not determined in this bench-scale study. By operating one or more filters on sedimentation tank effluent during pilot plant operation, one could answer this question without increasing pilot plant costs.

Ozone treatment is often used before biofiltration to enhance TOC removal. In addition to removing TOC by direct oxidation to CO_2, it breaks down some nonbiodegradable TOC to simpler substances that can be biodegraded. Ozone treatment of coagulated Delta waters is not endorsed because ozone treatment is too expensive. Therefore, if biofiltration is to contribute to the overall removal of TOC, it must do so on its own without prior ozone treatment.

<u>Jar Tests</u>

TOC-contaminated agricultural drain water is a Deltawide problem and treatment may occur at several sites. It would be valuable to know how well ferric chloride

Figure 5-19. Flow Schematic for Proposed Pilot Plant



4447-07.cdr

coagulation can remove TOC from the drain waters of other tracts in the Delta. The ideal situation would be a small, easily and inexpensively moved pilot plant. Then pilot testing could be conducted at several sites without undue expense. However, it is not anticipated that the pilot plant would be very portable, considering flow rates possibly as high as 80 gpm. Relocating a pilot plant of this size would be costly.

Jar testing with waters from different sites is a practical, low-cost alternative to pilot testing at those sites. Coagulation jar tests usually simulate full-scale treatment results very well. The tests would be similar to the tests conducted at University of Colorado, but not be so extensive. Jar testing's primary objective would be to define the dose-response curve for TOC or DOC removal from each drain water. Estimates of process cost could be made using the jar test data.

Summary, Conclusions, and Recommendations

1. Drainage samples collected from Twitchell and Bacon Islands had a range of TOC concentrations (12 to 43 mg/L). TOC concentrations in Twitchell Island samples were about twice the TOC concentrations in Bacon Island samples. Most of the TOC in all samples was in dissolved form (DOC and TOC approximately equal).

2. Bench tests conducted at the University of Colorado showed that optimized ferric chloride coagulation removed 55 to 78 percent of the DOC from the Twitchell and Bacon Islands samples. Alum coagulation removed 44 to 74 percent of the DOC. Membrane processes removed from 38 to 97 percent of the DOC, with tighter membranes producing the highest removals. THMFP and HAAFP were reduced approximately the same percentage; as DOC was reduced in each of the treatment technologies.

3. A cost analysis indicates that optimized ferric chloride coagulation is more cost effective than optimized alum coagulation for TOC removal from Twitchell Island drainage. The analysis showed that ferric chloride coagulation (which includes chemical addition, rapid mixing, flocculation, and sedimentation) could remove 60 percent of the TOC from Twitchell Island drainage for about $1.73 per lb of TOC removed. Process configurations using membranes cost 2 to 3.5 times as much as ferric chloride coagulation to achieve the same TOC removals. Biofiltration alone or coupled with ozone treatment does not appear to be cost effective. Note that costs are sensitive to raw water composition and flow rates, which vary between locations and seasonally. Therefore, it should be recognized that blanket applications of Twitchell Island cost factors (e.g., $1.73/lb of TOC removed) to all treatment scenarios will provide only an approximation of true Delta costs.

4. Treatment by coagulation can increase the water chloride, sulfate, sodium, calcium, and iron or aluminum concentrations, depending on the treatment chemicals used. Coagulation in a low-pH environment may reduce the concentration of inorganic carbon via CO_2 loss. Inorganic carbon could be partly restored by using soda ash to neutralize the low-pH water.

5. If on-island treatment is deemed to be an effective method of removing TOC from the Delta, a follow-on pilot program designed to confirm technical and economic viability of ferric chloride coagulation at one site in the Delta is recommended. A parallel jar test effort should be made to determine the relevance of ferric chloride coagulation at other Delta sites.

Chapter 6. Organic Carbon and Disinfection Byproducts Precursors from Flooded Delta Islands

Introduction

In a April 25, 1996 letter, CUWA requested the MWQI Program undertake a study to analyze organic carbon changes in water crossing permanently flooded Delta islands and estimating potential organic carbon impacts of Delta options which would involve island inundation. Initially, a workplan was developed with a sediment core drilling phase (Phase I) and a pilot Study phase (Phase II). However, the results showed that a sediment cap may not control the rate at which organic carbon is released from submerged peat. The opportunity arose to initiate the pilot scale portion of the Study by using a shallow flooded wetland being constructed by DWR/USGS for a subsidence Study. The workplan based on a constructed wetland was approved by the MWQI Committee in April 1997. A summary of the results of the literature review and the approved workplan are presented here.

Background/Literature Review

A review of literature related to sediment transport and deposition in the Delta, sediment capping and the transport of organic carbon through peat and other types of soils was performed. The following were identified as potential variables affecting the transport of DOC through sediment in a flooded island situation: wind action, wave action, flow rate, sediment cap (nature of material, thickness), roughness of channel bottom, nutrient availability, temperature, microbial activity and human disturbance.

Information was obtained about the quantity of flooded acreage in the Delta. DWR's Division of Flood Management provided the names of seventeen islands that have been partially or completely flooded since 1980 (DWR Bulletin 160-93). Soil types of the flooded islands, Franks Tract, Little Franks Tract, Mildred Island and Little Mandeville were determined to be mostly peaty muck with some fine sandy and clay loam (USDA, 1977 and USDA, 1992).

The presence of a sediment cap depends upon the sedimentation rate and the degree of weathering and scouring which may occur. Sediment load varies seasonally and from year to year. Surficial deposits are commonly loose and difficult to sample. Sediment coring methods to obtain undisturbed sediment samples that would preserve a sediment cap were investigated. These methods included the use of liquid nitrogren, the use of divers (rather than a drilling barge) and the use of compressed air samplers. Sediment dating methods including use of the radioisotopes, ^{14}C, ^{137}Cs, and ^{210}Pb, were also researched (Foster and others, 1990).

There are many factors that may control the release of organic carbon from submerged peat. Diffusion of oxygen through the sediment is probably not the rate-limiting step for DOC degradation by microbes. More likely, microbial degradation of organic matter is controlled by oxygen supplied through advective transport (Shum and Sundby 1995). The sediment surface is likely uneven with cracks, and mixed periodically during storm and tidal events. Therefore, it may be difficult to predict the rate at which organic matter is degraded by microbes with a particular sediment cap.

Flooded Island Study Workplan

Introduction

The CALFED Bay-Delta Program and CUWA are developing Delta alternatives as part of the CALFED Programmatic Environmental Impact Report/EIS process. Some of the options being considered involve flooding portions of Delta islands that contain organic peat soils. There is concern that flooding will release DOC from the peat soils covering many of the Delta islands, resulting in drainage water containing elevated concentrations of DOC and DBP precursors. Release of these waters to the Delta channels could negatively impact the quality of water exported from the Delta for drinking water supply by increasing the potential to form trihalomethanes and other DBPs during drinking water treatment. This threat is exacerbated by the elevated concentrations of bromide found in waters in the Delta, which disproportionately contribute to elevated concentrations of THMs.

On January 21, 1997, MWQI staff and the USGS presented a plan to the MWQI Flooded Island Study Technical Advisory Committee to study the water quality effects of shallow flooding of a 22-acre demonstration project on Twitchell Island for subsidence mitigation. The subsidence Study is an ongoing cooperative Study between the USGS and DWR to assess the effects of various wetland habitats on mitigating subsidence. A recent result from this Study showed that shallow flooding (about 1 foot deep) of peat soils decreased land subsidence by decreasing gaseous carbon losses. Continuous flooding of the peat soils causes anaerobic soil conditions and subsequently decreases gaseous carbon losses (i.e., land subsidence) by about one fifth compared to aerobic soil conditions. In addition, when water levels are maintained at about one-foot deep, vegetative growth is encouraged, biomass accumulates, and net carbon input to the system is positive, thereby promoting accretion of land surface. Combining the Flooded Island Study with the subsidence Study represents a cost-effective approach to assessing the effects of flooding on water quality. Combining the two studies addresses two primary CALFED objectives for the Delta – subsidence and water quality.

Objectives

- Assess the concentration of DOC and DBP precursors associated with the continuously flooded wetland environment (soil water, surface water, and drainage water). Compare the concentration of DOC and DBP precursors produced under a continuously flooded wetland environment with the concentration of DOC and DBP precursors produced in an agricultural field

- Characterize the nature and reactivity of the DOC in relation to formation of THMs and other DBPs

- Estimate the loads of DOC and associated DBP precursors in drainage waters produced from the flooded wetland that contribute to the Delta channel waters, potentially impacting the municipal drinking-water supplies that flow through the Delta. Compare with loads of DOC and associated DBP precursors produced in the agricultural field and with loads contributed by upstream rivers

- Determine when operating a shallow flooded island discharges (TOC concentration and mass load) be less or match current drainage discharges and river input

- Provide baseline data to CALFED for the on-island treatment pilot plant Study submitted by the MWQI Program

Approach

The Study will be a coordinated with an ongoing Study (DWR/USGS cooperative Study) that is examining the effects of a continuously flooded, wetland-habitat treatment for mitigating land subsidence. The release of DOC and DBP precursors from the soil to surface and drainage water will be assessed through sampling and analysis of irrigation water, soil water, groundwater, surface water, and drainage water.

This subsidence mitigation demonstration project is a 22-acre wetland being built on Twitchell Island. The wetland will be flooded to 1-foot depth and will be a flow-through system where water is moved across the wetland at a continuously slow rate. The flow rate of water across the system will be determined by calculating the ideal residence time of water for a managed wetland of this size. The 22-acre demonstration project is divided into two treatments, fertilized and unfertilized, for the purposes of encouraging wetland plant growth. Within each treatment are six sampling stations, and each sampling station is at the end of a 50-foot berm/platform that is perpendicular to the south or north edge of the field. To reduce costs for the water quality Study, only the unfertilized treatment will be sampled for this Study. At each sampling site, stainless steel piezometers will be installed with screened intervals from 1.0 to 2.0 feet and from 6.0 to 8.0 feet below land surface. The upper piezometer will be used to sample the oxidized, decomposed peat soil zone influenced by agricultural practices; whereas the deeper piezometer will be used to sample the reduced, fibrous peat soil zone mainly influenced by regional groundwater. In addition, a surface water sample also will be taken at each sampling site, and irrigation water and drainage water will be sampled for each sampling event.

Sampling Plan

Agricultural Field

In addition to sampling of the flooded wetland, the agricultural field sampled for the previous DWR/USGS SoilTOC Study will be sampled to compare the water quality effects of the different land uses. Samples will be collected on a quarterly. Existing lysimeters and piezometers will be sampled and analyzed for specific conductance, pH, temperature, dissolved oxygen, and redox potential (platinum electrode measurement) using a flow-through cell in the field. Water samples will be analyzed for DOC, UV absorbance (254 nm), reactivity-based THMFP and HAAFP, Br, minerals, Fe, Mn, NO_3, NO_2, and dissolved NH_3. Samples will be collected from the ditch and the main agricultural drain. Collection and analyses of these samples will be performed by DWR. USGS will analyze selected samples to characterize the DOC and relate these properties to the formation of DBPs.

Flooded Wetland

Samples will be collected on the following schedule: (1) after the applied water reaches the 1-foot depth, t=0; (2) 1 week later, t=1week; (3) t=2 weeks; (4) t=1 month; (5) t=3 months; and quarterly thereafter. This sampling schedule reflects the assumption that changes in the redox environment and processes affecting the release of DOC and its composition will be greatest during the first few weeks of water saturation when the soil redox environment will be changing from oxidized to reduced. These samples will be analyzed for the same constituents as described for the agricultural field.

Selected samples will be analyzed in detail to further characterize the nature of the DOC and relate these properties to formation of DBPs. Large volume samples will be collected and processed through XAD resins to fractionate and isolate the DOC into operationally defined hydrophobic (XAD-8 resin) and hydrophilic (XAD-4 resin) organic acids under the direction of George Aiken, USGS, National Research Program, Boulder, Colorado. Resulting isolates will be analyzed for specific UV absorbance and reactivity-based THMFP. Selected isolates will be further analyzed for functional group composition (^{13}C-NMR, under the direction of Robert Wershaw, USGS, National Research Program, Denver, Colorado), elemental composition, and other characteristics. Through this analytical approach, types of compounds contained in a DOC sample are probable THM precursors and what factors and conditions contribute to their formation. It should be noted that the ^{13}C-NMR analyses, and other potential characteristics (e.g., carbon isotopic composition), are being studied by the USGS National Research Program and National Drinking Water Initiative at no cost to this Study because of national interest in DBPs in drinking water.

Deep versus Shallow Flooded Island Experiment

The subsidence mitigation Study will monitor the changes in DOC concentrations in a 1-foot flooded wetland. It is not known if similar changes in DOC concentrations in a deeper flooded wetland would occur. At this time, a deeper flooded wetland cannot be constructed. However, to obtain guidance in the design of such a future Study, an experiment to study the impact of water depth on DOC release from submerged peat soils will be performed.

Two open ended, 2-foot diameter, PVC pipes will be placed upright and partially buried (2 feet deep) into the test pond for stability. The two pipes will be located near the wetland water inlet. One pipe will be 4 feet in length and the other 6 feet long. The shorter pipe, serving as a control, will be filled to the same level as the water level of the wetland (approximately 1 foot). The longer pipe will be filled to a water level of 5 feet depending on the length of exposed pipe. A water spigot will be installed on the side of the long pipe at the 3-3.5 feet water level for withdrawing water samples. Water levels will be kept constant and flows made continuously to prevent anaerobic conditions. The flow rate will be adjusted to be as close to the water exchange rate of the larger flooded wetland as possible. For the shorter pipe, four V-notches at the top of the pipe or four 2-inch diameter holes will allow circulation and flow of water into and through the pipe. For the longer pipe, water from the wetland pond inlet will supply water and controlled by a float valve to maintain a constant water level. Water samples will be withdrawn from each pipe for DOC and UVA-254 nm analyses and sampled as the same frequency as the subsidence mitigation Study.

Filling of the long pipe will begin after the flooded wetland has reached the 1-foot depth (t=0). The seepage rate within the long pipe will be periodically measured during the course of the experiment (approximately six months) to estimate the total volume of water used to maintain a constant water level. If seepage is minor, the constant water level in the long pipe would simulate a static flooded condition.

This small experiment will guide DWR staff in the planning and designing of future larger scale experiments. There are technical issues, such as the rate of seepage and filling rate needed to maintain a constant water level, that need to be addressed.

DOC results will be plotted against sampling intervals for a time series plot. These results will also be compared against DOC data from the wetland Study. The results will be examined to determine if DOC levels reach an equilibrium and if water levels are a factor and what might be the expected magnitude of DOC concentrations in the ponded water. The results of the experiment will guide us in the design and planning of future studies to examine the optimal conditions to control DOC releases from submerged soils. Some of these conditions include water residence time (flow rates) and depth of inundation.

Mass Loading Estimates

USGS flow and weather data collected at the wetland site supplemented with DWR field and water sample data will be used to compute the mass load of organic carbon generated and discharged from the wetland. Flow meters will be installed to measure irrigation water inflows and surface water outflows. As part of the subsidence Study, a weather station including an evaporation pan will be installed at the site prior to the beginning of sampling.

Weather data will be used to compute water evaporation loss based on standard empirical formulae. Seepage losses will be estimated from the difference in inflow volume minus outflow and evaporation losses ($V_{seepage} = V_{in} - V_{out} - V_{evap}$) during the course of the Study. Mass load (volume multiplied by DOC concentration) computations will be made to estimate the amount of DOC released from the 1-foot flooded wetland. Mass load estimates for other water quality constituents will also be conducted. TOC/DOC mass loads and concentrations observed in the DWR/USGS flooded island subsidence Study will be compared against Delta island drainage and to Sacramento and San Joaquin Rivers inputs. Delta island drainage volume estimates will be based on DWR Report No. 4 (1956) which contained monthly pumped drainage volumes in 1954-55. MWQI TOC/DOC concentration data will be used to compute river and drainage mass loads.

Chapter 7. North Bay Aqueduct Watershed Study (Sanitary Survey)

Introduction

Sanitary Survey follow-up activities for NBA began on July 1, 1996 in accordance with Phase I monitoring as specified by the *Workplan for the Barker Slough Watershed* (Appendix B). This Study of raw water quality of surface waters entering the Barker Slough Pumping Plant resulted from recommendations reported in the *Sanitary Survey Update Report 1996*. The 1996 Sanitary Survey report identified the pumping plant as having several water quality issues that concern the SWC by using it as a source of drinking water.

Several water quality issues have been requiring additional investigation characterizing the nature and extent of the problem and means of addressing them. These water quality issues include elevated levels of organic carbon, THMFP, metals, and coliforms in the Barker Slough watershed.

This Study was designed to investigate these problems, identify their sources and to identify potential measures to improve water quality in the watershed. The Study seeks to link field data with operational data at the various water treatment plants using Barker Slough as a source for drinking water.

The Study is divided into two phases. The first phase began on July 1, 1996. The second phase began after all sampling for Phase I (July 1, 1996 - June 30, 1997) was completed and reviewed by DWR and the NBA Technical Advisory Committee. Phase I was designed to quantify water quality constituents at the screening level. Phase II was designed to investigate specific pollutants and identify mitigation measures for those pollutants.

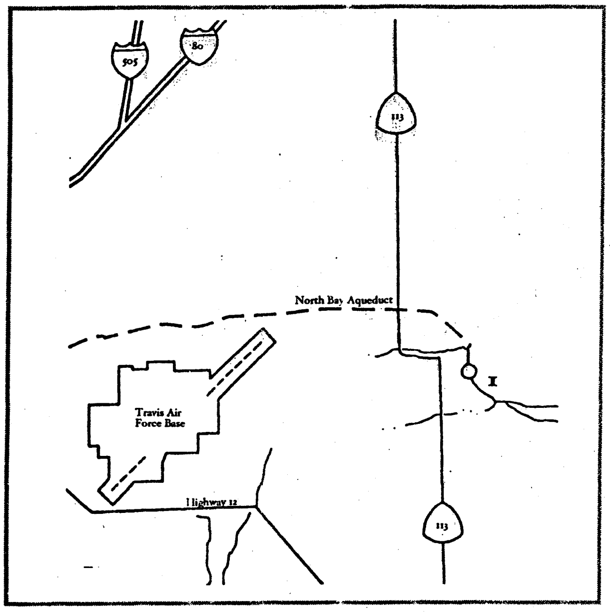
Results

Samples were collected from four locations: the Barker Slough Pumping Plant, Barker Slough at Cook Lane, Calhoun Cut at Highway 113, and Lindsey Slough at Hastings Island Bridge (see Figure 7-1). Water quality parameters reported include turbidity, DOC, THMFP, aluminum, iron, manganese, and *E. coli* as the constituents of interest. A listing of all data for this Study is included in Appendix B.

Physical and Chemical Constituents

The turbidity results (Figure 7-2) show that the Barker Slough/Cook Lane sampling site had the highest turbidity readings. The highest levels coincided

Figure 7-1. North Bay Aqueduct Watershed Study Phase I Sampling Sites and Watershed



LEGEND

I	Barker Slough Pumping Plant		Sampling Sites
2	cattle & sheep grazing	a	*Cook Lane*
3	corn, safflower, alfalfa, barley	b	*NBA Pumping Plant*
4	Easterly Wastewater Treatment Plant	c	*Calhoun Cut*
		d	*Lindsey Slough*
5	land application of sludge	e	*Dally Road*
6	Jepson Preserve	f	*Hay Road*
7	Campbell Ranch/ Argyll Park		
8	UST		
9	recreation activities		

Approximate area of watershed: 14.60 sq. mi. / 9,340 ac

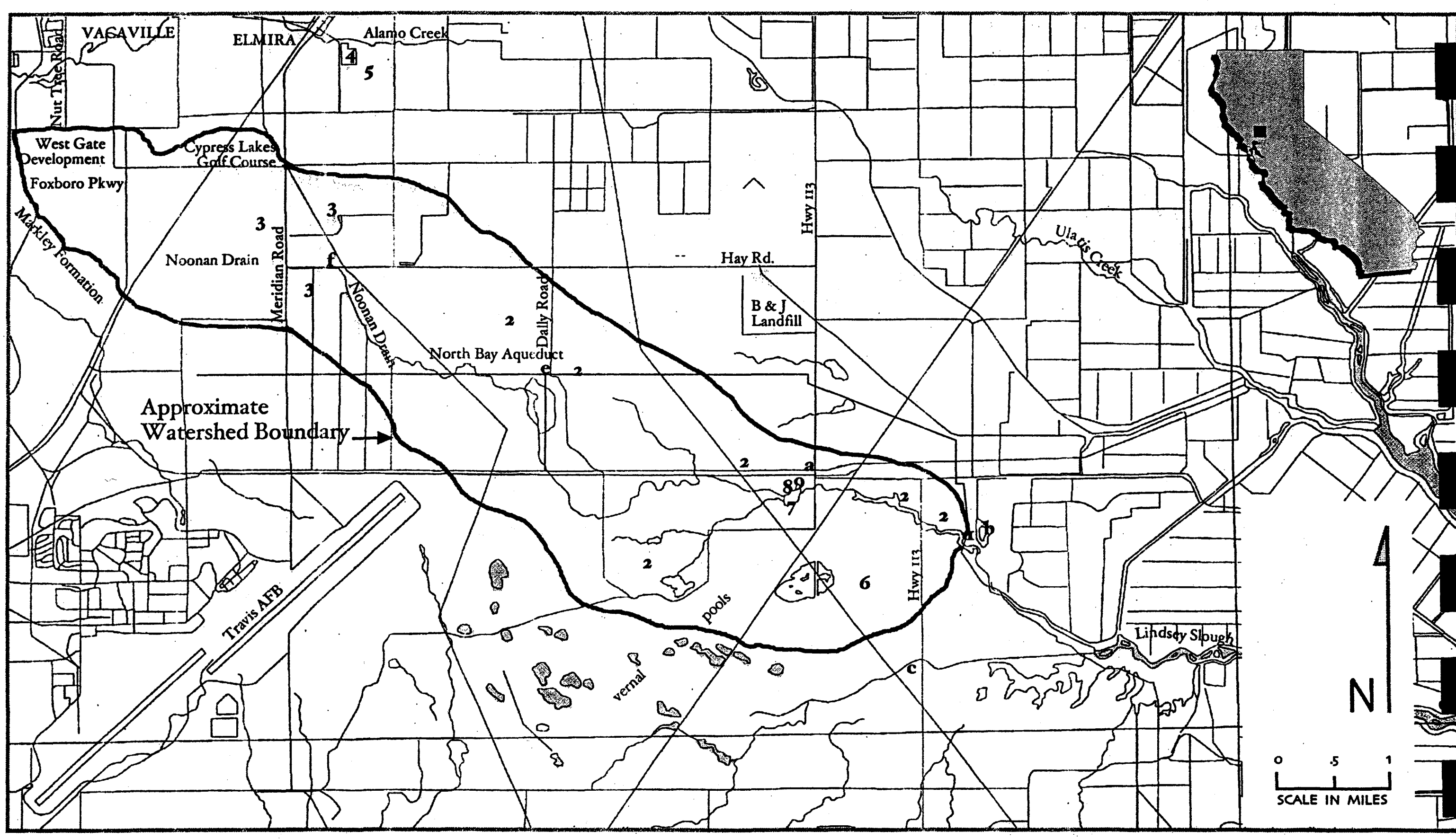
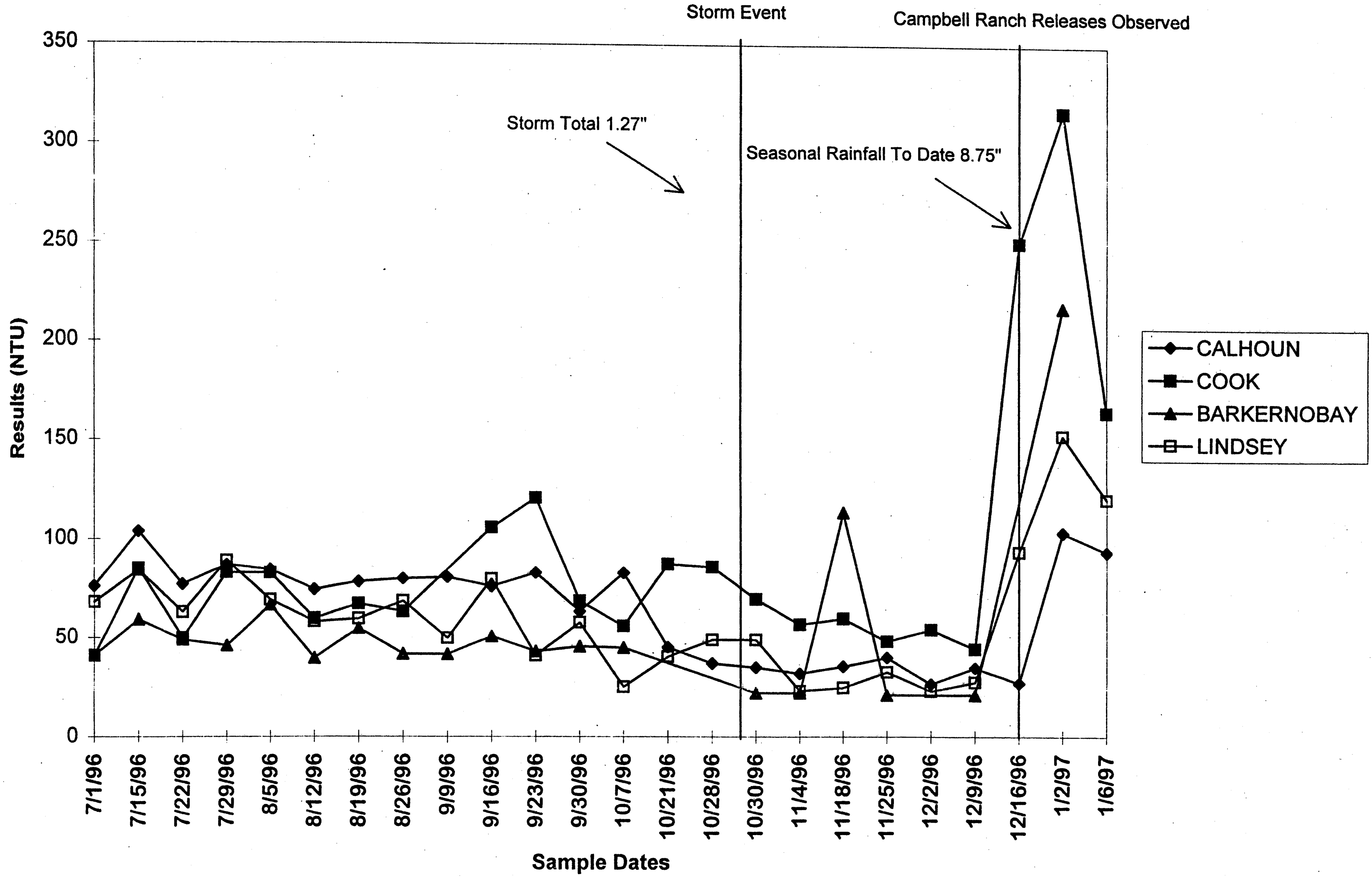


Figure 7-2. Turbidity Values for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)



with Campbell Ranch irrigation dam releases observed on December 16, 1997. The releases were in response to runoff accumulated from storms in October, November, and early December. The Barker Slough Pumping Plant had lower turbidity readings than the other three sites. However, the last data point recorded for the pumping plant on December 30, 1996 was the second highest turbidity level measured for all sites.

The results for DOC (Figure 7-3), THMFP (Figure 7-4), and ultraviolet analysis (Figure 7-5) show that DOC, THMFP, and UVA values follow the same pattern with higher levels seen at the Barker Slough/Cook Lane sampling site, and Lindsey Slough having the lowest results.

The lowest values for *EC* (Figure 7-6) were consistently recorded at Lindsey Slough. Bromide levels (Figure 7-7) were generally highest at the Calhoun Cut sampling site, with similar patterns at all sites. The highest bromide level was 0.07 mg/L, which was measured at the Calhoun Cut sampling site.

Most pH measurements (Figure 7-8) were within the range of approximately 7 to 8.5 mg/L which was measured at the Barker Slough/Cook Lane sampling site. In general, alkalinity (Figure 7-9) was highest at the Barker Slough/Cook Lane site and lowest at Lindsey Slough.

Results for aluminum (Figure 7-10) indicate that aluminum levels were the highest at Calhoun Cut. Manganese levels (Figure 7-11) were generally the highest at the Barker Slough/Cook Lane sampling site and the lowest at Lindsey Slough. The USEPA secondary MCL for manganese of 0.05 mg/L was exceeded twice at the Barker Slough/Cook Lane sampling site. Results for iron (Figure 7-12) show that iron levels were highest at Barker Slough/Cook Lane and lowest at the Barker Slough Pumping Plant sampling site. The USEPA secondary MCL of 0.3 mg/L for iron was exceeded by four samples at the Calhoun Cut, Lindsey Slough, and Barker Slough/Cook Lane sampling sites.

Table 7-1 reports the pesticides and organic compounds which were detected at the sampling sites.

Except for methylene chloride, none of the measured pesticides or organic compounds exceeded California Department of Health Services or USEPA standards for drinking water.

Figure 7-3. Dissolved Organic Carbon Results - North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

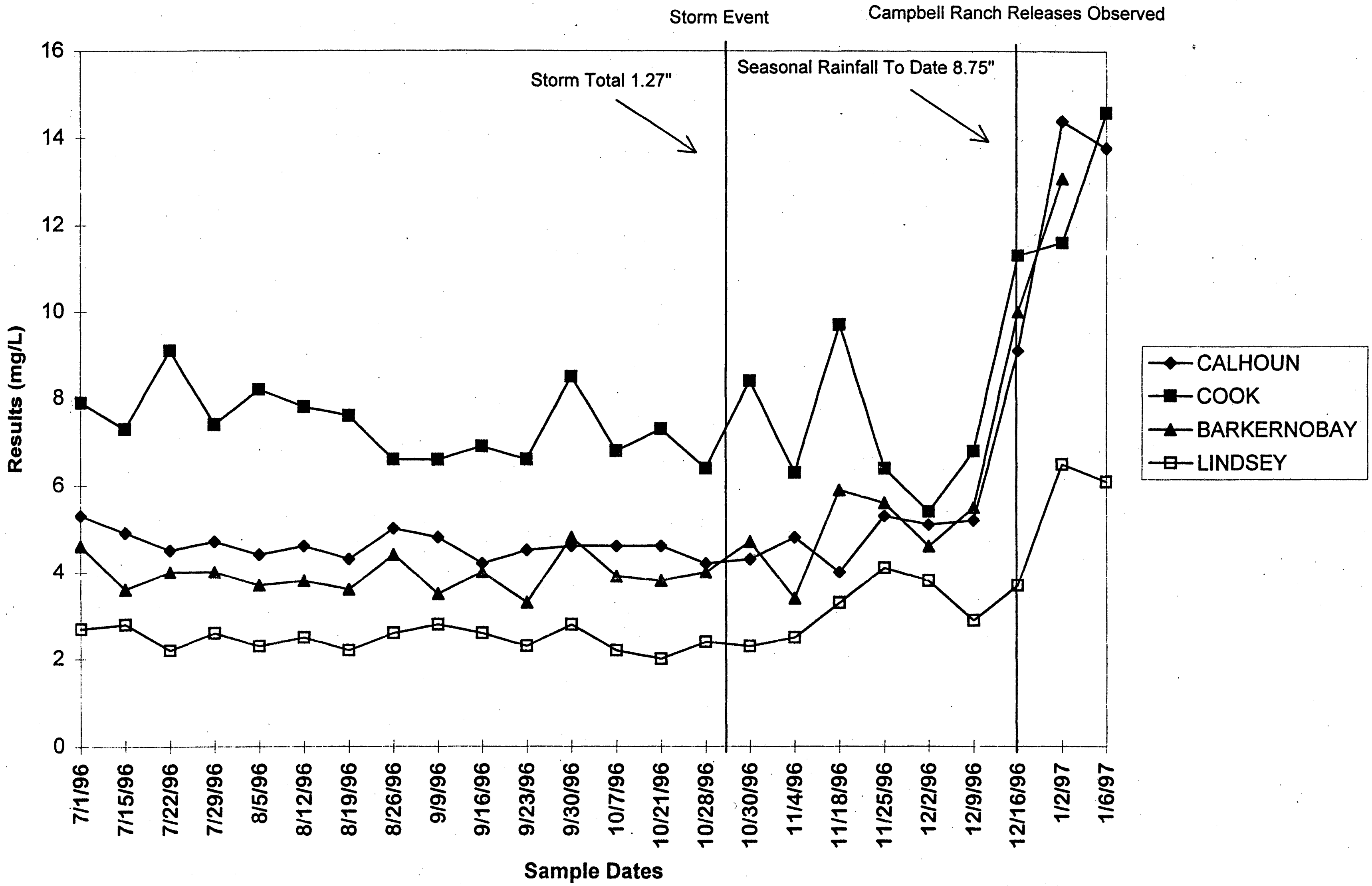


Figure 7-4. Total Trihalomethane Formation Potential - North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

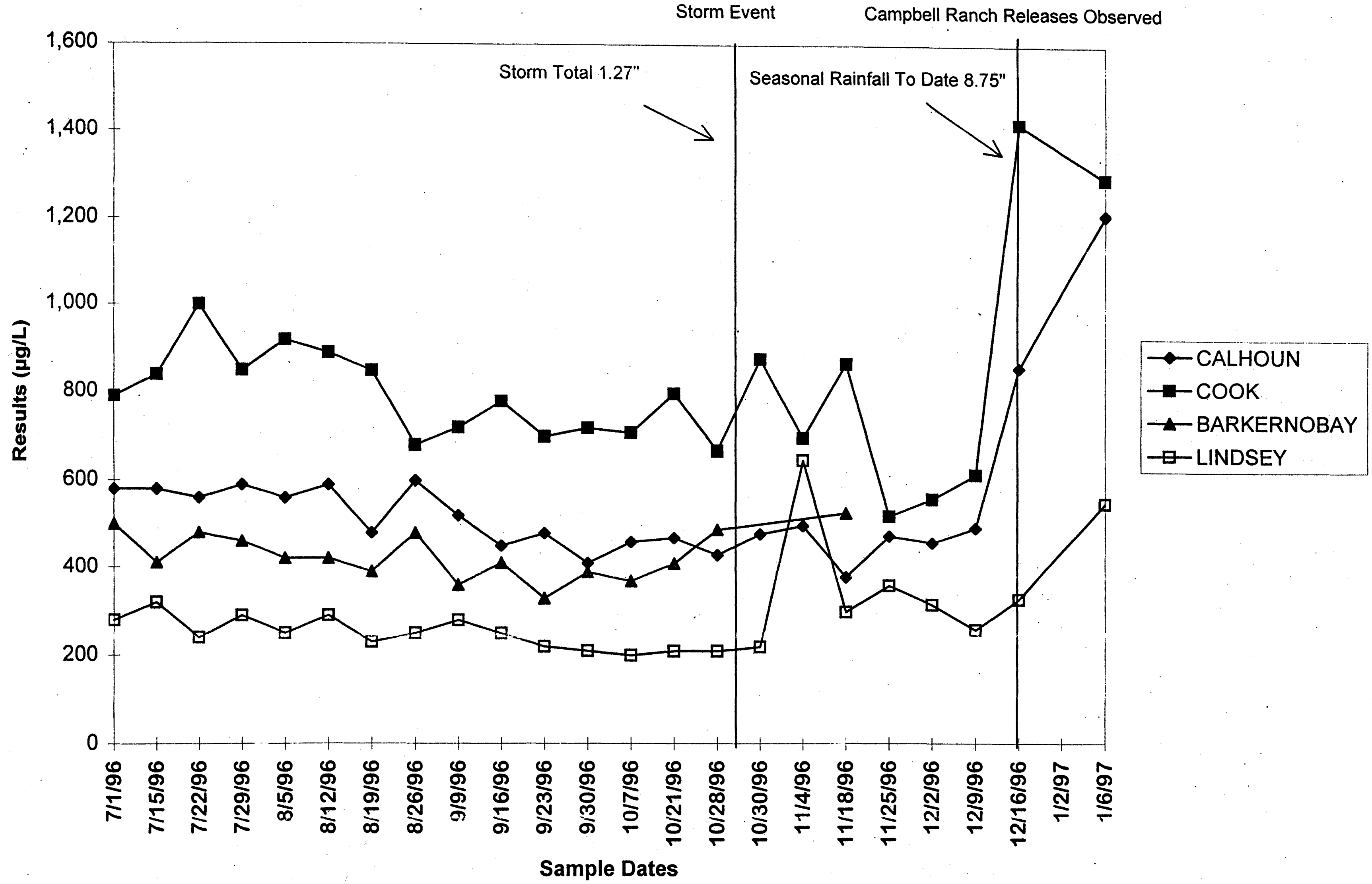


Figure 7-5. Ultraviolet Analysis Results for North Bay Aqueduct/Barker Slough Watershed Study (July 15, 1996 through January 6, 1997)

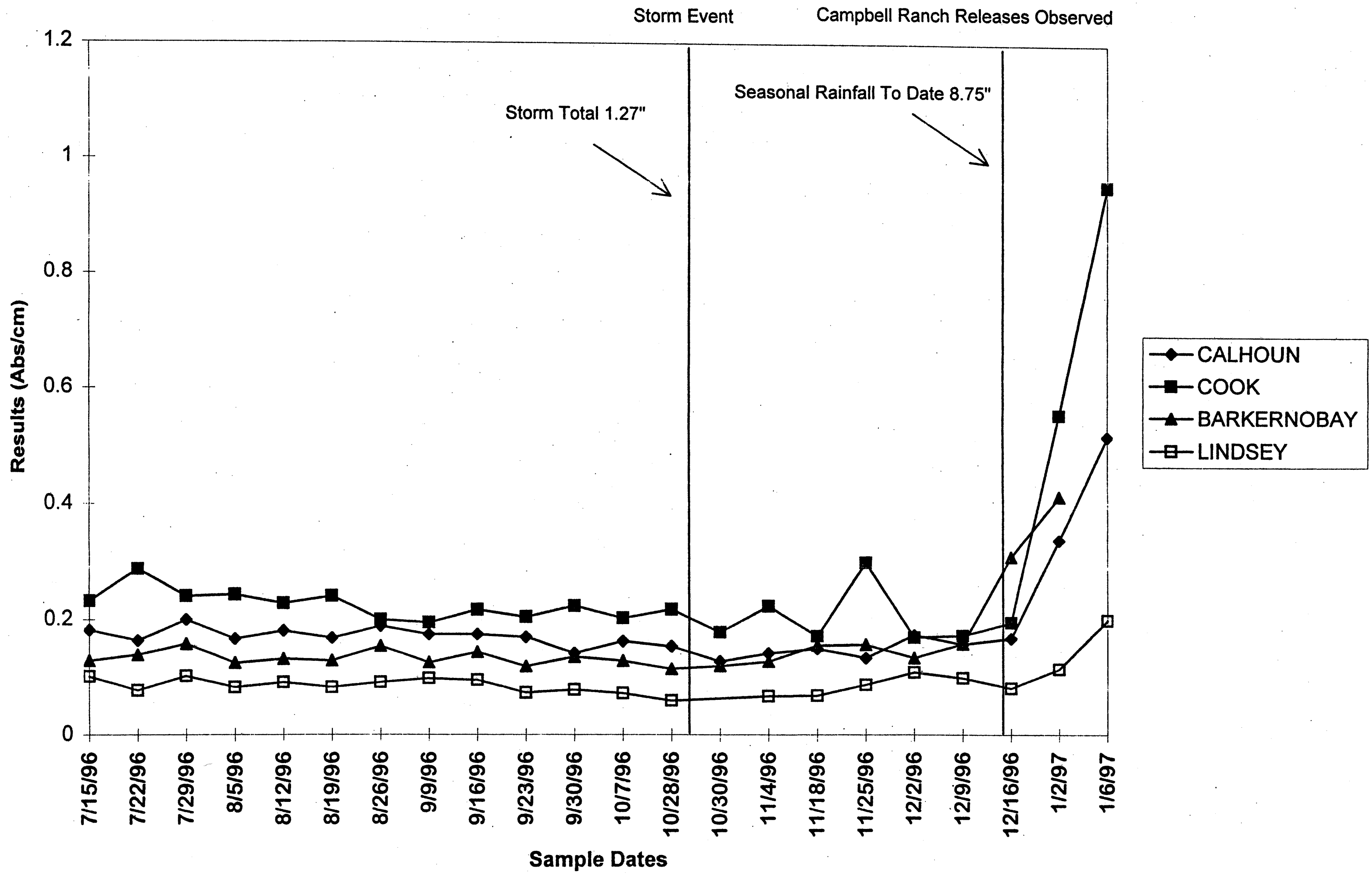
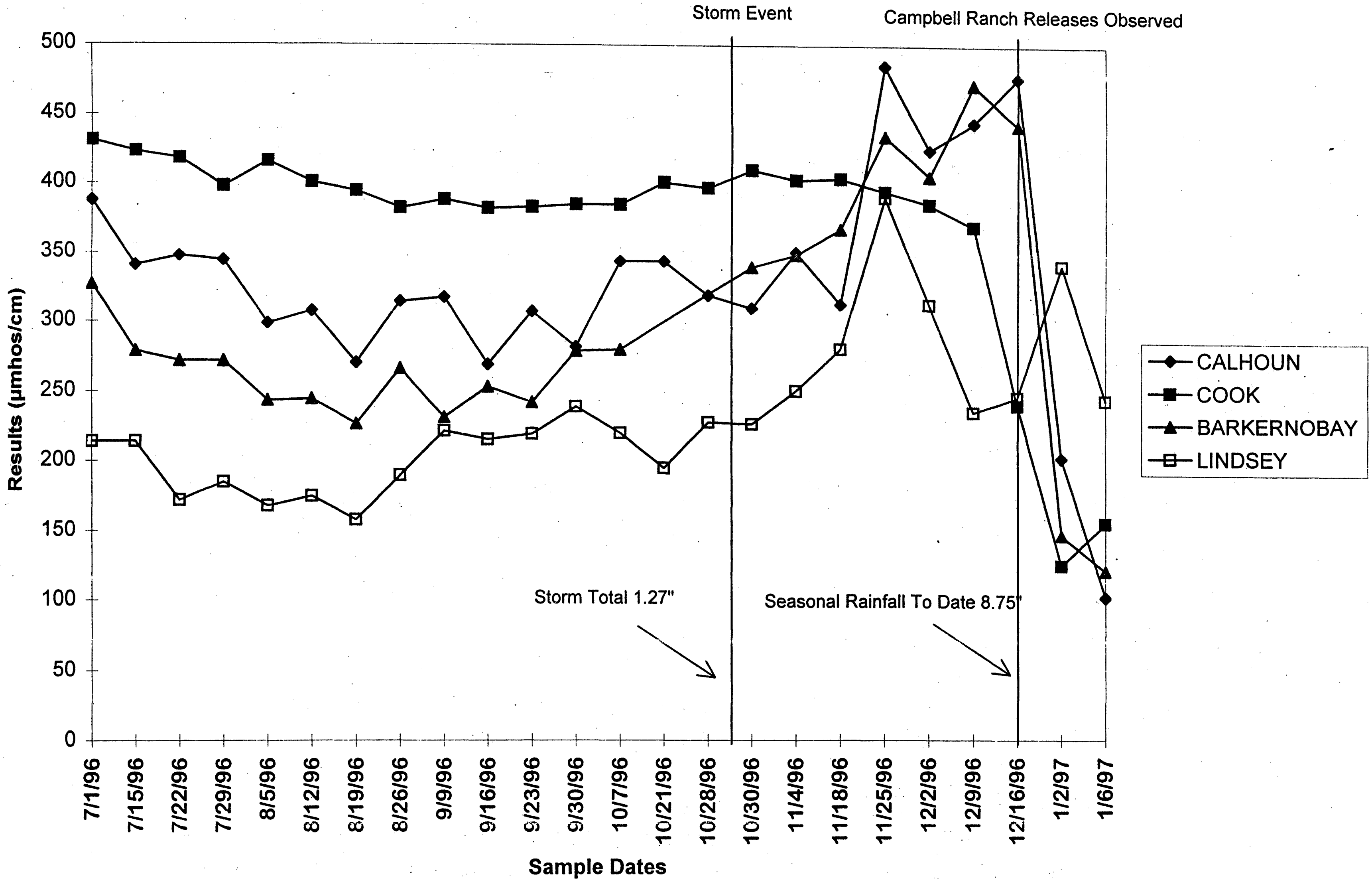


Figure 7-6. Electrical Conductivity Values for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)



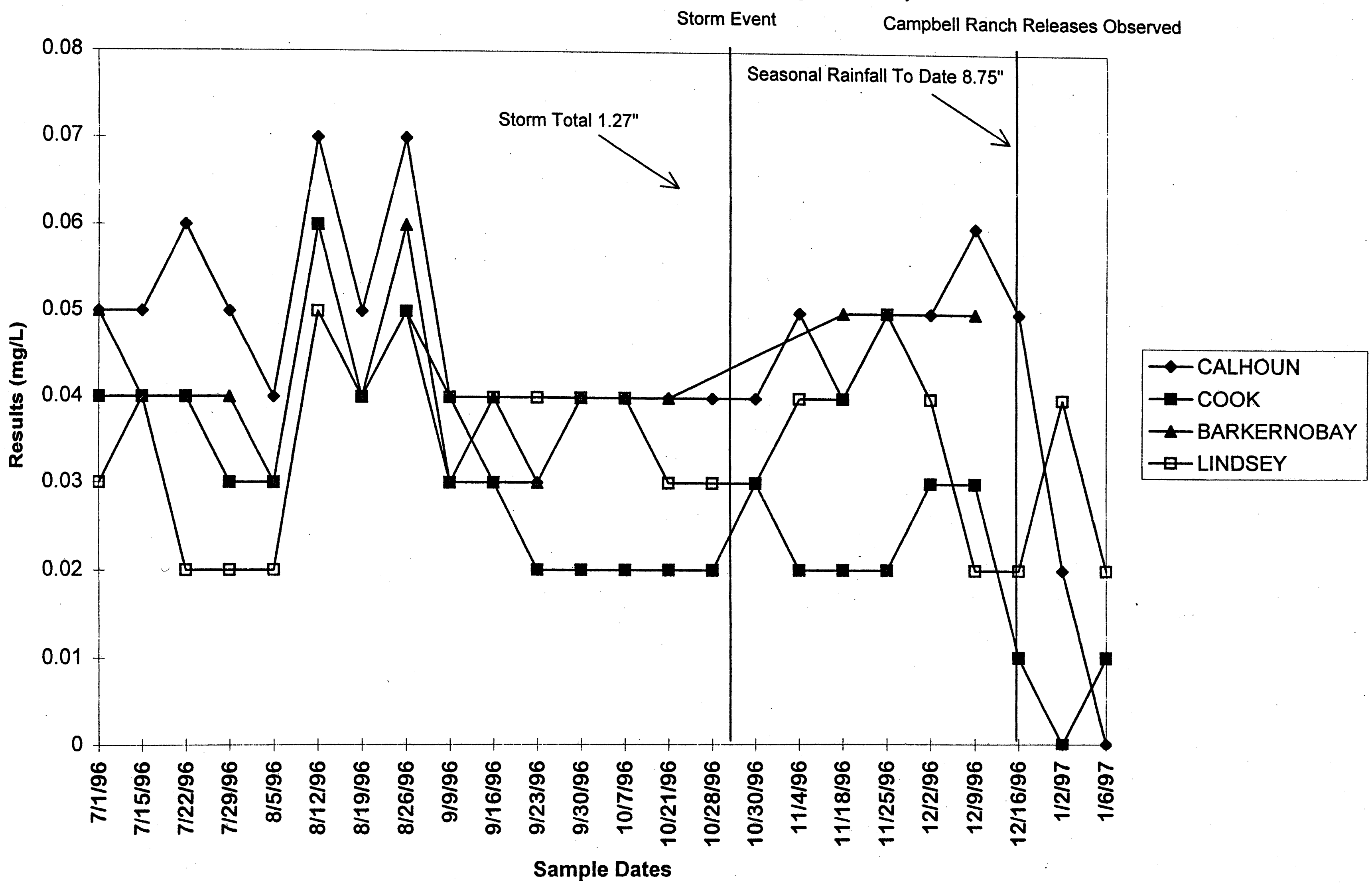


Figure 7-7. Bromide Results for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

Figure 7-8. pH Values for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

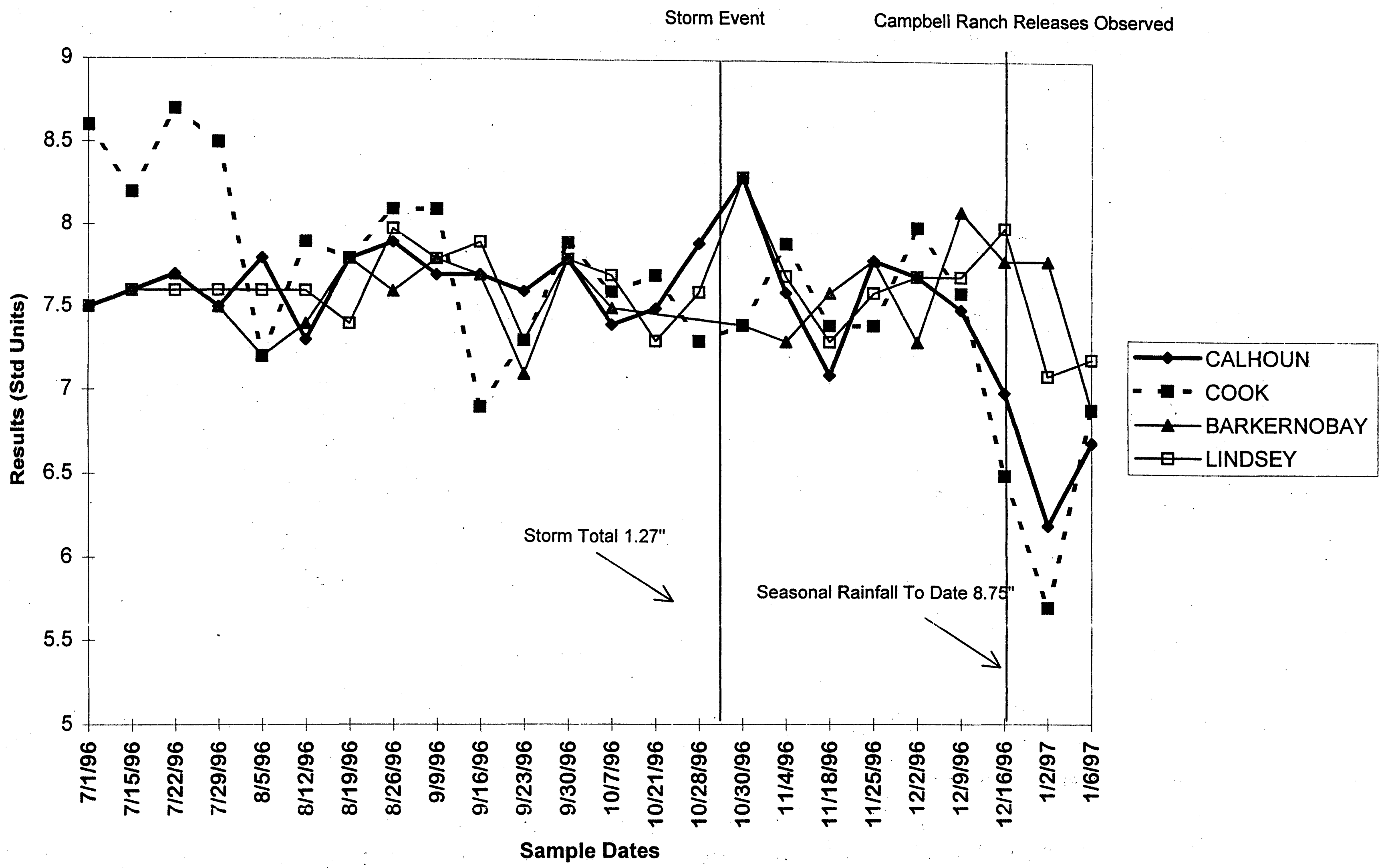


Figure 7-9. Alkalinity Results for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

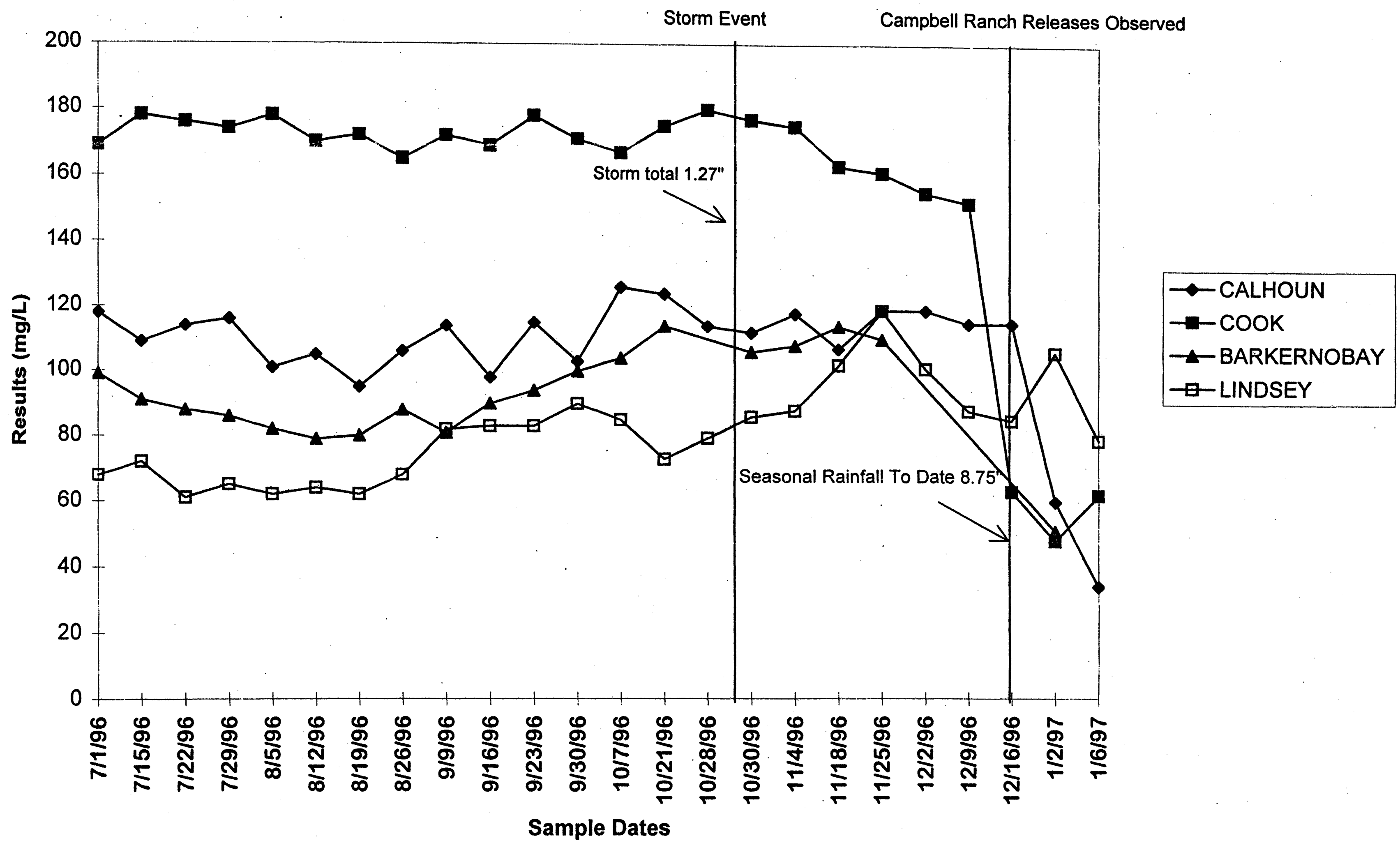


Figure 7-10. Dissolved Aluminum Results for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

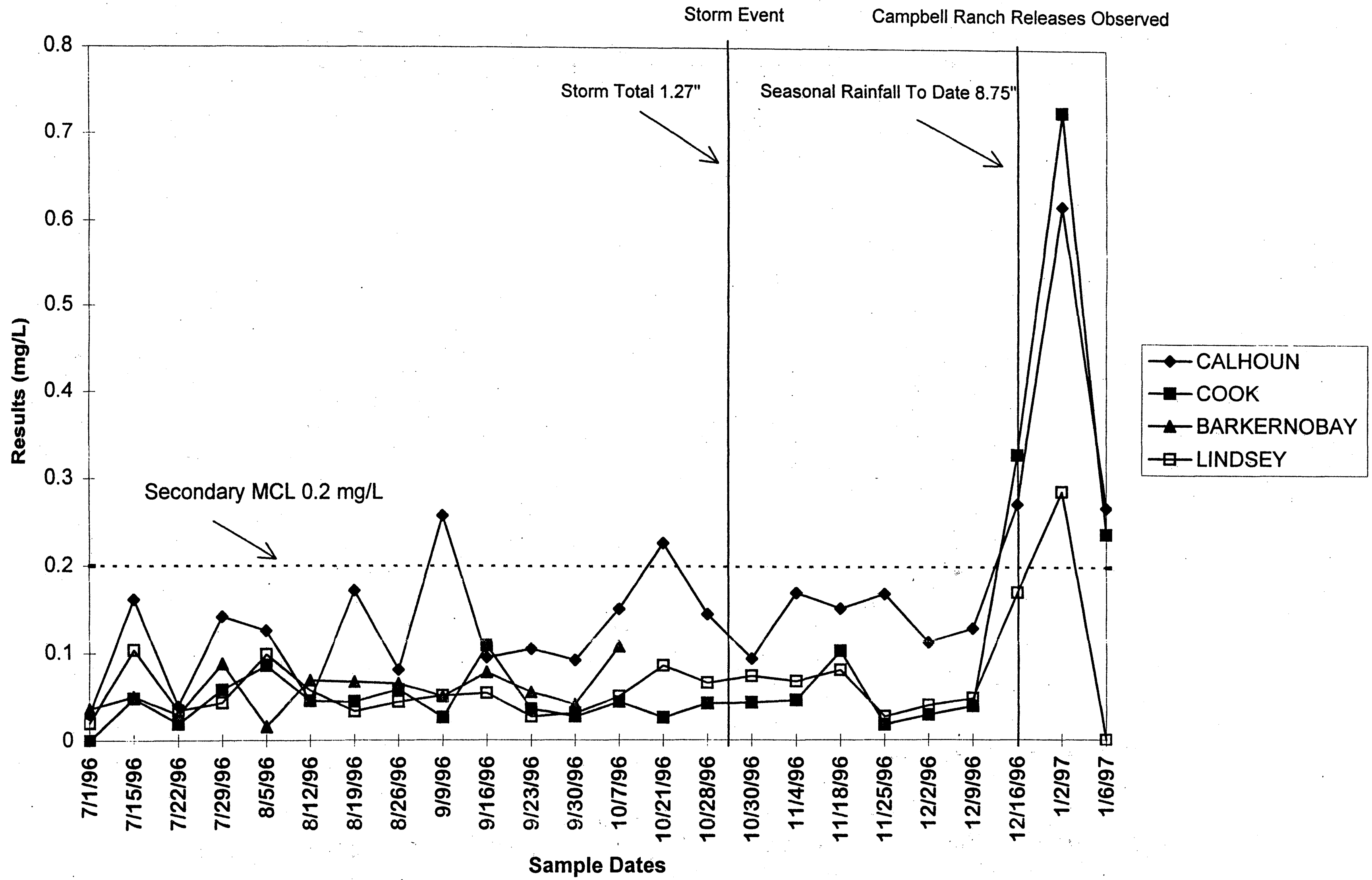


Figure 7-11. Dissolved Manganese Results for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

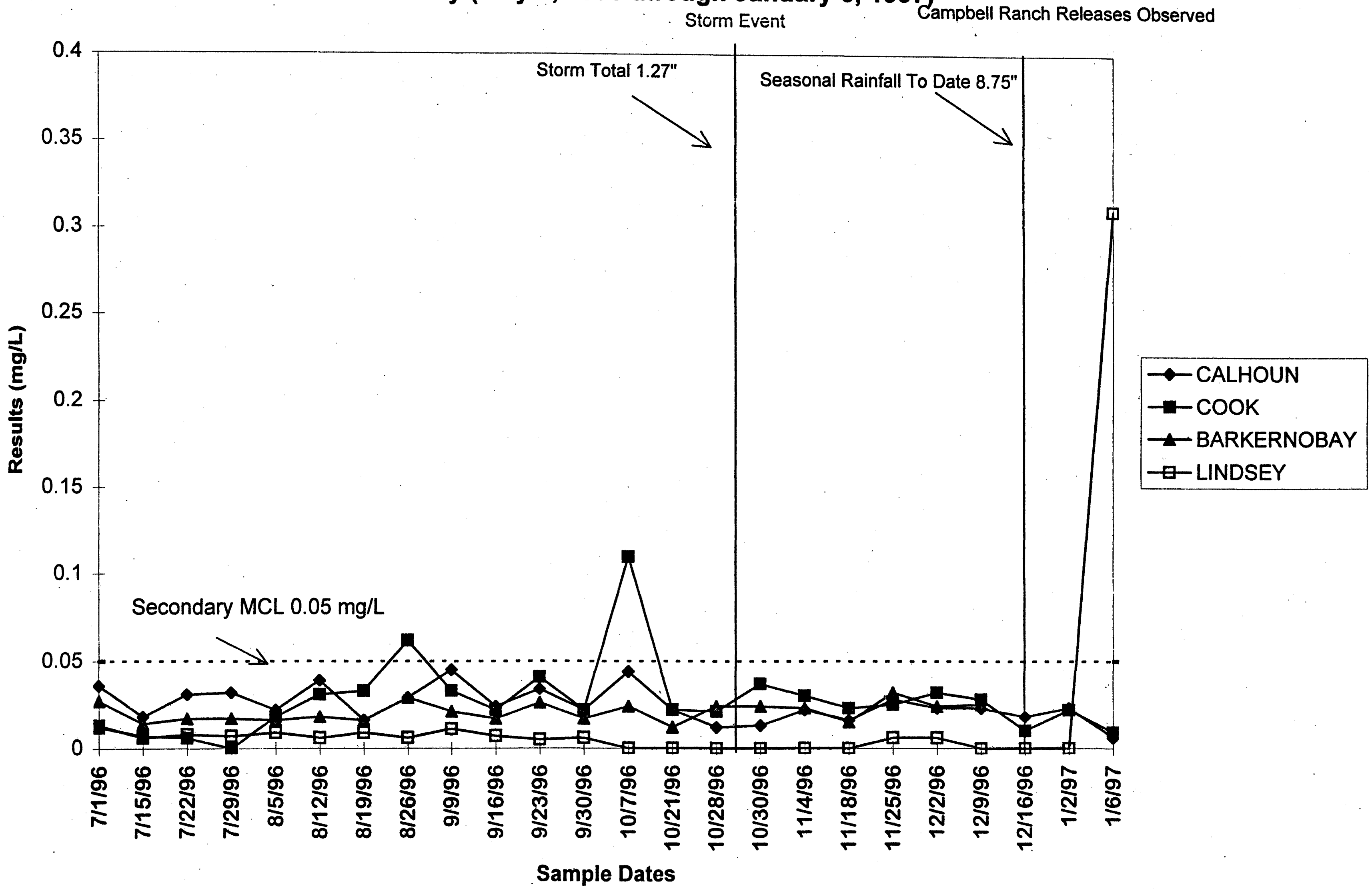


Figure 7-12. Dissolved Iron Results for North Bay Aqueduct/Barker Slough Watershed Study (July 1, 1996 through January 6, 1997)

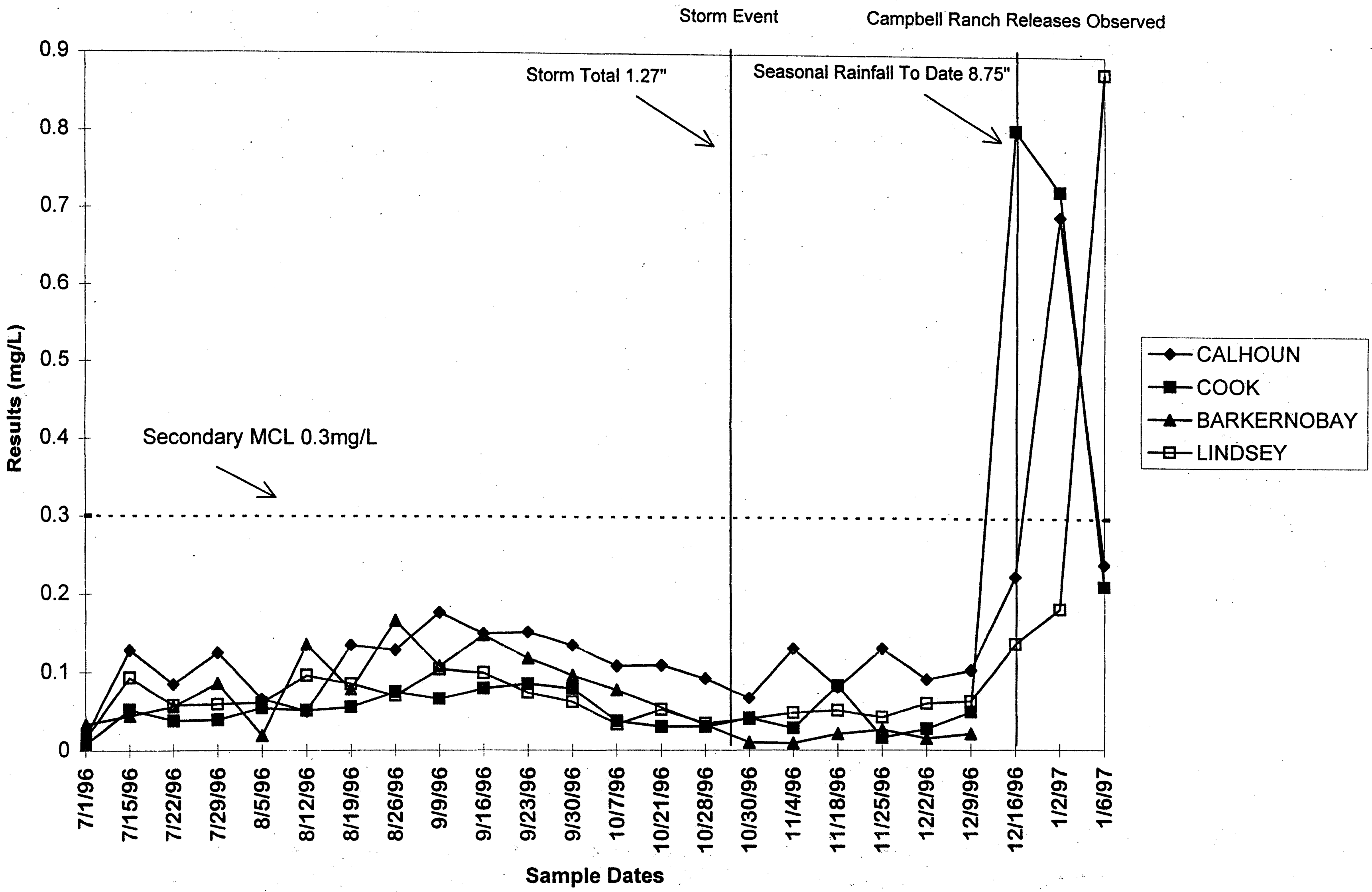


Table 7-1. Pesticides and Organic Compounds

Sample Dates	Locations	Analyte	Results	MCL
10/30/96	Calhoun Cut	Methylene chloride	0.0009 mg/L	0.005 mg/L
1/2/97	Calhoun Cut	Cyanazine	0.00003 mg/L	
1/2/97	Calhoun Cut	Cyanazine	0.00003 mg/L	
9/30/97	Barker Slough/Cook Lane	Diazinon	0.00004 mg/L	0.014 mg/L
9/30/97	Barker Slough/Cook Lane	Cyanazine	0.00004 mg/L	
9/30/96	Barker Slough/Cook Lane	Simazine	0.00006 mg/L	0.004 mg/L
10/30/96	Barker Slough/Cook Lane	Cyanazine	0.00007 mg/L	
10/30/96	Barker Slough/Cook Lane	Simazine	0.00007 mg/L	0.004 mg/L
1/2/97	Barker Slough/Cook Lane	Diazinon	0.00001 mg/L	0.014 mg/L
1/2/97	Barker Slough/Cook Lane	Cyanazine	0.00005 mg/L	
1/2/97	Barker Slough/Cook Lane	Simazine	0.00062 mg/L	0.004 mg/L
1/2/97	Barker Slough/Cook Lane	Diuron	0.00075 mg/L	
10/30/96	Lindsey	Methylene chloride	0.0014 mg/L	0.005 mg/L
1/2/97	Lindsey	Simazine	0.00011 mg/L	0.004 mg/L
1/2/97	Lindsey	Diuron	0.00045 mg/L	
9/30/96	Barker Slough Pumping Plant	Diazinon	0.00005 mg/L	0.014 mg/L

E. coli Data

E. coli is a bacteria found in the intestinal tracts of humans and most warm-blooded animals. The occurrence of *E. Coli* in water samples is considered a specific indicator of fecal contamination. Weekly sampling for (*E. coli*) began on July 1, 1996 at four sampling sites in the Barker Slough Watershed. The results were obtained using the Colilert 51-Well Quanti-Tray MPN Enumeration Test Procedure for 100 ml samples for enumeration of *E. coli.*

Because of the high values for *E. coli* obtained from the initial samples, subsequent samples were tested using undiluted samples, along with dilutions of 1:10 and 1:100. Reported results were then taken from quantified values obtained from the least diluted sample test. These results are in Figure 7-13.

The results indicated that higher *E. coli* levels were measured at the Barker Slough/Cook Lane, Calhoun Cut, and Barker Slough Pumping Plant sampling sites. Lindsey Slough consistently had lower *E. coli* levels than the other sites. This information suggests that the major sources of *E. coli* to the pumping plant are delivered through waters from Calhoun Cut and Barker Slough.

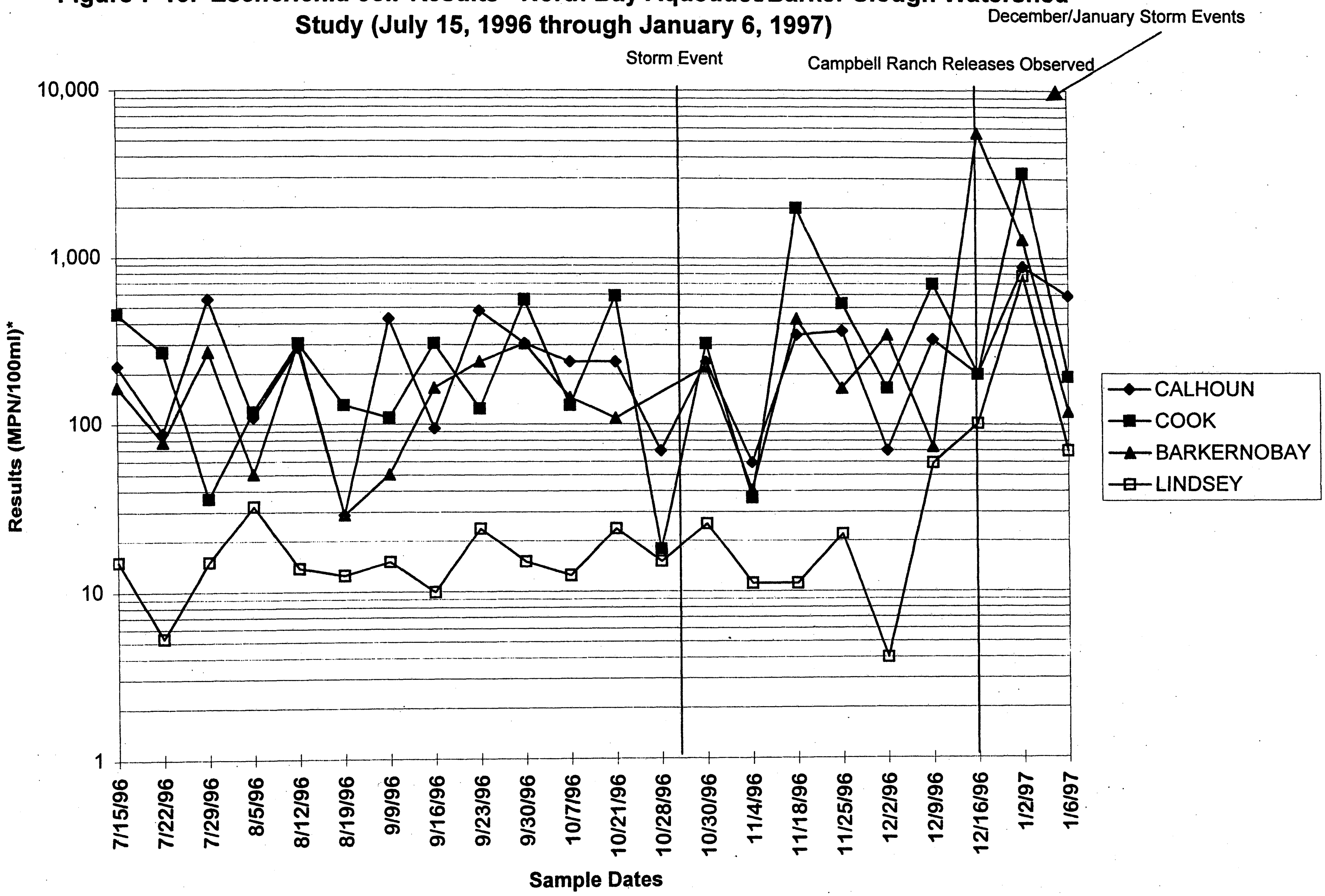
Storm Events and Yolo Bypass Sampling

Barker Slough Storm event sampling occurred on October 29, 1996, in accordance with Phase I monitoring as specified by the *Workplan for the Barker Slough Watershed*. Most of the runoff in the Barker Slough watershed from this event was contained in the irrigation pond on Campbell Ranch. Releases from the irrigation pond into Barker Slough were not observed until December 16, 1996 which coincided with sampling under the workplan. However, releases may have occurred as early as December 9, 1996 according to the owner of Campbell Ranch, Inc.

Yolo Bypass Sampling occurred on December 17, 1996 at the western part of the Fremont Weir (Input Site) and on December 18, 1996 at Shag Slough at the Liberty Island Bridge (Output Site). Results are summarized in Table 7-2.

Surface water at the Fremont Weir sampling site may be biased with Sacramento River water. The eastern portion has a greater percent of Sutter Bypass water as well as Feather River water. Based on these two samplings, the Yolo Bypass appears to accumulate DOC as surface water moves from north to south. Further investigation would be needed to characterize water quality changes in the Yolo Bypass.

Figure 7-13. *Escherichia coli* Results - North Bay Aqueduct/Barker Slough Watershed Study (July 15, 1996 through January 6, 1997)



* Scale is logarithmic

Table 7-2. Yolo Bypass Sampling Event

Site	E. coli MPA	Alkalinity mg/L	Dissolved Bromide mg/L	DOC mg/L	UVA Abs/cm	Field DO mg/L	Field EC umhos/cm	Field pH	Field Turbidity NTU
Fremont Weir	47.8	67	0	1.8	0.049	10.2	127	6.9	35.2
Shag Slough	165.2	76	0	4.6	0.14	8.5	193	6.9	45.5

Fremont Weir Sampled on December 17, 1996

Shag Slough Sampled on December 18, 1996

Summary

The data in this chapter were presented at the January 16,1997 NBA Technical Advisory Committee meeting held at the City of Napa Water Treatment Plant. TAC members agreed on the following action items:

- Continue Phase I sample collection at all Study sites
- Investigate sources of bromide and possible influences by seawater intrusion
- Run comparisons of analytical method results between DWR Bryte Chemical Laboratory and laboratories used by NBA contractors

The first six months of data collected for this Study indicate that Lindsey Slough has better water quality than the other sampling sites, with the lowest water quality found at the Barker Slough/Cook Lane sampling site. The highest levels of DOC, THMFP, and UVA are seen at the Barker Slough/Cook Lane sampling site, and the lowest levels are seen at Lindsey Slough. Results for *E. coli* show that Lindsey Slough consistently had lower *E. coli* levels than the other sites. A year of sampling results will be reported in the final report for the Study as specified in the *Workplan for the Barker Slough Watershed*.

Chapter 8. Coordinated Pathogen Monitoring Program for the State Water Project

Introduction

In the *California State Water Project Sanitary Survey Update Report 1996*, recommendations were made to address the potential threat to human health of microbial contaminants in SWP waters, such as *Giardia lamblia* and *Cryptosporidium*. These recommendations included:

1. Current sampling for *Giardia lamblia* and *Cryptosporidium* should continue, and total and fecal coliform sampling should be carried out.

2. Further investigation of each watershed should be conducted to further evaluate the potential sources of microbial contaminants identified.

3. The microbiological safety of SWP source waters should be comprehensively evaluated on an ongoing basis, and should include implementation of the following elements:

   a. Institute total and fecal coliform and monitoring of SWP source water at key locations.

   b. Work with municipal SWP contractors to coordinate monitoring in such a manner as to make data collected by the contracting agencies comparable to data collected from within the SWP system.

   c. On an ongoing basis, monitoring data from contracting agencies should be accumulated, along with data collected from within SWP.

   d. Results of the data analyses and evaluations should be shared on an ongoing basis among municipal contractors and DWR staff.

In addition to the recommendations made in the sanitary survey update report, the ICR was promulgated in May 1996, and the ICR Study began in July 1997. The rule requires large public water systems (systems serving a population of ≥100,000 persons) to routinely monitor influent water for microbiological contaminants, including total and fecal coliforms, *Giardia lamblia*, *Cryptosporidium*, and viruses monthly for 18 months. The rule also requires these large public water suppliers to routinely monitor finished water if, during any of the first 12 months of monitoring of the treatment plant influent, the following was detected:

1. 1,000 or more *Giardia lamblia* cysts/100 L,

2. 1,000 or more *Cryptosporidium* oocysts/100 L, or

3. One or more total culturable viruses/L.

This project was developed based on recommendations made in the sanitary survey update report and to augment data which will be collected by the microbiological monitoring required by the ICR. The data from this monitoring program, with the ICR monitoring data (obtained by public water suppliers using the SWP as a source of drinking water), will provide a complete set of microbiological data which may be used to evaluate and assess the microbiological safety of SWP source waters used for drinking water.

Project oversight and review are provided by the Sanitary Survey Action Committee. This committee meets regularly, and includes staff from SWC, DWR's DPLA and O&M, MWD, USEPA (Region IX), Department of Health Services, and the State Water Resources Control Board.

Scope

The coordinated monitoring program links and enhances the current and proposed monitoring programs of MWD of Southern California, the DWR's O&M, and DPLA's MWQI Program.

The project design incorporates three sample types: monthly samples, storm event samples, and contingency samples. The project's monthly sampling started in November 1996 and continued through October 1997. Storm event based sampling has been conducted at 11 of the SWP locations which include selected monthly sampling locations. Provisions for the collection of contingency samples were made in the Study design, and have been used for additional sampling of flood waters from the January 1997 floods.

Sampling locations were selected to include the source waters of the SWP, the Delta, the SWP's California Aqueduct, and the major reservoirs comprising the SWP system. The sampling locations include the Sacramento River above and below the American River, the Sacramento River above and below the City and County of Sacramento's publicly owned treatment works outfall, the San Joaquin River above and below the City of Stockton's publicly owned treatment works outfall, the Delta, the SWP's California Aqueduct, and SWP reservoirs.

The USEPA's ICR method for both *Giardia/Cryptosporidium* and *Clostridium perfringens* are used for this Study. This will allow a direct comparison with the results obtained by utilities using SWP water and requiring participation in the ICR Study using these methods.

Monthly Monitoring Locations

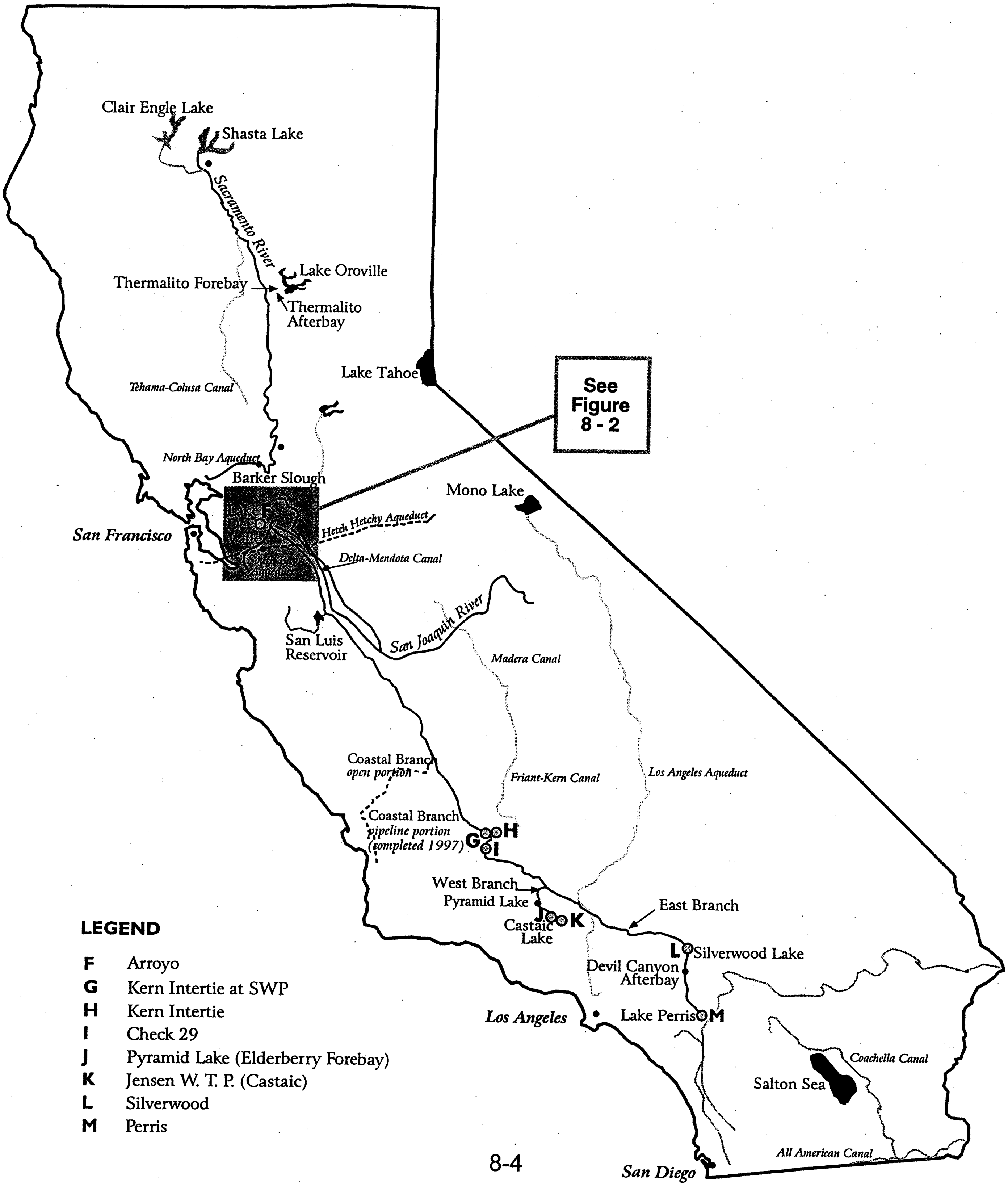
Monthly samples were collected at 14 locations listed in Table 8-1 and displayed in Figure 8-1. Sampling sites in the Delta and its tributaries are shown in greater detail in Figure 8-2. MWD will be conducting monthly sampling from Castaic and Silverwood Lakes at the intakes for the Jensen and Mills Water Treatment Plants, respectively. The source water for these plants at the time of sampling will consist of 100 percent SWP water.

Table 8-1. Monthly Monitoring

Sampling Site	Sampling by:
Sacramento River at Bryte Bend, at the marina	DPLA
Sacramento River above Sacramento Regional Wastewater Treatment Plant but below confluence with American River, Miller Park dock	DPLA
Sacramento River below Sacramento Regional Wastewater Treatment Plant, Greenes Landing	DPLA
San Joaquin River at Vernalis, at the Airport Road bridge	DPLA
Stockton Wastewater Treatment Plant[1], at Holt Road	DPLA
Banks Pumping Plant	O&M
Delta-Mendota Canal at McCabe Road	O&M
Arroyo Valle Creek Inflow to Lake Del Valle (when flowing, approximately 5 months/year), at the creek mouth	O&M
California Aqueduct, Check 29	KCWA/O&M
Pyramid Lake, at the tower in Elderberry Forebay, release from Elderberry Forebay to Castaic	O&M
Castaic Lake, influent to Jensen Water Treatment Plant	MWD
Silverwood Lake, influent at Mills Water Treatment Plant or Devil's Canyon	MWD
Perris, at the outlet tower	O&M
Barker Slough Pumping Plant	O&M

[1] Samples are taken downstream of the Stockton POTW outfall at or shortly after the midpoint of an ebb tide at the sampling site to ensure flow is toward the Delta.

Figure 8 - 1
Coordinated Pathogen Monitoring Program for the State Water Project

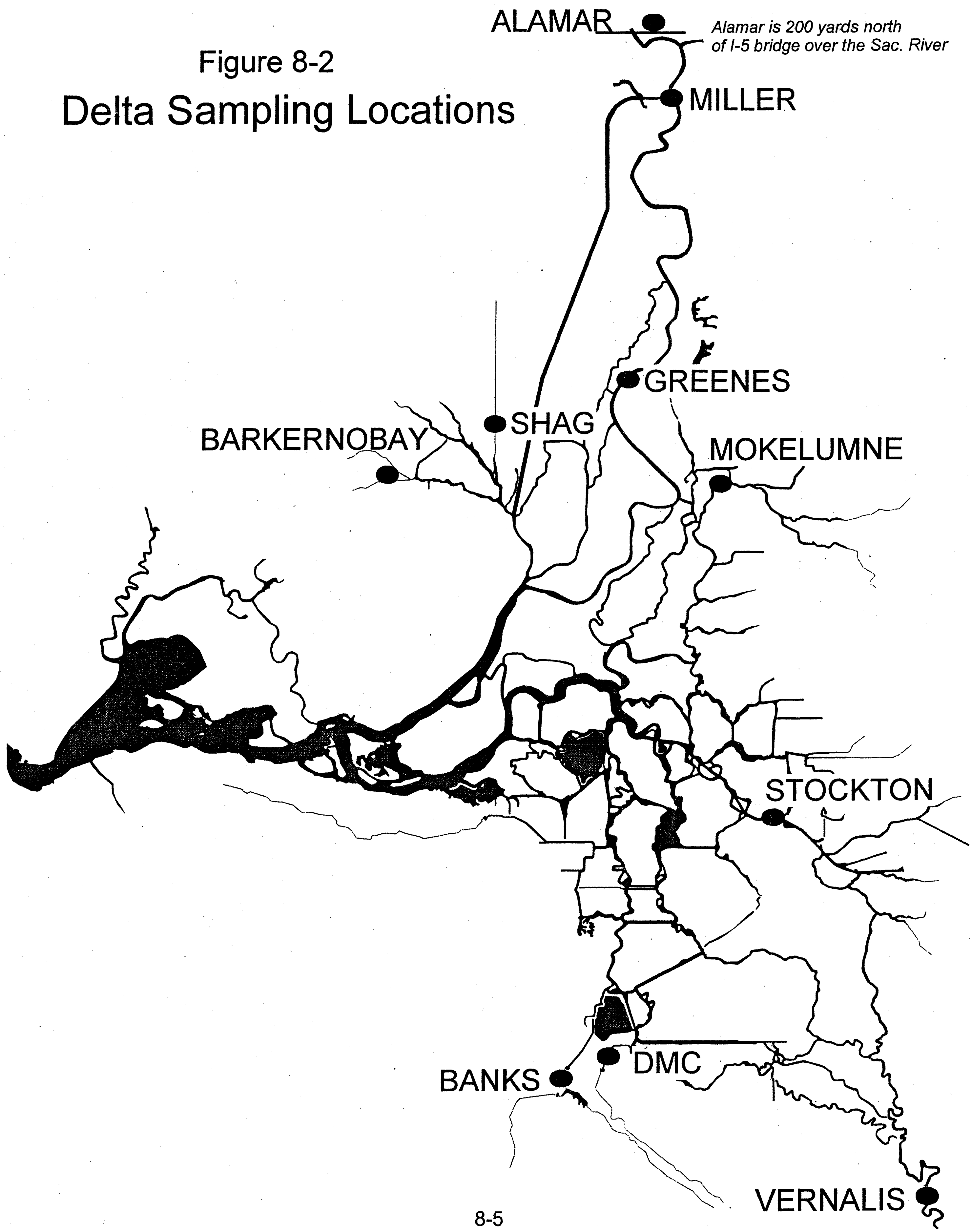


LEGEND

F	Arroyo
G	Kern Intertie at SWP
H	Kern Intertie
I	Check 29
J	Pyramid Lake (Elderberry Forebay)
K	Jensen W. T. P. (Castaic)
L	Silverwood
M	Perris

Figure 8-2

Delta Sampling Locations



Event Monitoring Locations

Storm and flood event sampling at 16 sampling locations was included in the Study (Table 8-2). Plans were made for storm event based samples to be obtained during the first flush of a storm, during a storm event in the middle of the wet season, and during a storm event late in the wet season. The first flush storm event was sampled during October through December 1996, the mid-season event during January 27, 1997 through February 21, 1997, and the late season event during February 21, 1997 to the end of the 1996-97 wet season. The storm and flood event sampling locations are shown in Figures 8-1 and 8-2.

Four flood-related locations were added to the 12-event based monitoring locations as a result of the January 1997 floods. Flood event samples were collected during January 6-10, 1997 at the 12-storm event sampling locations with two sites added to monitor the flood waters of the Mokelumne River and the Yolo Bypass. Two locations were added coinciding with the opening of the Kern River Intertie to the California Aqueduct during the flooding, with one sample from the Kern River prior to its confluence with the California Aqueduct and one sample from the California Aqueduct upstream of this confluence.

All event monitoring locations were sampled for all organisms included in the Study. Additional samples were collected for total/fecal coliforms and *E. coli* at the Delta water sampling locations weekly through the end of January 1997 in order to obtain additional information on the levels of these organisms carried by the receding flood waters.

Storm Event Monitoring Criteria

A storm event for the purpose of this Study is defined as rainfall of sufficient intensity and duration resulting in measurable surface runoff, or a measurable change in existing runoff, from interior areas of the watershed into the system of streams, creeks, rivers, or other channels comprising the drainage system of the watershed. There are various factors related to the nature of the storm, and of the watershed that can influence surface runoff. Each watershed in this project is expected to respond differently to rainfall events.

The area drained, steepness of slopes and topography in general, land use practices, and the types of soils and vegetation in the watershed all affect overland flow, or runoff of water into the watershed drainage system. For example, the thickness and type of vegetation can retard or enhance runoff, with some densely vegetated areas capable of substantially reducing runoff.

Table 8-2. Event-Based Monitoring

Sampling Site	Sampling by:
Sacramento River at Bryte Bend, at the marina	DPLA
Sacramento River above Sacramento Regional Wastewater Treatment Plant but below confluence with American River, at Miller Park dock	DPLA
San Joaquin River at Vernalis, at the Airport Road bridge	DPLA
Banks Pumping Plant	O&M
Clifton Court, at the West Canal intake near radial gates	O&M
Delta-Mendota Canal at McCabe Road	O&M
Arroyo Valle Creek Inflow to Lake Del Valle, near the creek mouth	O&M
California Aqueduct, Check 29 [1]	KCWA/O&M
Pyramid Lake, at the Piru Creek gauging station	O&M
Castaic Lake at Elderberry Forebay [2]	O&M
Silverwood Lake [3]	O&M
Barker Slough Pumping Plant	O&M
Mokelumne River at New Hope [4]	O&M
Shag Slough at Liberty Island Bridge [4]	DPLA
Kern River Intertie just prior to confluence with the aqueduct [4]	O&M
California Aqueduct at MI 241.02 just upstream of the Kern River Intertie [4]	O&M

[1] Inflow to the San Luis Reach of the California Aqueduct from Cantua and Salt Creeks may be used as a storm event monitoring trigger for this site.

[2] a. Fish Creek and Castaic Creek confluence at the lowest debris basin above Elderberry Forebay
b. Fish Creek - if no water in debris basin
c. Castaic Creek
d. Elizabeth arm of lake at the gauging station

[3] a. Miller Canyon gauging station
b. Cleghorn drainage
c. Sawpit

[4] Flood event related sites.

The permeability of soils can have an effect on drainage, with clay soils being more impermeable and producing greater runoff quickly relative to more permeable sandy soils, with loam soils falling in between depending on their composition. The saturation or moisture content of the soil resulting from previous rainfall or other sources is a factor.

Ideally, a gauging station or flow meter measuring either the depth or the velocity of water in the stream would be located above the sampling site to determine the hydrograph of the storm event runoff. It is important for the purposes of this Study that the "first flush", i.e., the first storm of the wet season producing measurable runoff as discussed, be sampled on the rising side of the storm hydrograph, but before the crest or time of greatest flow or depth of water in the stream is reached. An upstream gauging station or flow meter could calculate or predict the rising hydrograph in order to determine the optimum time of sampling. After the sample has been taken, this type of data can also be used to retroactively determine the point on the hydrograph when the sample was obtained. Any tidal influences or regulated flows would have to be considered.

Since it is unlikely that gauging stations or flow meters are present, and/or may be placed in the channel at all sampling sites prior to the storm event, best professional judgement and a familiarity, knowledge of the watershed and how it responds to storm events will have to be employed by the sampler to estimate the appropriate point on the hydrograph to collect the storm-event sample. Should a storm-event sample be collected during the week when a monthly sample was scheduled to be collected, the monthly sample was not collected.

Microorganisms to be Monitored and Methods

All samples obtained for this monitoring program are analyzed for the following microorganisms by the indicated analytical methods, unless exceptions are specified:

1. *Giardia* and *Cryptosporidium*

   a. Analysis: USEPA ICR Protozoan Method For Detecting *Giardia* Cysts and *Cryptosporidium* Oocysts in Water by a Fluorescent Antibody Procedure, Section VII, EPA/600/R-95/178, April 1996.

   b. Sampling: Information Collection Requirements Rule - Protozoa and Enteric Virus Sample Collection Procedures, EPA/814-B-95-001, June 1995.

   c. The sample volume to be filtered ranges from a minimum of 25 liters to a maximum of 100 liters of water, which is substantially dependent on the turbidity of the water being sampled. A 100-liter volume of water will be filtered if at all possible. If turbidity is greater than 160 NTU, a 4-liter grab sample will be obtained and submitted for analysis in place of the filtered sample, which is a project specific change to the ICR sampling protocol.

d. The desired Method Detection Limit for this project is 10 cysts or oocysts/100L. Up to a total of five slides may be analyzed per sample to obtain this detection limit. The results of each slide is combined for detection limit purposes, and is also reported separately for each sample analyzed.

1. Total and fecal coliforms, and *E. coli*

a. Standard Methods for the Examination of Water and Wastewater, 19th Edition, 1995. 5 Tube - 5 Dilution Standard Total Coliform/Fecal Coliform Fermentation Technique, with *Escherichia coli* Procedure added. Sections referenced include: Section 9221 A-C and Section 9221 F.

b. A 100-ml grab sample will be collected in sterile containers.

3. *Clostridium perfringens*

a. USEPA ICR Membrane Filter Method for C. Perfringens, Section XI, (EPA/600/R-95/178), April 1996.

b. A 100-ml grab sample will be collected in sterile containers.

Sample Holding Time

The holding times established for this Study are as follows:

1. *Giardia* and *Cryptosporidium*: 96 hours

2. Total and fecal coliforms, and *E. coli*: 24 hours

3. *Clostridium perfringens*: 24 hours

Samples are collected, packaged, and shipped as soon as possible to meet these holding times. When collecting samples, the *Giardia/Cryptosporidium* sample is collected first, since this sample will require more time to collect. The samples collected for total and fecal coliforms, *E. coli*, and *Clostridium perfringens* are collected last and just prior to leaving the sampling site in order to conserve sample holding time.

Sampling Schedule

Storm-event sampling began with the first storm of the wet season of 1996-97, which occurred in late October 1996. Monthly samplings were conducted as follows:

November 25-27, 1996	May 19-21,1997
December 16-18, 1996	June 24-26, 1997
January 20-22, 1997	July 21-23, 1997
February 17-19, 1997	August 18-20, 1997
March 17-19, 1997	September 15-17, 1997
April 21-23, 1997	October 20-22, 1997

Analytical Laboratory

Samples collected by MWD, DWR's O&M and DPLA, and KCWA staff for *Giardia* and *Cryptosporidium,* total and fecal coliforms/*E. coli*, and *Clostridium perfringens* are sent to BioVir Laboratories (Benicia) for analysis.

Quality Assurance and Quality Control

QA/QC is provided as required by the analytical methods, in compliance with the ICR where applicable, and in accordance with existing DWR's DPLA QA/QC protocols. In addition, split matrix spike samples will be collected from sampling locations throughout the project area and analyzed by BioVir Laboratories.

1. Analytical precision: Detection limits improve with the reading of more slides, and reporting results based on all slides taken together. Viewed another way results from reading more than one slide would give some indication of precision. This requires reading more than one slide to achieve the detection limit, BioVir Laboratories reports the results of each slide separately, while combining the results for all slides for detection limit purposes.

2. The USEPA ICR Performance Evaluation sample analysis for *Giardia/Cryptosporidium* is complete. These performance evaluations are designed to determine which laboratories are approved to participate in the ICR Study, which began in July 1997. BioVir Laboratories, along with 27 laboratories nationwide, has been approved to analyze ICR samples (see Appendix C). Once the ICR Study is underway, laboratories will have to meet specific QC and PE Study requirements during the course of the 18-month Study

to maintain USEPA approval to continue to participate in the Study, utilities participating in the Study are required to use an USEPA ICR-approved laboratory. Should the laboratory they are using not retain ICR approval during the Study, utilities are required to immediately begin using another ICR-approved laboratory.

3. Results of the weekly IFA positive and negative batch samples required by the ICR protozoan method will be reported along with the data. Also required by the ICR protozoan method, are monthly data on the recovery of cysts and oocysts from spiked QC samples, which will also be included in the final report.

4. The results of the quarterly California Department of Health Services certification for microbiological testing (coliforms and *E. coli*) are included in Appendix D. Laboratories must maintain State certification under the Drinking Water Certification Program to participate in the Study.

5. The results of the total/fecal coliforms, *Clostridium perfringens*, and *E. coli* quality control results are in Appendix E.

Monitoring Conducted

The results of the 51 samples collected and analyzed through May 1, 1997 are included in this discussion. Approximately 200 samples were collected for this Study at its completion (October 1997).

***Giardia* and *Cryptosporidium* Sampling and Analysis**

Up to five slides were analyzed for each sample to achieve the project detection limit of 10 cysts or oocysts per 100 liters of water. Following the ICR method, a filtered sample was obtained where possible and practical, and where turbidity was less than 160 NTU. When turbidity was greater than 160 NTU or where storm event or flood event conditions made it unsafe to collect a filtered sample of between 25 to 100 liters of water, a 4-liter grab sample was obtained.

The *Giardia* and *Cryptosporidium* results are shown in Tables 8-3 and 8-4, and are compared with the LeChevallier and Norton (1995) Study, which reflects the results of 347 surface water samples collected between 1988 and 1993 from 72 water treatment plants in 15 states and two Canadian provences. The sample size in the LeChevallier and Norton (1995) database was 499 L, with a range of 86.6 to 3,394 L; most samples were obtained from water treatment plants in the eastern United States.

The CPMP Study followed the ICR sampling protocol as closely as possible (with the exception of the 4-liter grab samples), and attempts were made to get a

100 L filtered sample when possible. The storm and flood event sampling results are combined with the monthly sampling results, but will be separated for comparative purposes in the final report.

Giardia and Cryptosporidium Results

The range of positive *Giardia* results was 2.4 to 129.8 cysts/100L, with a geometric mean of 29.2 cysts/100L. The LeChevallier and Norton (1995) Study had a range of 2 - 4380 cysts/100L for *Giardia*, and a geometric mean of 200 cysts/100L.

Table 8-3. *Giardia* Results

Study	Positive Results Range	Positive Samples Percent	Geometric Mean Cysts/100L
CPMP	2.4 - 129.8 cysts/100L	35 (18/51)	29.2
L&N	2 - 4380 cysts/100L	53.9 (187/347)	200

The range of positive CPMP *Cryptosporidium* findings was 4.4 oocysts/100L to 200 oocysts/100L, which was lower than the range of 6.5 - 6510 oocysts/100L seen by LeChevallier and Norton (1995). The geometric mean of the CPMP *Cryptosporidium* results was 29.7 oocysts/100L, which is lower than the geometric mean of 240 oocysts/100L for *Cryptosporidium* seen in the LeChevallier and Norton (1995) Study (Table 8-4).

Table 8-4. *Cryptosporidium* Results

Study	Positive Results Range	Positive Samples Percent	Geometric Mean Oocysts/100L
CPMP	4.4 - 200 oocysts/100L	22 (11/51)	29.7
L&N	6.5 - 6510 oocysts/100L	60.2 (209/347)	240

The range of positive *Clostridium perfringens* concentrations was 2 CFUs/100 ml to 800 CFUs/100ml, with several samples having none detected. In the samples analyzed, 76 percent (19/25) were positive. Samples were not analyzed for *C. perfringens* until December 1996 because the analytical laboratory was setting up to perform the analysis.

Total/fecal Coliforms and *E. coli*

Positive findings of fecal coliform concentrations ranged from 2 MPN to 22,000 MPN, with several samples having none detected. Positive *E. coli* concentrations results ranged from 2 MPN to 8000 MPN, with several samples having none detected.

Occurrence of *Giardia*, *Cryptosporidium*, and *C. perfringens* in Combination

Although the data set at this point in the Study is insufficient to perform meaningful statistical correlations on the covariance of the various organisms, observations were made on the occurrence of the organisms with each other in the same sample, as shown in Table 8-5.

Preliminary Data Trends

Only very general trends are discernable at this early point in the CPMP Study. Both *Giardia* and *Cryptosporidium* concentrations and the frequency of detections in the Sacramento River are higher at the northern sites and decrease as the water reaches the Banks and DMC sites. The San Joaquin River has concentrations and detection frequencies similar to the northern Sacramento River sites. Concentrations and detection frequencies in the California Aqueduct (Check 29) and in the reservoirs are lower than concentrations in either the Sacramento and San Joaquin Rivers or at the Delta sites (Banks and DMC). Storm and flood event sample concentrations and detection frequencies are generally higher than nonevent samples.

Table 8-5. *Giardia, Cryptosporidium*, and *Clostridium* Associations

ORGANISMS	***Clostridium perfringens* Plus *Giardia***	***Clostridium perfringens* Plus *Cryptosporidium***	***Giardia* Plus *Cryptosporidium***	***Clostridium, Giardia, Cryptosporidium***
LOCATION	Greenes 12/18/96	Greenes 12/18/96	Miller 10/30/96	Greenes 12/18/96
	Barker 12/16/96	Holt Rd. 12/18/96	Greenes 12/18/96	Vernalis 1/8/97
	Vernalis 12/19/96	Shag 1/8/97	Vernalis 11/19/96	Kern SWP 1/9/97
	Alamar 1/8/97	Vernalis 1/8/97	Vernalis 1/8/97	Barker 1/6/97
	Miller 1/8/97	Kern SWP 1/9/97	Kern SWP 1/9/97	
	Vernalis 1/8/97	Barker 1/6/97	Barker 1/6/97	
	Kern SWP 1/9/97			
	Barker 1/6/97			
	Clifton 1/6/97			
# of Samples	9	6	6	4

C. perfringens results are inconclusive, and a trend or trends are not evident. This is most likely a result of the small data set available in the Study.

Total and fecal coliforms and *E. coli* trends follow those of the *Giardia* and *Cryptosporidium*. Concentrations in the Sacramento River are higher at the northern sites and decrease at the Delta sites (DMC and Banks Pumping Plant). Barker slough concentrations are generally similar to those at the Sacramento River and Delta sites. The concentrations in the San Joaquin River at the Vernalis and Holt Road sites are similar to the northern Sacramento River sites. Concentrations and detection frequencies at the DMC site were lower than at the Banks Pumping Plant site. Concentrations and detection frequencies in the California Aqueduct and reservoirs are much lower than at the sites north of the Banks/DMC sites, which include the Sacramento and San Joaquin Rivers.

Other Activities

Other tasks which may be performed in association with the CPMP Study include:

1. Once the ICR Study begins, all ICR monitoring data from water treatment plants which use SWP water can be obtained. These data, in conjunction with data from sampling within the SWP, may be used to completely evaluate and assess the microbiological quality of SWP water.

2. Unless work is added, a final report will be produced in early 1998, and will contain data collected during October 1996 through October 1997. This report will likely be a collaborative effort between MWD, DWR's O&M, and DPLA, (with DWR-DPLA in the lead role).

3. Coordination meetings to discuss Study progress, analytical results, and statistical analysis may be scheduled.

Chapter 9. New Parameter Study

The purpose of the New Parameter Study was to determine the concentrations of newly or soon to be regulated constituents in Delta water, and to determine if it is necessary to add more parameters to the routine MWQI monitoring schedule. The Study was planned to be conducted from June 1995 through June 1997. The results of this Study were designed to provide information which could be used to: (1) obtain monitoring waivers for constituents, (2) provide data that can be used to satisfy a system's initial sampling requirements, (3) provide data that may be used to evaluate future best available technology (BAT) requirements.

The Phase II and Phase V rules under the USEPA's drinking water regulations establishes limits for several organic and inorganic chemicals. In addition, California has established new MCLs for a number of constituents. The New Parameter Study was designed to gather information for the newly regulated constituents, for which little historical data was available.

The California DHS has the authority to grant waivers to compliance monitoring requirements. Waivers are based on a vulnerability assessment, or prior analysis, or both. Waiver determinations are based on a contaminant-by-contaminant basis. At this time DHS, has not developed standard guidelines for obtaining a waiver. Therefore, it was not possible to model this Study on known waiver requirements. Consequently, the Study was designed based on the current standard compliance monitoring requirements.

Study Parameters

The analytical parameters included in the Study are listed in Table 9-1, New Parameter Study List of Parameters. With a few exceptions, this list includes most of the newly or soon to be regulated parameters. The list of Study parameters includes some parameters that are monitored under the MWQI Program.

The pathogens, including *Giardia* and *Cryptosporidium*, were not proposed for monitoring under this Study. The MWQI program has developed a Study to address these constituents. The D/DBPs are not included on the list of parameters. D/DBPs are formed during the water treatment process and are not likely to be found in the source water. A MWQI Study is underway to simulate the formation of D/DBPs in a distribution system using Delta waters as source water.

Although waivers may be granted on a vulnerability assessment alone, DWR conducted analyses for all parameters listed in Table 9-1 for the following reasons: (1) DHS has not developed standard waiver guidelines and may require monitoring results in the future; and (2) analytical laboratories charge based on the method, not the number of parameters analyzed for in each method.

Table 9-1. Municipal Water Quality Investigations New Parameter Study List of Parameters

1,1,1,2-Tetrachloroethane	Dinoseb
1,1,2,2-Tetrachloroethane	Diquat
1,1,2-Trichloroethane	Di-2(ethylhexyl)adipate
1,1-Dichloropropane	Di-2(ethylhexyl)phthalate
1,2,4-Trichlorobenzene	Endothall
1,2-Dibromoethane (EDB)	Endrin
1,2-Dichloropropane	Ethylbenzene
1,3-Dichloropropane	Ethylene thiourea
2,2-Dichloropropane	Fluorotrichloromethane
2,3,7,8-TCDD	Glyphosate
2,4,5-T	Heptachlor
2,4,5-TP	Heptachlor epoxide
2,4-D	Hexachlorobenzene
3-Hydroxycarbofuran	Hexachlorobutadiene
Acifluorfen	Hexachlorocyclopentadiene
Acrylonitrile	Hexachloroethane
Alachlor	Lindane
Aldicarb	Manganese
Aldicarb sulfone	Mercury
Aldicarb sulfoxide	Methomyl
Aldrin	Methoxychlor
Antimony	Methyl tertiary butyl ether
Asbestos	Methylene chloride
Atrazine	Metolachlor
Barium	Metribuzin
Benzo(a)pyrene	Molybdenum
Beryllium	Nickel
Boron	Nitrate
Bromacil	Nitrate-Nitrite (Total)
Bromobenzene	Nitrite
Bromochloroacetonitrile	Oxamyl
Bromomethane	o-Chlorotoluene
Butachlor	o-Dichlorobenzene
Cadmium	PCBs
Carbaryl	Pentachlorophenol
Carbofuran	Picloram
Chlordane	Prometon
Chlorobenzene	Propachlor
Chloroethane	p-Chlorotoluene
Chloromethane	Selenium
Chromium	Simazine
cis-1,2-Dichloroethylene	Styrene
Cyanazine	Sulfate
Cyanide	Tetrachloroethylene
Dalapon	Thallium
Dibromoacetonitrile	Toluene
Dibromochloropropane	Toxaphene
Dicamba	trans-1,2-Dichloroethylene
Dichloroacetonitrile	Trichloroacetonitrile
Dichlorodifluoromethane	Trichloropropane
Dichloroethane	Trifluralin
Dichloropropene	Xylenes (Total)
Dieldrin	Zinc

Sampling Sites

The sample sites consist of the major sites of diversion from the Delta: Barker Slough Pumping Plant, Contra Costa Pumping Plant, Delta-Mendota Canal, and Banks Pumping Plant. Old River near Byron was added as a sampling site in June 1996.

Timing of Sampling

Sample collection began in June 1995 and continued quarterly during September, December, and March. This report includes results for October 1, 1995 through December 31, 1996 (see Table 9-2, New Parameter Study 1995/96 Sample Results). Summary results for the parameters were detected during the Study and are discussed in this report and included in Table 9-3, Summary of New Parameter Study Detections, June 1995 through December 1996.

Continued Monitoring

Study results were used to determine whether certain parameters should be added to routine MWQI monitoring, based on their frequency and level of detection.

Regulatory Update

The following is an update of the regulations that apply to this Study. A list of applicable parameters, analytical methods, and corresponding federal regulations are shown in Table 9-2.

<u>Phase II Rule</u>

The Phase II Rule for synthetic organic compounds and inorganic compounds was finalized in two notices published on January 30, 1991 and July 1, 1991. The rule regulates 38 organic and inorganic chemicals. As part of the Phase II requirements, systems must monitor for contaminants based on a 9-year compliance cycle. The 9-year compliance cycle contains three 3-year compliance periods.

In addition to the 38 regulated compounds, Phase II requires monitoring for 30 unregulated contaminants. All systems monitor at a minimum or base requirement concentration for the contaminant or contaminant group unless a waiver has been granted by the State. Waivers to sampling requirements are available to all systems at

Table 9-2. Study Parameters, Analytical Methods, and Regulations

Method	Constituents	Regulation	MCL mg/L
Inorganics			
204.2	Antimony	Phase II, V	0.006
	Asbestos	Phase II	7 mil fibers/L
208.1	Barium	Phase II	2
210.2	Beryllium	Phase II, V	0.004
212.3	Boron	Phase VIB	0.6
213.2	Cadmium	Phase VIB	0.005
218.2	Chromium	Phase II	0.1
335.2	Cyanide	Phase II, V	0.2
243.2	Manganese	Phase VIB	0.2
245.2	Mercury	Phase II	0.002
246.2	Molybdenum	Phase VIB	0.04
249.2	Nickel	Phase II, V	0.1
352.1	Nitrate	Phase II	10 (as N)
354.1	Nitrite	Phase II	10 (as N)
270.3	Selenium	Phase II	0.05
375.2	Sulfate	Phase II, V, Sulfate Rule	
279.2	Thallium	Phase II, V	0.002
353.2	Total nitrate-nitrite	Phase II	10 (as N)
289.2	Zinc	Phase VIB	2
Organics			
507	**Nitrogen and Phosphorus Pesticides**		
	Bromacil	Phase VI B	
	Butachlor	Phase II	
	Metolachlor	Phase II, VIB	0.1
	Metribuzin	Phase II, VIB	0.2
	Prometon	Phase VIB	
508	**Chlorinated Pesticides**		
	Aldrin	Phase II	
	Cyanazine	Phase VIB	0.001
	Dieldrin	Phase II	
	Endrin	Phase V	0.002
	Heptachlor	Phase II	0.0004
	Heptachlor epoxide	Phase II	0.0002
	Lindane	Phase II	0.0002
	Methoxychlor	Phase II	0.04
	PCBs	Phase II	0.0005
	Propachlor	Phase II	
	Toxaphene	Phase II	0.003
	Trifluralin	Phase VIB	0.005
513	2,3,7,8 -TCDD	Phase II,V	3 X 10 exp(-8)

Table 9-2. Study Parameters, Analytical Methods, and Regulations (cont.)

Method	Constituents	Regulation	MCL mg/L
515.2	**Chlorinated Herbicides**		
	Dalapon	Phase II, V	0.2
	2,4,5-T	Priority List	
	2,4,5-TP	Phase II	0.05
	2,4-D	Phase II	0.07
	Acifluorfen	Phase VIB	0.002
	Dicamba	Phase II, VIB	0.2
	Dinoseb	Phase II, V	0.007
	Pentachlorophenol	Phase II	0.001
	Picloram	Phase II, V	0.5
524.2	**Volitile Organics**		
	Hexachlorobutadiene	Phase VIB	0.001
	1,2-Dibromoethane (EDB)	Phase II	0.00005
	o-Dichlorobenzene	Phase II	0.6
	1,2,4-Trichlorobenzene	Phase V	0.07
	Chlorobenzene	Phase II	0.1
	Ethylbenzene	Phase II	0.7
	Fluorotrichloromethane	Priority List	
	trans-1,2-Dichloroethylene	Phase II	0.1
	1,1,1, 2-Tetrachloroethane	Phase VIB	0.07
	1,1,2,2-Tetrachloroethane	Phase VIB	
	1,1-Dichloropropene	Priority List	
	1,2-Dichloropropane	Phase II	0.005
	1,3-Dichloropropane	Priority List	
	2,2-Dichloropropane	Priority List	
	Bromobenzene	Priority List	
	Bromomethane	Phase VIB	0.01
	Chloroethane	Priority List	
	Chloromethane	Priority List	
	cis-1,2-Dichloroethylene	Phase II	0.07
	Dichlorodifluoromethane	Priority List	
	Dichloroethane	Phase VIB	
	Methylene Chloride	Phase V	0.005
	o-Chlorotoluene	Priority List	
	p-Chlorotoluene	Priority List	
	Styrene	Phase II	0.1
	Toluene	Phase II	1
	Trichloropropane	Phase VI B	0.0008
	Xylenes (total)	Phase II	10
	1, 1,2-Trichloroethane	Phase V	0.005
	Hexachloroethane	Priority List	
	Methyl tertiary butyl ether	Phase VI B	
	Dichloropropene	Phase VI B	0.0006
	Acrylonitrile	Phase VIB	0.003

Table 9-2. Study Parameters, Analytical Methods, and Regulations (cont.)

Method	Constituents	Regulation	MCL mg/L
521.1	**Base, Neutrals, Acids, & Pesticides**		
	Di-2(ethythexyl)adipate	Phase II, V	0.4
	Di-2(ethyihexyl)phthalate	Phase II, V	0.006
	Simazine	Phase II, V	0.004
	Chlordane	Phase II	0.002
	Alachlor	Phase II	0.002
	Atrazine	Phase II	0.003
	Benzo(a)-pyrene	Phase II, V	0.0002
	Hexachlorobenzene	Phase II, V	0.001
	Hexachlorocyclopentadiene	Phase II, V	0.05
531.1	**Carbamates**		
	3-Hydroxycarbafuran	Phase II	
	Aldicarb	Phase II	0.003
	Aldicarb sulfone	Phase II	0.002
	Aldicarb sulfoxide	Phase II	0.004
	Carbaryl	Phase II	
	Carbofuran	Phase II	0.04
	Oxamyl	Phase II, V	0.2
	Methomyl	Phase II, VIB	0.2
547	Glyphosate	Phase II, V	0.7
548	Endothall	Phase II, V	0.1
549	Diquat	Phase II, V	0.02
551	**Chlorinated Byproducts & Solvents**		
	Dibromochlorpropane	Phase II	0.0002
	Bromochloroacetonitrile	Priority List	
	Dibromoacetonitrile	Priority List	
	Dichloroacetonitrile	Priority List	
	Tetrachloroethylene	Phase II	0.005
	Trichloroacetonitrile	Priority List	
553	Ethylene Thiourea	Phase VIB	0.025

Table 9-3. Summary of New Parameter Study Detections June 1995 through December 1996

Sample Site	Constituent Detected	Date Detected	Result (mg/L)	Regulation	Federal MCL (mg/L)	State MCL (mg/L)
Barker Slough Pumping Plant	Arsenic	June 95 September 95 December 95 March 96 June 96 September 96 December 96	0.002 0.003 0.002 0.002 0.003 0.003 0.002	**Arsenic Rule	0.05	0.05
	Barium	June 95 March 96	.13 0.062	Phase II	2	1
	2,4,-D	June 95 September 95	0.001 0.002	Phase II	0.07	1
Equal to MCL	**Bis(2-ethyl-hexyl)phthalate**	**September 96**	**0.004**	**Phase II, V**	**0.006**	**0.004**
	Formetenate Hydrochloride	June 96	0.001			
	Manganese	September 95 December 95 March 96 June 96 September 96	0.014 0.043 0.016 0.015 0.025	**Phase VIB	0.05 (SMCL)	0.05 (SMCL)
	Nickel	December 95	0.005	Phase II, V	.1	.1
	Simazine	March 96	0.001	Phase II, V	0.004	0.004
	Zinc	June 95 September 95 December 95 March 96 September 96	0.021 0.011 0.008 0.028 0.015	**Phase VIB	5 (2 proposed)	5

Table 9-3. Summary of New Parameter Study Detections June 1995 through December 1996 (cont.)

Sample Site	Constituent Detected	Date Detected	Result (mg/L)	Regulation	Federal MCL (mg/L)	State MCL (mg/L)
Contra Costa Pumping Plant	Arsenic	June 95 September 95 December 95 March 96 June 96 September 96 December 96	0.002 0.002 0.002 0.002 0.003 0.002 0.002	**Arsenic Rule	0.05	0.05
Exceeded MCL	**Bis(2-ethylhexyl) phthalate**	**September 96**	**0.007**	**Phase II,V**	**0.006**	**0.004**
	2,4-D	June 95 September 95	0.001 0.002	Phase II	0.07	1
	2,4,5-T	June 95	0.001	Priority List		
	Copper	June 96	0.007		TT(1.3)[c]	1 (SMCL)
	Manganese	June 95 September 95 December 95 June 96	0.018 0.011 0.015 0.021	**Phase VIB	0.05 (SMCL)	0.05 (SMCL)
	Simazine	March 96	0.001	Phase II, V	0.004	0.004
	Zinc	June 95 December 95 March 96 September 96	0.011 0.008 0.005 0.006	**Phase VIB	5 (2 proposed)	5

Table 9-3. Summary of New Parameter Study Detections June 1995 through December 1996 (cont.)

Sample Site	Constituent Detected	Date Detected	Result (mg/L)	Regulation	Federal MCL (mg/L)	State MCL (mg/L)
Delta-Mendota Canal	Arsenic	June 95 September 95 December 95 March 96 June 96 September 96 December 96	0.002 0.002 0.002 0.001 0.001 0.002 0.001	**Arsenic Rule	0.05	0.05
	Barium	December 95 June 95 September 95 June 96 September 96	0.06 0.053 0.07 0.053 0.065	Phase II	2	1
	Manganese	September 95 December 95 March 96 September 96 December 96	0.023 0.018 0.032 0.026 0.022	** Phase VIB	0.05 (SMCL)	0.05 (SMCL)
	Selenium	September 95 September 96	0.001 0.002	Phase II	0.05	0.05
	Zinc	June 95 September 95 December 95 March 96 June 96 September 96 December 96	0.002 00.026 0.014 0.012 0.014 0.018 0.013	**Phase VIB	5 (2 proposed)	5

Table 9-3. Summary of New Parameter Study Detections June 1995 through December 1996 (cont.)

Sample Site	Constituent Detected	Date Detected	Result (mg/L)	Regulation	Federal MCL (mg/L)	State MCL (mg/L)
Old River near Byron **(not added until June 1996)**	Aminomethylphosphoric Acid	September 96	0.1	Phase II	2	1
	Arsenic	June 96 September 96	0.002 0.002	**Arsenic Rule	0.05	0.05
	Barium	December 96	0.074			
	2,4-D	June 96	0.003	Phase II	0.07	1
	Glyphosate	September 96	0.1	Phase II, V	.7	.7
	Maganese	June 96 September 96 December 96	0.026 0.026 0.017	**Phase VIB	0.05 (SMCL)	0.05 (SMCL)
	Zinc	June 96 September 96 December 96	0.008 0.008 0..007	**Phase VIB	5 (2 proposed)	5

Table 9-3. Summary of New Parameter Study Detections June 1995 through December 1996 (cont.)

Sample Site	Constituent Detected	Date Detected	Result (mg/L)	Regulation	Federal MCL (mg/L)	State MCL (mg/L)
Banks Pumping Plant	Arsenic	September 95 December 95 March 96 September 96 December 96	0.002 0.002 0.001 0.002 0.001	**Arsenic Rule	0.05	0.05
	Barium	June 95	0.13	Phase II	2	1
	Copper	December 95	0.008		TT(1.3)[TT]	1 (SMCL)
	2,4-D	June 95	0.001	Phase II	0.07	1
	Dalapon	December 96	0.002	Phase II, V	0.2	0.2
	Manganese	September 95 December 95 March 96 June 96 September 96 December 96	0.009 0.008 0.033 0.026 0.012 0.014	**Phase VIB	0.05 (SMCL)	0.05 (SMCL)
	Zinc	September 95 December 95 March 96 June 96 September 96	0.008 0.010 0.012 4.33 0.007	**Phase VIB	5 (2 proposed)	5

Table 9-3. Summary of New Parameter Study Detections June 1995 through December 1996 (cont.)

Sample Site	Constituent Detected	Date Detected	Result (mg/L)	Regulation	Federal MCL (mg/L)	State MCL (mg/L)
Old River @ Bacon Island	Arsenic	June 95 September 95 December 95 March 96 June 96	0.001 0.002 0.002 0.001 0.002	**Arsenic Rule	0.05	0.05
	Barium	June 95 March 96	0.052 0.056	Phase II	2	1
	2,4-D	June 95 June 96	0.001 0.001	Phase II	0.07	1
	Diquat	September 95	0.01	Phase II, V	0.02	0.02
	Manganese	June 95 September 95 December 95 June 96 September 96 December 96	0.022 0.007 0.007 0.010 0.010 0.008	**Phase VIB	0.05 (SMCL)	0.05 (SMCL)
	Zinc	June 95 September 95 December 95 March 96 June 96 September 96	0.005 0.013 0.014 0.022 0.008 0.016	**Phase VIB	5 (2 proposed)	5

* Exceeds primary or secondary MCL.
** Not proposed.
TT = Treatment technique (TT) triggered at Action Level of 1300 ppb.
SMCL = Secondary Maximum Contaminant Level.

the State's discretion, based on a vulnerability assessment or prior analytical results, or both. Waiver determinations are made by the State on a contaminant-by-contaminant basis.

Five of the original 38 chemicals proposed in Phase II were reproposed in a separate rule known as Phase IIB. These chemicals are aldicarb, aldicarb sulfoxide, aldicarb sulfone, pentachlorophenol, and barium. The final Phase II was published in the Federal Register on July 1, 1991 and became effective in January 1, 1993. The State has adopted Phase II and IIB Rules. In some cases, like toluene and monochlorobenzene, the State's MCLs are more stringent than federal MCLs.

Phase V Rule

The final Phase V Rule was promulgated on July 17, 1992. The rule regulates 13 Synthetic Organic Chemicals, 5 Inorganic Chemicals, and 3 Volatile Organic Chemicals. Although sulfate was included in the proposed regulation, because of its potentially high treatment cost and mild health risk, it was deleted from the final rule. A proposed Sulfate Rule is expected by May 31, 1998.

Phase V established Maximum Contaminant Level Goals, MCLs, laboratory criteria, and BAT for these 23 contaminants. These regulations apply to all community and nontransicent noncommunity systems. Public water systems with *150* or more connections were to begin monitoring in the first compliance from January 1, 1993 to December 31, 1995. Smaller systems are to begin monitoring from January 1, 1996 to December 31, 1999.

Initial monitoring waivers are based on vulnerability assessments. Although initial monitoring waivers are only allowable for the SOCs and cyanide, reduced monitoring may be possible for many contaminants if sampling results show no detections or concentrations "consistently" below the MCLs. However, monitoring may have to be increased if sampling results are higher than "trigger" levels set for contaminants. The State has adopted the Phase V Rule.

Phase VIB

When Congress amended the Safe Drinking Water Act in 1986, it required the USEPA to regulate 25 new contaminants every three years. Phase VIB was the last set of contaminants proposed to be regulated. Many of the contaminants in Phase VIB had little health-based data, and could be costly to control in water treatment systems.

The proposed rule was supposed to be published by February 28, 1995; however, the USEPA requested an extension to October 21, 1996. The August 1996 SDWA Amendments suspended developmental work on Phase VIB. The previous law's demand for USEPA to develop 25 new standards every three years was replaced with a new process based on occurrence, relative risk and cost benefit analyses. USEPA will select at least five new candidate contaminants to consider for regulation every five years. Regulation must be geared toward contaminants posing the greatest health risks. Because lab costs are based on the analytical method used, as opposed to the constituent, there would be no cost savings for eliminating Phase VIB parameters from this Study. Therefore, Phase VIB parameters continue to be included in the Study.

Proposed Federal Sulfate Rule

A federal rule for sulfate was proposed by USEPA in the December 20, 1994 Federal Register. This rule sets both the MCLG and MCL for sulfate at 500 mg/L. The rule was originally proposed in 1990 with a larger group of contaminants, but was deferred because of the significant economic effects on a number of water systems.

The proposed rule would affect all community water systems and noncommunity water systems, including transient water systems. In addition to compliance with the sulfate MCL, systems operators will be required to provide alternative water and public education/notification to targeted, sensitive populations. Alternative water is defined as either bottled water that is in compliance with all USEPA MCLs, or water treated by point of use or point of entry devices.

In the August 1996 SDWA Amendments, USEPA and the Center for Disease Control were directed to study the health risk effects of sulfate in drinking water within 30 months. USEPA must include sulfate as one of the five contaminants to be considered for regulation in the first five-year cycle of the regulatory process.

Federal Lead and Copper Rule

The final Lead and Copper Rule was promulgated by USEPA on June 7, 1991 (56 FR 26460). Corrections to this rule were published on July 15, 1991 and June 29, 1992. On July 12, 1996, USEPA published notice that it was considering making changes to the national water standard and invited comments to be received by July 11, 1996. These regulations will not affect the rule's basic requirements. Rather, they are intended to reduce the reporting burden of the rule and to respond to a legal challenge by the Natural Resources Defense Council on the exclusion of Transient Noncommunity Water Systems from coverage under the old rule.

The effective date for monitoring was July 7, 1991. The remaining regulations, including action levels and treatment requirements, became effective on December 7, 1992. Final lead and copper regulations call for treatment techniques.

Treatment techniques consist of:

- Optimal corrosion control treatment
- Source water treatment
- Public education
- Lead service line replacement

The August 1996 SDWA Amendments made it unlawful to use lead-containing products in installation or repair of any public water systems or any facility providing water for human consumption. It will be unlawful to manufacture any plumbing fitting or pipe that is not lead-free after August 1998.

The first flush water samples from consumers' taps will be monitored. If more than 10 percent of these samples contain greater than the action level of 0.015 mg/L for lead, or 1.3 mg/L for copper, three required actions must be taken. These requirements are corrosion control treatment, source water treatment, and public education. If a system continues to exceed the lead action level, lead service lines will have to be replaced.

The Lead and Copper Rule also eliminated the lead MCL of 0.05 mg/L and the copper secondary MCL of 1.0 mg/L. The federal MCLGs of 0 and 1.3 mg/L have been set for lead and copper, respectively.

Arsenic Rule

USEPA was under a court-ordered deadline to propose revised regulations for arsenic no later than November 30, 1995. USEPA did not make the deadline and received an extension for this rule through the 1996 SDWA Amendments. USEPA is required to conduct additional research on arsenic, particularly the health effects at low levels of exposure. USEPA must propose a regulation for Arsenic not later than January 1, 2000, and issue a final regulation 12 months later.

QA/QC Summary

<u>Holding Times</u>

Holding times for total cyanide, nitrate, nitrate+nitrite, and dissolved nitrite were exceeded in December 1995 by five to six days. Sampling stations where exceedances occurred include Contra Costa Pumping Plant, Old River at Bacon Island, and Delta Pumping Plant Headworks. The holding time for cyanide exceeded at Barker Slough Pumping Plant by six days. No other holding time exceedances were identified.

Matrix Spikes

Matrix spikes provide information on the accuracy of the sample results in an environmental sample. The accuracy of sample results is often less in environmental samples due to matrix interferences. The matrix spikes are prepared by adding a known concentration of method analytes to an environmental sample. Similar to laboratory control samples, one matrix spike are generally prepared for every 10 samples.

The matrix spike recovery for sample number C960406 exceeded the lower control limit by 7 percent. However, since the laboratory control sample for Molybdenum was within control limits for the batch analyzed, there is no QC problem associated with sample number C960406.

The following exceedances were identified for December 1996 samples. The upper control limits on sample number C962329 for 2,4-D and Dalapon were exceeded by 32 and 25 percent, respectively. However, since the LCS recoveries were within control limits for the two analytes, the exceedances are attributed to matrix effects. The lower control limit for Picloram was also exceeded on C962329 by 12 percent which is attributed to the laboratory method used by BSK Laboratories for Picloram recoveries.

Laboratory Control Samples

Laboratory control samples provide information on the accuracy of the sample results. Laboratory control samples are prepared by adding a known concentration of method analyte(s) to a clean matrix. Generally, one laboratory control sample is prepared for every 10 samples, otherwise known as a "batch".

The upper control limits were slightly exceeded for Hexachlorocyclopentadiene, Dieldrin, and Heptachlor epoxide for sample numbers X on X. These exceedances are not significant because results for the analytes in question were all below detection limits. The upper control limits were slightly exceeded in December 1996 for Chlorothalonil, Endrin, Methoxychlor, and Hexachlorobenzene for sample number C962330. These extracts have a background level of interference peaks which contribute to these high recoveries according to BSK. The lower control limit for Thiobencarb was also exceeded by 2 percent for sample number C962330.

Method Blanks

Method blanks are a blank sample which contain any reagents which may be used in the sample preparation and analysis procedure. The preferred outcome from analysis of method blanks is a less than detectable concentration of the analyte of interest. No method blank exceedances were identified.

Field Duplicates

For field duplicates, results are compared using a relative percent difference between the duplicate results. As a general rule for field duplicates, an RPD of up to 15 percent is acceptable for metals, 20 percent for inorganics, and 30 percent for organics. No field duplicate RPD exceedances were identified.

Summary of Sampling Results for June 1995 through December 1996

Table 9-3, Summary of New Parameter Detections, shows parameters of significance that were detected in at least one of the seven sampling periods. For the purposes of this Study, "significant" parameters include all pesticides and metals that are not part of MWQI routine monitoring.

Arsenic is consistently present at all of the sample sites at levels well below the State and federal MCL's. The herbicide *2,4-D* was detected at most of the sampling sites in June 1995 and at Barker Slough and Contra Costa Pumping Plant in September 1995. Levels were in the range of 0.001 to 0.002 mg/L, well below the State and federal MCL's of 1.0 and 0.07 mg/L, respectively. *Bis(2-ethylhexyl) phthalate* (also known as DEHP) is a manufactured chemical found in plastics and sometimes in pesticides. DEHP was detected in September 1996 at Barker Slough at a level of 0.004 mg/L and at Contra Costa Pumping Plant at a level of 0.007 mg/L. Levels of DEHP at Barker Slough are equal to the State MCL of 0.004 mg/L, but less than the federal MCL of 0.006 mg/L. September DEHP levels at Contra Costa Pumping Plant exceeded both the State and federal MCL's. In June 1996, the insecticide *formetenate hydrochloride* (also known as Carzol) was detected at the reporting limit of 0.001 mg/L at Barker Slough. There is no federal or State MCL that regulates it. This constituent is a common lab contaminant and could possibly be a false detect. The herbicide *Simazine* was detected at Barker Slough and Contra Costa Pumping Plant in March 1996 at a level of 0.001 mg/L, below the MCL of 0.004 mg/L. *Zinc* was detected regularly at all of the sampling sites at relatively low levels, with one exception. In June 1996, the Zinc level at Banks Pumping Plant was measured at 4.33 mg/L. The current MCL for Zinc is 5 mg/L.

The pesticide *2,4,5-T* was detected at Contra Costa Pumping Plant at a level of 0.001 mg/L. There are no MCL's set for this constituent, however it is on USEPA's Priority Pollutant List. *Dalapon* was detected at Banks Pumping Plant in December 1996 at a level of 0.002 mg/, which is below the MCL of 0.2 mg/L. Dalapon is a chlorinated herbicide commonly used in citrus grove ditches and drainage ditches. Sometimes it is used in combination with 2,4-D. *Selenium* was detected at the Delta-Mendota Canal in both September of 1995 and 1996 (at 0.001mg/L and 0.002 mg/L, respectively). The MCL for Selenium is 0.05 mg/L. The insecticide *aminomethyl-phosphoric acid* was detected at Old River near Byron at a level of 0.1 mg/L. The pesticide *Glyphosate* was detected in September 1996 at Old River near Byron at a level of 0.1 mg/L, well below the MCL of 0.07 mg/L. *Diquat* was also detected at Old River at 0.01 mg/L. The MCL for Diquat is 0.02 mg/L.

Overall, the Barker Slough and Contra Costa Pumping Plant Sampling Sites had the greatest occurrence of pesticides. The high amount of agricultural land use in the area may be a large contributor. The pesticide detected most often was 2,4-D. This parameter was consistently detected during June and September. There were several isolated occurrences of different pesticides at all of the sites, with the exception of the Delta-Mendota Canal, where no pesticides were detected. The only pesticide that exceeded MCLs was DEHP in September 1996 at the Contra Costa Pumping Plant and at Barker Slough.

A complete listing of sample results from October 1995 through December 1996 is in Table 9-4, New Parameter Study 1995/96 Sample Results.

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C953043	12/6/95	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1,1,2-Tetrachloroethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,1,1-Trichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1,1-Trichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1,1-Trichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1,1-Trichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1,1-Trichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	1,1,1-Trichloroethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1,1-Trichloroethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1,1-Trichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1,1-Trichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1,1-Trichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1,1-Trichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1,1-Trichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1,1-Trichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1,1-Trichloroethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1,1-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1,1-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1,1-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1,1-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1,1-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1,1-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1,1-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1,1-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1,1-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1,1-Trichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1,1-Trichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1,1-Trichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1,1-Trichloroethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1,2,2-Tetrachloroethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,1,2-Trichloroethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1,2-Trichloroethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1,2-Trichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1,2-Trichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1,2-Trichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1,2-Trichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1,2-Trichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1,2-Trichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1,2-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1,2-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1,2-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1,2-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1,2-Trichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1,2-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1,2-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1,2-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1,2-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1,2-Trichloroethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1,2-Trichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1,2-Trichloroethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C961844	9/11/96	1,1,2-Trichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1,2-Trichloroethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,1-Dichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1-Dichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1-Dichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	1,1-Dichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1-Dichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1-Dichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1-Dichloro-2-propanone	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	1,1-Dichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1-Dichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	1,1-Dichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1-Dichloro-2-propanone	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1-Dichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1-Dichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1-Dichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1-Dichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1-Dichloro-2-propanone	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1-Dichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1-Dichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1-Dichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1-Dichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1-Dichloro-2-propanone	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1-Dichloro-2-propanone	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1-Dichloro-2-propanone	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1-Dichloro-2-propanone	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1-Dichloro-2-propanone	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	1,1-Dichloroethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1-Dichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1-Dichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1-Dichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1-Dichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1-Dichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1-Dichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1-Dichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1-Dichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1-Dichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1-Dichloroethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1-Dichloroethene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1-Dichloroethene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,1-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,1-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,1-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,1-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,1-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,1-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,1-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,1-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,1-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,1-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,1-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,1-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,1-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,1-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,1-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,1-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,1-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,1-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,1-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,1-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,1-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,1-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,2,3-Trichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2,3-Trichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2,3-Trichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2,3-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2,3-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2,3-Trichlorobenzene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C962332	12/11/96	1,2,3-Trichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2,3-Trichloropropane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2,3-Trichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2,3-Trichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2,3-Trichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2,3-Trichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2,3-Trichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2,3-Trichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2,3-Trichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2,3-Trichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2,3-Trichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2,3-Trichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2,3-Trichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2,3-Trichloropropane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2,3-Trichloropropane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2,3-Trichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2,3-Trichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2,3-Trichloropropane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2,3-Trichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2,3-Trichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2,3-Trichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2,3-Trichloropropane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2,4-Trichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2,4-Trichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2,4-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2,4-Trichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,2,4-Trimethylbenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2,4-Trimethylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2,4-Trimethylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2,4-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2,4-Trimethylbenzene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2,4-Trimethylbenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2-Dibromo-3-chloropropane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2-Dibromoethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2-Dibromoethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2-Dibromoethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2-Dibromoethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2-Dibromoethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2-Dibromoethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2-Dibromoethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2-Dibromoethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2-Dibromoethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2-Dibromoethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2-Dibromoethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2-Dibromoethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2-Dibromoethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2-Dibromoethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2-Dibromoethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2-Dibromoethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2-Dibromoethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2-Dibromoethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2-Dibromoethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2-Dibromoethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2-Dibromoethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,2-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2-Dichlorobenzene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C961403	6/6/96	1,2-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,2-Dichloroethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2-Dichloroethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2-Dichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2-Dichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2-Dichloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2-Dichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2-Dichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2-Dichloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2-Dichloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2-Dichloroethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2-Dichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2-Dichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2-Dichloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2-Dichloroethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,2-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,2-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,2-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,2-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,2-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,2-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,2-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,2-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,2-Dichloropropane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,2-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,2-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,2-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,2-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,3,5-Trimethylbenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,3,5-Trimethylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,3,5-Trimethylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,3,5-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,3,5-Trimethylbenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,3-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,3-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,3-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,3-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,3-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,3-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,3-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,3-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,3-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,3-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,3-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,3-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,3-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,3-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,3-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,3-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,3-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,3-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,3-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,3-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,3-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,3-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,3-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,3-Dichloropropane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C961403	6/6/96	1,3-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,3-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,3-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,3-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,3-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,3-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,3-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,3-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,3-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,3-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,3-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,3-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,3-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,3-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,3-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,3-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,3-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,3-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,3-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,3-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1,4-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	1,4-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	1,4-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1,4-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1,4-Dichlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1,4-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	1,4-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	1,4-Dichlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	1,4-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1,4-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1,4-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1,4-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1,4-Dichlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1,4-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	1,4-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	1,4-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	1,4-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	1,4-Dichlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	1,4-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1,4-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1,4-Dichlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1,4-Dichlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	1-Naphthol	0	4	µg/L
Barker Slough P.P.	C960401	3/7/96	1-Naphthol	0	4	µg/L
Barker Slough P.P.	C961403	6/6/96	1-Naphthol	0	4	µg/L
Barker Slough P.P.	C962329	12/5/96	1-Naphthol	0	4	µg/L
Contra Costa PP Number 01	C953045	12/6/95	1-Naphthol	0	4	µg/L
Contra Costa PP Number 01	C960403	3/7/96	1-Naphthol	0	4	µg/L
Contra Costa PP Number 01	C961404	6/6/96	1-Naphthol	0	4	µg/L
Contra Costa PP Number 01	C962330	12/5/96	1-Naphthol	0	4	µg/L
Delta P.P. Headworks	C953062	12/7/95	1-Naphthol	0	4	µg/L
Delta P.P. Headworks	C960428	3/14/96	1-Naphthol	0	4	µg/L
Delta P.P. Headworks	C961406	6/13/96	1-Naphthol	0	4	µg/L
Delta P.P. Headworks	C961853	9/12/96	1-Naphthol	0	4	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	1-Naphthol	0	4	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C960427	3/14/96	1-Naphthol	0	4	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	1-Naphthol	0	4	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	1-Naphthol	0	4	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	1-Naphthol	0	4	µg/L
Old River at Bacon Island	C953054	12/6/95	1-Naphthol	0	4	µg/L
Old River at Bacon Island	C960420	3/13/96	1-Naphthol	0	4	µg/L
Old River at Bacon Island	C961286	6/12/96	1-Naphthol	0	4	µg/L
Old River at Bacon Island	C961845	9/11/96	1-Naphthol	0	4	µg/L
Old River at Bacon Island	C962333	12/11/96	1-Naphthol	0	4	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	1-Naphthol	0	4	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	1-Naphthol	0	4	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	1-Naphthol	0	4	µg/L
Barker Slough P.P.	C953043	12/6/95	2,2-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	2,2-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	2,2-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	2,2-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	2,2-Dichloropropane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	2,2-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	2,2-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	2,2-Dichloropropane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	2,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	2,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	2,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	2,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	2,2-Dichloropropane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	2,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	2,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	2,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	2,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	2,2-Dichloropropane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	2,2-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	2,2-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	2,2-Dichloropropane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	2,2-Dichloropropane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	2,3,7,8-TCDD	0	1.8	pg/L
Barker Slough P.P.	C960401	3/7/96	2,3,7,8-TCDD	0	2.3	pg/L
Barker Slough P.P.	C961403	6/6/96	2,3,7,8-TCDD	0	2.9	pg/L
Contra Costa PP Number 01	C953045	12/6/95	2,3,7,8-TCDD	0	1.1	pg/L
Contra Costa PP Number 01	C960403	3/7/96	2,3,7,8-TCDD	0	3.2	pg/L
Contra Costa PP Number 01	C961404	6/6/96	2,3,7,8-TCDD	0	2.8	pg/L
Delta P.P. Headworks	C953062	12/7/95	2,3,7,8-TCDD	0	3.8	pg/L
Delta P.P. Headworks	C960428	3/14/96	2,3,7,8-TCDD	0	2.1	pg/L
Delta P.P. Headworks	C961406	6/13/96	2,3,7,8-TCDD	0	2.5	pg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	2,3,7,8-TCDD	0	1	pg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	2,3,7,8-TCDD	0	2.7	pg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	2,3,7,8-TCDD	0	3.4	pg/L
Old River at Bacon Island	C953054	12/6/95	2,3,7,8-TCDD	0	2.1	pg/L
Old River at Bacon Island	C960420	3/13/96	2,3,7,8-TCDD	0	4	pg/L
Old River at Bacon Island	C961286	6/12/96	2,3,7,8-TCDD	0	3.1	pg/L
Old River at Bacon Island	C961845	9/11/96	2,3,7,8-TCDD	0	1.3	pg/L
Old River at Bacon Island	C962333	12/11/96	2,3,7,8-TCDD	0	1.6	pg/L
Old River nr. Byron (St 9)	C961285	6/12/96	2,3,7,8-TCDD	0	2.9	pg/L
Old River nr. Byron (St 9)	C962332	12/11/96	2,3,7,8-TCDD	0	2.7	pg/L
Barker Slough P.P.	C953043	12/6/95	2,4,5-T	0	0.2	µg/L
Barker Slough P.P.	C960401	3/7/96	2,4,5-T	0	0.2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C961403	6/6/96	2,4,5-T	0	0.2	µg/L
Barker Slough P.P.	C962329	12/5/96	2,4,5-T	0	0.2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	2,4,5-T	0	0.2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	2,4,5-T	0	0.2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	2,4,5-T	0	0.2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	2,4,5-T	0	0.2	µg/L
Delta P.P. Headworks	C953062	12/7/95	2,4,5-T	0	0.2	µg/L
Delta P.P. Headworks	C960428	3/14/96	2,4,5-T	0	0.2	µg/L
Delta P.P. Headworks	C961406	6/13/96	2,4,5-T	0	0.2	µg/L
Delta P.P. Headworks	C961853	9/12/96	2,4,5-T	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	2,4,5-T	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	2,4,5-T	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	2,4,5-T	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	2,4,5-T	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	2,4,5-T	0	0.2	µg/L
Old River at Bacon Island	C953054	12/6/95	2,4,5-T	0	0.2	µg/L
Old River at Bacon Island	C960420	3/13/96	2,4,5-T	0	0.2	µg/L
Old River at Bacon Island	C961286	6/12/96	2,4,5-T	0	0.2	µg/L
Old River at Bacon Island	C961845	9/11/96	2,4,5-T	0	0.2	µg/L
Old River at Bacon Island	C962333	12/11/96	2,4,5-T	0	0.2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	2,4,5-T	0	0.2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	2,4,5-T	0	0.2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	2,4,5-T	0	0.2	µg/L
Barker Slough P.P.	C953043	12/6/95	2,4,5-TP(Silvex)	0	0.2	µg/L
Barker Slough P.P.	C960401	3/7/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Barker Slough P.P.	C961403	6/6/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Barker Slough P.P.	C962329	12/5/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	2,4,5-TP(Silvex)	0	0.2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Delta P.P. Headworks	C953062	12/7/95	2,4,5-TP(Silvex)	0	0.2	µg/L
Delta P.P. Headworks	C960428	3/14/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Delta P.P. Headworks	C961406	6/13/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Delta P.P. Headworks	C961853	9/12/96	2,4,5-TP(Silvex)	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	2,4,5-TP(Silvex)	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	2,4,5-TP(Silvex)	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	2,4,5-TP(Silvex)	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	2,4,5-TP(Silvex)	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River at Bacon Island	C953054	12/6/95	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River at Bacon Island	C960420	3/13/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River at Bacon Island	C961286	6/12/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River at Bacon Island	C961845	9/11/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River at Bacon Island	C962333	12/11/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	2,4,5-TP(Silvex)	0	0.2	µg/L
Barker Slough P.P.	C953043	12/6/95	2,4-D	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	2,4-D	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	2,4-D	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	2,4-D	0	0.1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	2,4-D	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	2,4-D	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	2,4-D	0	0.1	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP Number 01	C962330	12/5/96	2,4-D	0	0.1	µg/L
Delta P.P. Headworks	C953062	12/7/95	2,4-D	0	0.1	µg/L
Delta P.P. Headworks	C960428	3/14/96	2,4-D	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	2,4-D	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	2,4-D	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	2,4-D	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	2,4-D	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	2,4-D	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	2,4-D	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	2,4-D	0	0.1	µg/L
Old River at Bacon Island	C953054	12/6/95	2,4-D	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	2,4-D	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	2,4-D	0.1	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	2,4-D	0.14	0.1	µg/L
Old River at Bacon Island	C962333	12/11/96	2,4-D	0	0.1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	2,4-D	0.3	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	2,4-D	0	0.1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	2,4-D	0	0.1	µg/L
Barker Slough P.P.	C953043	12/6/95	2-Chlorotoluene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	2-Chlorotoluene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	2-Chlorotoluene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	2-Chlorotoluene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	2-Chlorotoluene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	2-Chlorotoluene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	2-Chlorotoluene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	2-Chlorotoluene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	2-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	2-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	2-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	2-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	2-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	2-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	2-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	2-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	2-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	2-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	2-Chlorotoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	2-Chlorotoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	2-Chlorotoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	2-Chlorotoluene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	3-Hydroxycarbofuran	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	3-Hydroxycarbofuran	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	3-Hydroxycarbofuran	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	3-Hydroxycarbofuran	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	3-Hydroxycarbofuran	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	3-Hydroxycarbofuran	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	3-Hydroxycarbofuran	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	3-Hydroxycarbofuran	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	3-Hydroxycarbofuran	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	3-Hydroxycarbofuran	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	3-Hydroxycarbofuran	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	3-Hydroxycarbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	3-Hydroxycarbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	3-Hydroxycarbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	3-Hydroxycarbofuran	0	2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961852	9/12/96	3-Hydroxycarbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	3-Hydroxycarbofuran	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	3-Hydroxycarbofuran	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	3-Hydroxycarbofuran	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	3-Hydroxycarbofuran	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	3-Hydroxycarbofuran	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	3-Hydroxycarbofuran	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	3-Hydroxycarbofuran	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	3-Hydroxycarbofuran	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	3-Hydroxycarbofuran	0	2	µg/L
Barker Slough P.P.	C961974	9/30/96	4,4'-DDD	0	0.01	µg/L
Barker Slough P.P.	C961974	9/30/96	4,4'-DDE	0	0.01	µg/L
Barker Slough P.P.	C961974	9/30/96	4,4'-DDT	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	4-Chlorotoluene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	4-Chlorotoluene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	4-Chlorotoluene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	4-Chlorotoluene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	4-Chlorotoluene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	4-Chlorotoluene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	4-Chlorotoluene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	4-Chlorotoluene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	4-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	4-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	4-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	4-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	4-Chlorotoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	4-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	4-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	4-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	4-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	4-Chlorotoluene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	4-Chlorotoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	4-Chlorotoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	4-Chlorotoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	4-Chlorotoluene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	4-Isopropyltoluene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	4-Isopropyltoluene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	4-Isopropyltoluene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	4-Isopropyltoluene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	4-Isopropyltoluene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	4-Isopropyltoluene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	4-Isopropyltoluene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	4-Isopropyltoluene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	4-Isopropyltoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	4-Isopropyltoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	4-Isopropyltoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	4-Isopropyltoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	4-Isopropyltoluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	4-Isopropyltoluene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	4-Isopropyltoluene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	4-Isopropyltoluene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	4-Isopropyltoluene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	4-Isopropyltoluene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	4-Isopropyltoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	4-Isopropyltoluene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C961844	9/11/96	4-Isopropyltoluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	4-Isopropyltoluene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Acifluorfen	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	Acifluorfen	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	Acifluorfen	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	Acifluorfen	0	0.1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Acifluorfen	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Acifluorfen	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Acifluorfen	0	0.1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Acifluorfen	0	0.1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Acifluorfen	0	0.1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Acifluorfen	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Acifluorfen	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Acifluorfen	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Acifluorfen	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Acifluorfen	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Acifluorfen	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Acifluorfen	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Acifluorfen	0	0.1	µg/L
Old River at Bacon Island	C953054	12/6/95	Acifluorfen	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	Acifluorfen	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	Acifluorfen	0	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	Acifluorfen	0	0.1	µg/L
Old River at Bacon Island	C962333	12/11/96	Acifluorfen	0	0.1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Acifluorfen	0	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Acifluorfen	0	0.1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Acifluorfen	0	0.1	µg/L
Barker Slough P.P.	C953043	12/6/95	Alachlor	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	Alachlor	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	Alachlor	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Alachlor	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Alachlor	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Alachlor	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Alachlor	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Alachlor	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Alachlor	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Alachlor	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Alachlor	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Alachlor	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Alachlor	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Alachlor	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Alachlor	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Alachlor	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Alachlor	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Alachlor	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	Alachlor	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	Alachlor	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	Alachlor	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Alachlor	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Alachlor	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Alachlor	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Alachlor	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	Aldicarb	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Aldicarb	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Aldicarb	0	2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C962329	12/5/96	Aldicarb	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Aldicarb	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Aldicarb	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Aldicarb	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Aldicarb	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Aldicarb	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Aldicarb	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Aldicarb	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Aldicarb	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Aldicarb	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Aldicarb	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Aldicarb	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Aldicarb	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Aldicarb	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Aldicarb	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Aldicarb	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Aldicarb	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Aldicarb	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Aldicarb	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Aldicarb	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Aldicarb	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Aldicarb	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Aldicarb sulfone	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Aldicarb sulfone	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Aldicarb sulfone	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Aldicarb sulfone	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Aldicarb sulfone	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Aldicarb sulfone	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Aldicarb sulfone	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Aldicarb sulfone	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Aldicarb sulfone	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Aldicarb sulfone	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Aldicarb sulfone	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Aldicarb sulfone	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Aldicarb sulfone	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Aldicarb sulfone	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Aldicarb sulfone	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Aldicarb sulfone	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Aldicarb sulfone	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Aldicarb sulfone	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Aldicarb sulfone	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Aldicarb sulfone	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Aldicarb sulfone	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Aldicarb sulfone	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Aldicarb sulfone	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Aldicarb sulfone	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Aldicarb sulfone	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Aldicarb sulfoxide	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Aldicarb sulfoxide	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Aldicarb sulfoxide	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Aldicarb sulfoxide	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Aldicarb sulfoxide	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Aldicarb sulfoxide	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Aldicarb sulfoxide	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Aldicarb sulfoxide	0	2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C953062	12/7/95	Aldicarb sulfoxide	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Aldicarb sulfoxide	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Aldicarb sulfoxide	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Aldicarb sulfoxide	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Aldicarb sulfoxide	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Aldicarb sulfoxide	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Aldicarb sulfoxide	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Aldicarb sulfoxide	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Aldicarb sulfoxide	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Aldicarb sulfoxide	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Aldicarb sulfoxide	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Aldicarb sulfoxide	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Aldicarb sulfoxide	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Aldicarb sulfoxide	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Aldicarb sulfoxide	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Aldicarb sulfoxide	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Aldicarb sulfoxide	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Aldrin	0	0.075	µg/L
Barker Slough P.P.	C960401	3/7/96	Aldrin	0	0.075	µg/L
Barker Slough P.P.	C961403	6/6/96	Aldrin	0	0.075	µg/L
Barker Slough P.P.	C962329	12/5/96	Aldrin	0	0.075	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Aldrin	0	0.075	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Aldrin	0	0.075	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Aldrin	0	0.075	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Aldrin	0	0.075	µg/L
Delta P.P. Headworks	C953062	12/7/95	Aldrin	0	0.075	µg/L
Delta P.P. Headworks	C960428	3/14/96	Aldrin	0	0.075	µg/L
Delta P.P. Headworks	C961406	6/13/96	Aldrin	0	0.075	µg/L
Delta P.P. Headworks	C961853	9/12/96	Aldrin	0	0.075	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Aldrin	0	0.075	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Aldrin	0	0.075	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Aldrin	0	0.075	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Aldrin	0	0.075	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Aldrin	0	0.075	µg/L
Old River at Bacon Island	C953054	12/6/95	Aldrin	0	0.075	µg/L
Old River at Bacon Island	C960420	3/13/96	Aldrin	0	0.075	µg/L
Old River at Bacon Island	C961286	6/12/96	Aldrin	0	0.075	µg/L
Old River at Bacon Island	C961845	9/11/96	Aldrin	0	0.075	µg/L
Old River at Bacon Island	C962333	12/11/96	Aldrin	0	0.075	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Aldrin	0	0.075	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Aldrin	0	0.075	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Aldrin	0	0.075	µg/L
Barker Slough P.P.	C953043	12/6/95	Alkalinity	82	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Alkalinity	91	1	mg/L
Barker Slough P.P.	C961830	9/5/96	Alkalinity	86	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Alkalinity	115	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Alkalinity	55	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Alkalinity	119	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Alkalinity	62	1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Alkalinity	71	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Alkalinity	61	1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Alkalinity	50	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Alkalinity	61	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Alkalinity	62	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Alkalinity	65	1	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Alkalinity	53	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Alkalinity	92	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Alkalinity	91	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Alkalinity	46	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Alkalinity	52	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Alkalinity	53	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Alkalinity	59	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Alkalinity	60	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Alkalinity	53	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Alkalinity	53	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Alkalinity	60	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Alkalinity	63	1	mg/L
Barker Slough P.P.	C961953	9/9/96	Aluminum, Diss.	0.05	0.01	mg/L
Barker Slough P.P.	C961960	9/16/96	Aluminum, Diss.	0.078	0.01	mg/L
Barker Slough P.P.	C961967	9/23/96	Aluminum, Diss.	0.055	0.01	mg/L
Barker Slough P.P.	C961974	9/30/96	Aluminum, Diss.	0.041	0.01	mg/L
Barker Slough P.P.	C953043	12/6/95	Aminomethylphosphonic Acid	0	100	µg/L
Barker Slough P.P.	C960401	3/7/96	Aminomethylphosphonic Acid	0	100	µg/L
Barker Slough P.P.	C961403	6/6/96	Aminomethylphosphonic Acid	0	100	µg/L
Barker Slough P.P.	C962329	12/5/96	Aminomethylphosphonic Acid	0	100	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Aminomethylphosphonic Acid	0	100	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Aminomethylphosphonic Acid	0	100	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Aminomethylphosphonic Acid	0	100	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Aminomethylphosphonic Acid	0	100	µg/L
Delta P.P. Headworks	C953062	12/7/95	Aminomethylphosphonic Acid	0	100	µg/L
Delta P.P. Headworks	C960428	3/14/96	Aminomethylphosphonic Acid	0	100	µg/L
Delta P.P. Headworks	C961406	6/13/96	Aminomethylphosphonic Acid	0	100	µg/L
Delta P.P. Headworks	C961853	9/12/96	Aminomethylphosphonic Acid	0	100	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Aminomethylphosphonic Acid	0	100	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Aminomethylphosphonic Acid	0	100	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Aminomethylphosphonic Acid	0	100	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Aminomethylphosphonic Acid	0	100	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Aminomethylphosphonic Acid	0	100	µg/L
Old River at Bacon Island	C953054	12/6/95	Aminomethylphosphonic Acid	0	100	µg/L
Old River at Bacon Island	C960420	3/13/96	Aminomethylphosphonic Acid	0	100	µg/L
Old River at Bacon Island	C961286	6/12/96	Aminomethylphosphonic Acid	0	100	µg/L
Old River at Bacon Island	C961845	9/11/96	Aminomethylphosphonic Acid	0	100	µg/L
Old River at Bacon Island	C962333	12/11/96	Aminomethylphosphonic Acid	0	100	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Aminomethylphosphonic Acid	0	100	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Aminomethylphosphonic Acid	100	100	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Aminomethylphosphonic Acid	0	100	µg/L
Barker Slough P.P.	C961830	9/5/96	Ammonia, Diss. (mg/L as N)	0.01	0.01	mg/L
Barker Slough P.P.	C962321	12/5/96	Ammonia, Diss. (mg/L as N)	0.03	0.01	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Ammonia, Diss. (mg/L as N)	0.02	0.01	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Ammonia, Diss. (mg/L as N)	0.02	0.01	mg/L
Delta P.P. Headworks	C961859	9/12/96	Ammonia, Diss. (mg/L as N)	0.09	0.01	mg/L
Delta P.P. Headworks	C962346	12/12/96	Ammonia, Diss. (mg/L as N)	0.11	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Ammonia, Diss. (mg/L as N)	0.11	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Ammonia, Diss. (mg/L as N)	0.11	0.01	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Ammonia, Diss. (mg/L as N)	0.2	0.01	mg/L
Old River at Bacon Island	C961851	9/11/96	Ammonia, Diss. (mg/L as N)	0.02	0.01	mg/L
Old River at Bacon Island	C962339	12/11/96	Ammonia, Diss. (mg/L as N)	0.1	0.01	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Ammonia, Diss. (mg/L as N)	0.03	0.01	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Ammonia, Diss. (mg/L as N)	0.11	0.01	mg/L
Barker Slough P.P.	C953043	12/6/95	Antimony	0	2	ug/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C960401	3/7/96	Antimony	0	2	ug/L
Barker Slough P.P.	C961403	6/6/96	Antimony	0	2	ug/L
Barker Slough P.P.	C962329	12/5/96	Antimony	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Antimony	0	2	ug/L
Contra Costa PP Number 01	C960403	3/7/96	Antimony	0	2	ug/L
Contra Costa PP Number 01	C961404	6/6/96	Antimony	0	2	ug/L
Contra Costa PP Number 01	C962330	12/5/96	Antimony	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Antimony	0	2	ug/L
Delta P.P. Headworks	C960428	3/14/96	Antimony	0	2	ug/L
Delta P.P. Headworks	C961406	6/13/96	Antimony	0	2	ug/L
Delta P.P. Headworks	C961853	9/12/96	Antimony	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Antimony	0	2	ug/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Antimony	0	2	ug/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Antimony	0	2	ug/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Antimony	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Antimony	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Antimony	0	2	ug/L
Old River at Bacon Island	C960420	3/13/96	Antimony	0	2	ug/L
Old River at Bacon Island	C961286	6/12/96	Antimony	0	2	ug/L
Old River at Bacon Island	C961845	9/11/96	Antimony	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Antimony	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Antimony	0	2	ug/L
Old River nr. Byron (St 9)	C961844	9/11/96	Antimony	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Antimony	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Arsenic,Diss.	0.002	0.001	mg/L
Barker Slough P.P.	C960401	3/7/96	Arsenic,Diss.	0.002	0.001	mg/L
Barker Slough P.P.	C961830	9/5/96	Arsenic,Diss.	0.003	0.001	mg/L
Barker Slough P.P.	C962321	12/5/96	Arsenic,Diss.	0.002	0.001	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Arsenic,Diss.	0.002	0.001	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Arsenic,Diss.	0.002	0.001	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Arsenic,Diss.	0.002	0.001	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Arsenic,Diss.	0.002	0.001	mg/L
Delta P.P. Headworks	C953062	12/7/95	Arsenic,Diss.	0.002	0.001	mg/L
Delta P.P. Headworks	C960428	3/14/96	Arsenic,Diss.	0.001	0.001	mg/L
Delta P.P. Headworks	C961859	9/12/96	Arsenic,Diss.	0.002	0.001	mg/L
Delta P.P. Headworks	C962346	12/12/96	Arsenic,Diss.	0.001	0.001	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Arsenic,Diss.	0.002	0.001	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Arsenic,Diss.	0.001	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Arsenic,Diss.	0.002	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Arsenic,Diss.	0.002	0.001	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Arsenic,Diss.	0.001	0.001	mg/L
Old River at Bacon Island	C953054	12/6/95	Arsenic,Diss.	0.002	0.001	mg/L
Old River at Bacon Island	C960420	3/13/96	Arsenic,Diss.	0.001	0.001	mg/L
Old River at Bacon Island	C961286	6/12/96	Arsenic,Diss.	0.002	0.001	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Arsenic,Diss.	0.002	0.001	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Arsenic,Diss.	0.002	0.001	mg/L
Barker Slough P.P.	C953043	12/6/95	Asbestos, Chrysotile	552.65	5.64	MFL
Barker Slough P.P.	C960401	3/7/96	Asbestos, Chrysotile	0	0.541	MFL
Barker Slough P.P.	C962329	12/5/96	Asbestos, Chrysotile	0	1.1	L(>10µm
Barker Slough P.P.	C962329	12/5/96	Asbestos, Chrysotile	34.08	1.1	MFL
Contra Costa PP Number 01	C953045	12/6/95	Asbestos, Chrysotile	25.94	1.13	MFL
Contra Costa PP Number 01	C960403	3/7/96	Asbestos, Chrysotile	0	0.18	MFL
Contra Costa PP Number 01	C961404	6/6/96	Asbestos, Chrysotile	0	0.1803	L(>10µm
Contra Costa PP Number 01	C961404	6/6/96	Asbestos, Chrysotile	0.3607	0.1803	MFL
Contra Costa PP Number 01	C962330	12/5/96	Asbestos, Chrysotile	0	0.55	L(>10µm

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP Number 01	C962330	12/5/96	Asbestos, Chrysotile	25.28	0.55	MFL
Delta P.P. Headworks	C953062	12/7/95	Asbestos, Chrysotile	16.92	1.13	MFL
Delta P.P. Headworks	C953062	12/7/95	Asbestos, Chrysotile	0	1.13	L(>10µm
Delta P.P. Headworks	C960428	3/14/96	Asbestos, Chrysotile	0	0.361	L(>10µm
Delta P.P. Headworks	C960428	3/14/96	Asbestos, Chrysotile	1.8	0.361	MFL
Delta P.P. Headworks	C961406	6/13/96	Asbestos, Chrysotile	0	0.54	L(>10µm
Delta P.P. Headworks	C961406	6/13/96	Asbestos, Chrysotile	40.58	0.54	MFL
Delta P.P. Headworks	C961853	9/12/96	Asbestos, Chrysotile	3.43	0.18	MFL
Delta P.P. Headworks	C961853	9/12/96	Asbestos, Chrysotile	0	0.18	L(>10µm
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Asbestos, Chrysotile	0	1.13	L(>10µm
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Asbestos, Chrysotile	42.86	1.13	MFL
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Asbestos, Chrysotile	5.04	0.361	MFL
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Asbestos, Chrysotile	0	0.361	L(>10µm
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Asbestos, Chrysotile	10.22	0.2	MFL
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Asbestos, Chrysotile	0	0.2	L(>10µm
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Asbestos, Chrysotile	4.15	0.18	MFL
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Asbestos, Chrysotile	0	0.18	L(>10µm
Old River at Bacon Island	C953054	12/6/95	Asbestos, Chrysotile	0	4.51	L(>10µm
Old River at Bacon Island	C953054	12/6/95	Asbestos, Chrysotile	18.05	4.51	MFL
Old River at Bacon Island	C960420	3/13/96	Asbestos, Chrysotile	0	0.361	L(>10µm
Old River at Bacon Island	C960420	3/13/96	Asbestos, Chrysotile	2.89	0.361	MFL
Old River at Bacon Island	C961286	6/12/96	Asbestos, Chrysotile	4.51	0.18	MFL
Old River at Bacon Island	C961286	6/12/96	Asbestos, Chrysotile	0	0.18	L(>10µm
Old River at Bacon Island	C962333	12/11/96	Asbestos, Chrysotile	0	0.2	L(>10µm
Old River at Bacon Island	C962333	12/11/96	Asbestos, Chrysotile	3.8	0.2	MFL
Old River nr. Byron (St 9)	C961285	6/12/96	Asbestos, Chrysotile	0	0.18	FL >10µm
Old River nr. Byron (St 9)	C961285	6/12/96	Asbestos, Chrysotile	3.07	0.18	MFL
Old River nr. Byron (St 9)	C962332	12/11/96	Asbestos, Chrysotile	0	0.2	L(>10µm
Old River nr. Byron (St 9)	C962332	12/11/96	Asbestos, Chrysotile	3.2	0.2	MFL
Barker Slough P.P.	C961403	6/6/96	Asbestos, Chrysotile >10µm	0.9017	0.2003	MFL
Barker Slough P.P.	C953043	12/6/95	Atrazine	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	Atrazine	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	Atrazine	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Atrazine	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Atrazine	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Atrazine	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Atrazine	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Atrazine	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Atrazine	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Atrazine	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Atrazine	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Atrazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Atrazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Atrazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Atrazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Atrazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Atrazine	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Atrazine	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	Atrazine	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	Atrazine	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	Atrazine	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Atrazine	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Atrazine	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Atrazine	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Atrazine	0	1	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C953043	12/6/95	Barium, Diss.	0	0.05	mg/L
Barker Slough P.P.	C960401	3/7/96	Barium, Diss.	0.062	0.05	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Barium, Diss.	0	0.05	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Barium, Diss.	0	0.05	mg/L
Delta P.P. Headworks	C953062	12/7/95	Barium, Diss.	0.05	0.05	mg/L
Delta P.P. Headworks	C960428	3/14/96	Barium, Diss.	0	0.05	mg/L
Delta P.P. Headworks	C961406	6/13/96	Barium, Diss.	0	0.05	mg/L
Delta P.P. Headworks	C961853	9/12/96	Barium, Diss.	0	0.05	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Barium, Diss.	0.06	0.05	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Barium, Diss.	0	0.05	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Barium, Diss.	0.053	0.05	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Barium, Diss.	0.065	0.05	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Barium, Diss.	0	0.05	mg/L
Old River at Bacon Island	C953054	12/6/95	Barium, Diss.	0	0.05	mg/L
Old River at Bacon Island	C960420	3/13/96	Barium, Diss.	0.056	0.05	mg/L
Old River at Bacon Island	C961286	6/12/96	Barium, Diss.	0	0.05	mg/L
Old River at Bacon Island	C961845	9/11/96	Barium, Diss.	0	0.05	mg/L
Old River at Bacon Island	C962333	12/11/96	Barium, Diss.	0	0.05	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Barium, Diss.	0	0.05	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Barium, Diss.	0	0.05	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Barium, Diss.	0	0.05	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Barium, Diss.	0.074	0.05	mg/L
Barker Slough P.P.	C961974	9/30/96	Benfluralin	0	0.05	µg/L
Barker Slough P.P.	C953043	12/6/95	Bentazon	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Bentazon	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Bentazon	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Bentazon	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bentazon	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bentazon	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bentazon	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Bentazon	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bentazon	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Bentazon	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bentazon	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bentazon	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bentazon	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bentazon	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bentazon	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bentazon	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bentazon	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Bentazon	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Bentazon	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Bentazon	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Bentazon	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Bentazon	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bentazon	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bentazon	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bentazon	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Benzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Benzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Benzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Benzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Benzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Benzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Benzene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C961406	6/13/96	Benzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Benzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Benzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Benzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Benzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Benzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Benzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Benzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Benzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Benzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Benzo(a)pyrene	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	Benzo(a)pyrene	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	Benzo(a)pyrene	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	Benzo(a)pyrene	0	0.1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Benzo(a)pyrene	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Benzo(a)pyrene	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Benzo(a)pyrene	0	0.1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Benzo(a)pyrene	0	0.1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Benzo(a)pyrene	0	0.1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Benzo(a)pyrene	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Benzo(a)pyrene	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Benzo(a)pyrene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Benzo(a)pyrene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Benzo(a)pyrene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Benzo(a)pyrene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Benzo(a)pyrene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Benzo(a)pyrene	0	0.1	µg/L
Old River at Bacon Island	C953054	12/6/95	Benzo(a)pyrene	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	Benzo(a)pyrene	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	Benzo(a)pyrene	0	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	Benzo(a)pyrene	0	0.1	µg/L
Old River at Bacon Island	C962333	12/11/96	Benzo(a)pyrene	0	0.1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Benzo(a)pyrene	0	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Benzo(a)pyrene	0	0.1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Benzo(a)pyrene	0	0.1	µg/L
Barker Slough P.P.	C953043	12/6/95	Beryllium	0	1	ug/L
Barker Slough P.P.	C960401	3/7/96	Beryllium	0	1	ug/L
Barker Slough P.P.	C961403	6/6/96	Beryllium	0	1	ug/L
Barker Slough P.P.	C962329	12/5/96	Beryllium	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Beryllium	0	1	ug/L
Contra Costa PP Number 01	C960403	3/7/96	Beryllium	0	1	ug/L
Contra Costa PP Number 01	C961404	6/6/96	Beryllium	0	1	ug/L
Contra Costa PP Number 01	C962330	12/5/96	Beryllium	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Beryllium	0	1	ug/L
Delta P.P. Headworks	C960428	3/14/96	Beryllium	0	1	ug/L
Delta P.P. Headworks	C961406	6/13/96	Beryllium	0	1	ug/L
Delta P.P. Headworks	C961853	9/12/96	Beryllium	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Beryllium	0	1	ug/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Beryllium	0	1	ug/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Beryllium	0	1	ug/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Beryllium	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Beryllium	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Beryllium	0	1	ug/L
Old River at Bacon Island	C960420	3/13/96	Beryllium	0	1	ug/L
Old River at Bacon Island	C961286	6/12/96	Beryllium	0	1	ug/L
Old River at Bacon Island	C961845	9/11/96	Beryllium	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Beryllium	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Beryllium	0	1	ug/L
Old River nr. Byron (St 9)	C961844	9/11/96	Beryllium	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Beryllium	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	Bis(2-ethylhexyl)adipate	0	3	µg/L
Barker Slough P.P.	C960401	3/7/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Barker Slough P.P.	C961403	6/6/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Barker Slough P.P.	C962329	12/5/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bis(2-ethylhexyl)adipate	0	3	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bis(2-ethylhexyl)adipate	0	3	µg/L
Delta P.P. Headworks	C960428	3/14/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bis(2-ethylhexyl)adipate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River at Bacon Island	C953054	12/6/95	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River at Bacon Island	C960420	3/13/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River at Bacon Island	C961286	6/12/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River at Bacon Island	C961845	9/11/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River at Bacon Island	C962333	12/11/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bis(2-ethylhexyl)adipate	0	3	µg/L
Barker Slough P.P.	C953043	12/6/95	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Barker Slough P.P.	C960401	3/7/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Barker Slough P.P.	C961403	6/6/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Barker Slough P.P.	C962329	12/5/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Delta P.P. Headworks	C960428	3/14/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bis(2-ethylhexyl)phthalate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Old River at Bacon Island	C953054	12/6/95	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Old River at Bacon Island	C960420	3/13/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Old River at Bacon Island	C961286	6/12/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C961845	9/11/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Old River at Bacon Island	C962333	12/11/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Barker Slough P.P.	C953043	12/6/95	Boron, Diss.	0.1	0.1	mg/L
Barker Slough P.P.	C960401	3/7/96	Boron, Diss.	0.2	0.1	mg/L
Barker Slough P.P.	C961830	9/5/96	Boron, Diss.	0.2	0.1	mg/L
Barker Slough P.P.	C962321	12/5/96	Boron, Diss.	0.2	0.1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Boron, Diss.	0	0.1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Boron, Diss.	0.9	0.1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Boron, Diss.	0	0.1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Boron, Diss.	0.1	0.1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Boron, Diss.	0.3	0.1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Boron, Diss.	0.2	0.1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Boron, Diss.	0	0.1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Boron, Diss.	0.1	0.1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Boron, Diss.	0.2	0.1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Boron, Diss.	0.2	0.1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Boron, Diss.	0.3	0.1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Boron, Diss.	0.3	0.1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Boron, Diss.	0.1	0.1	mg/L
Old River at Bacon Island	C953054	12/6/95	Boron, Diss.	0	0.1	mg/L
Old River at Bacon Island	C960420	3/13/96	Boron, Diss.	0.2	0.1	mg/L
Old River at Bacon Island	C961851	9/11/96	Boron, Diss.	0	0.1	mg/L
Old River at Bacon Island	C962339	12/11/96	Boron, Diss.	0	0.1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Boron, Diss.	0	0.1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Boron, Diss.	0.3	0.1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Boron, Diss.	0	0.1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Boron, Diss.	0.1	0.1	mg/L
Barker Slough P.P.	C953043	12/6/95	Bromide, Total	0.04	0.01	mg/L
Barker Slough P.P.	C960401	3/7/96	Bromide, Total	0.04	0.01	mg/L
Barker Slough P.P.	C961830	9/5/96	Bromide, Total	0.03	0.01	mg/L
Barker Slough P.P.	C961974	9/30/96	Bromide, Total	0.04	0.01	mg/L
Barker Slough P.P.	C962321	12/5/96	Bromide, Total	0.05	0.01	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Bromide, Total	0.05	0.01	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromide, Total	0.34	0.01	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Bromide, Total	0.11	0.01	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Bromide, Total	0.41	0.01	mg/L
Delta P.P. Headworks	C953062	12/7/95	Bromide, Total	0.1	0.01	mg/L
Delta P.P. Headworks	C960428	3/14/96	Bromide, Total	0.07	0.01	mg/L
Delta P.P. Headworks	C961859	9/12/96	Bromide, Total	0.09	0.01	mg/L
Delta P.P. Headworks	C962346	12/12/96	Bromide, Total	0.21	0.01	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromide, Total	0.1	0.01	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromide, Total	0.08	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Bromide, Total	0.22	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Bromide, Total	0.23	0.01	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Bromide, Total	0.06	0.01	mg/L
Old River at Bacon Island	C953054	12/6/95	Bromide, Total	0.04	0.01	mg/L
Old River at Bacon Island	C960420	3/13/96	Bromide, Total	0.08	0.01	mg/L
Old River at Bacon Island	C961851	9/11/96	Bromide, Total	0.08	0.01	mg/L
Old River at Bacon Island	C962339	12/11/96	Bromide, Total	0.31	0.01	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Bromide, Total	0.06	0.01	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Bromide, Total	0.09	0.01	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Bromide, Total	0.07	0.01	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C962336	12/11/96	Bromide, Total	0.3	0.01	mg/L
Barker Slough P.P.	C953043	12/6/95	Bromobenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Bromobenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Bromobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bromobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bromobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bromobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bromobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bromobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bromobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bromobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bromobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Bromobenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromobenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Bromobenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Bromobenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Bromobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bromobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bromobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bromobenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Bromochloroacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Bromochloroacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Bromochloroacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C962329	12/5/96	Bromochloroacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bromochloroacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromochloroacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bromochloroacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Bromochloroacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bromochloroacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Bromochloroacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bromochloroacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bromochloroacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromochloroacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromochloroacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bromochloroacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bromochloroacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bromochloroacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Bromochloroacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromochloroacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Bromochloroacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Bromochloroacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Bromochloroacetonitrile	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bromochloroacetonitrile	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bromochloroacetonitrile	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bromochloroacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Bromochloromethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Bromochloromethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Bromochloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bromochloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromochloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bromochloromethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bromochloromethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C961406	6/13/96	Bromochloromethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Bromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Bromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Bromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Bromochloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bromochloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bromochloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bromochloromethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Bromocil	0	10	µg/L
Barker Slough P.P.	C960401	3/7/96	Bromocil	0	10	µg/L
Barker Slough P.P.	C961403	6/6/96	Bromocil	0	10	µg/L
Barker Slough P.P.	C962329	12/5/96	Bromocil	0	10	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bromocil	0	10	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromocil	0	10	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bromocil	0	10	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Bromocil	0	10	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bromocil	0	10	µg/L
Delta P.P. Headworks	C960428	3/14/96	Bromocil	0	10	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bromocil	0	10	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bromocil	0	10	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromocil	0	10	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromocil	0	10	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bromocil	0	10	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bromocil	0	10	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bromocil	0	10	µg/L
Old River at Bacon Island	C953054	12/6/95	Bromocil	0	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromocil	0	10	µg/L
Old River at Bacon Island	C961286	6/12/96	Bromocil	0	10	µg/L
Old River at Bacon Island	C961845	9/11/96	Bromocil	0	10	µg/L
Old River at Bacon Island	C962333	12/11/96	Bromocil	0	10	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bromocil	0	10	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bromocil	0	10	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bromocil	0	10	µg/L
Barker Slough P.P.	C953043	12/6/95	Bromodichloromethane	31	10	µg/L
Barker Slough P.P.	C960401	3/7/96	Bromodichloromethane	47	10	µg/L
Barker Slough P.P.	C961403	6/6/96	Bromodichloromethane	0	10	µg/L
Barker Slough P.P.	C961974	9/30/96	Bromodichloromethane	29	10	ug/L
Barker Slough P.P.	C962321	12/5/96	Bromodichloromethane	38	10	ug/L
Contra Costa PP Number 01	C953045	12/6/95	Bromodichloromethane	37	10	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromodichloromethane	170	10	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bromodichloromethane	0	10	µg/L
Contra Costa PP Number 01	C961832	9/5/96	Bromodichloromethane	61	10	ug/L
Contra Costa PP Number 01	C962323	12/5/96	Bromodichloromethane	110	10	ug/L
Delta P.P. Headworks	C953062	12/7/95	Bromodichloromethane	56	10	µg/L
Delta P.P. Headworks	C960428	3/14/96	Bromodichloromethane	51	10	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bromodichloromethane	0	10	µg/L
Delta P.P. Headworks	C961859	9/12/96	Bromodichloromethane	49	10	ug/L
Delta P.P. Headworks	C962346	12/12/96	Bromodichloromethane	93	10	ug/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromodichloromethane	63	10	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromodichloromethane	56	10	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bromodichloromethane	0	10	µg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Bromodichloromethane	89	10	ug/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Bromodichloromethane	35	10	ug/L
Old River at Bacon Island	C953054	12/6/95	Bromodichloromethane	32	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromodichloromethane	0	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromodichloromethane	56	10	µg/L
Old River at Bacon Island	C961286	6/12/96	Bromodichloromethane	0	0.5	µg/L
Old River at Bacon Island	C961851	9/11/96	Bromodichloromethane	43	10	ug/L
Old River at Bacon Island	C961845	9/11/96	Bromodichloromethane	0	0.5	µg/L
Old River at Bacon Island	C962282	12/8/96	Bromodichloromethane	110	10	ug/L
Old River at Bacon Island	C962339	12/11/96	Bromodichloromethane	120	10	ug/L
Old River nr. Byron (St 9)	C953051	12/6/95	Bromodichloromethane	42	10	µg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Bromodichloromethane	58	10	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bromodichloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Bromodichloromethane	47	10	ug/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bromodichloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Bromodichloromethane	120	10	ug/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bromodichloromethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Bromoform	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Bromoform	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Bromoform	0	0.5	µg/L
Barker Slough P.P.	C961974	9/30/96	Bromoform	0	10	ug/L
Barker Slough P.P.	C962321	12/5/96	Bromoform	0	10	ug/L
Contra Costa PP Number 01	C953045	12/6/95	Bromoform	0	10	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Bromoform	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromoform	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bromoform	0	0.5	µg/L
Contra Costa PP Number 01	C961832	9/5/96	Bromoform	0	10	ug/L
Contra Costa PP Number 01	C962323	12/5/96	Bromoform	0	10	ug/L
Delta P.P. Headworks	C953062	12/7/95	Bromoform	0	10	µg/L
Delta P.P. Headworks	C960428	3/14/96	Bromoform	0	10	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bromoform	0	0.5	µg/L
Delta P.P. Headworks	C961859	9/12/96	Bromoform	0	10	ug/L
Delta P.P. Headworks	C962346	12/12/96	Bromoform	0	10	ug/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromoform	0	10	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromoform	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bromoform	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Bromoform	0	10	ug/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Bromoform	0	10	ug/L
Old River at Bacon Island	C953054	12/6/95	Bromoform	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Bromoform	0	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromoform	0	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromoform	0	0.5	µg/L
Old River at Bacon Island	C961851	9/11/96	Bromoform	0	10	ug/L
Old River at Bacon Island	C962282	12/8/96	Bromoform	0	10	ug/L
Old River at Bacon Island	C962339	12/11/96	Bromoform	0	10	ug/L
Old River nr. Byron (St 9)	C953051	12/6/95	Bromoform	0	10	µg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Bromoform	0	10	µg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Bromoform	0	10	ug/L
Old River nr. Byron (St 9)	C962336	12/11/96	Bromoform	0	10	ug/L
Barker Slough P.P.	C953043	12/6/95	Bromomethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Bromomethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Bromomethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP Number 01	C953045	12/6/95	Bromomethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Bromomethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Bromomethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Bromomethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Bromomethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Bromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Bromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Bromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Bromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Bromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Bromomethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Bromomethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Bromomethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Bromomethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Bromomethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Bromomethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Bromomethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Bromomethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Bromomethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Butachlor	0	0.38	µg/L
Barker Slough P.P.	C960401	3/7/96	Butachlor	0	0.38	µg/L
Barker Slough P.P.	C961403	6/6/96	Butachlor	0	0.38	µg/L
Barker Slough P.P.	C962329	12/5/96	Butachlor	0	0.38	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Butachlor	0	0.38	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Butachlor	0	0.38	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Butachlor	0	0.38	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Butachlor	0	0.38	µg/L
Delta P.P. Headworks	C953062	12/7/95	Butachlor	0	0.38	µg/L
Delta P.P. Headworks	C960428	3/14/96	Butachlor	0	0.38	µg/L
Delta P.P. Headworks	C961406	6/13/96	Butachlor	0	0.38	µg/L
Delta P.P. Headworks	C961853	9/12/96	Butachlor	0	0.38	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Butachlor	0	0.38	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Butachlor	0	0.38	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Butachlor	0	0.38	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Butachlor	0	0.38	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Butachlor	0	0.38	µg/L
Old River at Bacon Island	C953054	12/6/95	Butachlor	0	0.38	µg/L
Old River at Bacon Island	C960420	3/13/96	Butachlor	0	0.38	µg/L
Old River at Bacon Island	C961286	6/12/96	Butachlor	0	0.38	µg/L
Old River at Bacon Island	C961845	9/11/96	Butachlor	0	0.38	µg/L
Old River at Bacon Island	C962333	12/11/96	Butachlor	0	0.38	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Butachlor	0	0.38	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Butachlor	0	0.38	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Butachlor	0	0.38	µg/L
Barker Slough P.P.	C953043	12/6/95	Cadmium, Diss.	0	0.005	mg/L
Barker Slough P.P.	C960401	3/7/96	Cadmium, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Cadmium, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Cadmium, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C953062	12/7/95	Cadmium, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C960428	3/14/96	Cadmium, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C961406	6/13/96	Cadmium, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C961853	9/12/96	Cadmium, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Cadmium, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Cadmium, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Cadmium, Diss.	0	0.005	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Cadmium, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Cadmium, Diss.	0	0.005	mg/L
Old River at Bacon Island	C953054	12/6/95	Cadmium, Diss.	0	0.005	mg/L
Old River at Bacon Island	C960420	3/13/96	Cadmium, Diss.	0	0.005	mg/L
Old River at Bacon Island	C961286	6/12/96	Cadmium, Diss.	0	0.005	mg/L
Old River at Bacon Island	C961845	9/11/96	Cadmium, Diss.	0	0.005	mg/L
Old River at Bacon Island	C962333	12/11/96	Cadmium, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Cadmium, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Cadmium, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Cadmium, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Cadmium, Diss.	0	0.005	mg/L
Barker Slough P.P.	C953043	12/6/95	Calcium Diss.	15	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Calcium Diss.	15	1	mg/L
Barker Slough P.P.	C961830	9/5/96	Calcium Diss.	14	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Calcium Diss.	18	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Calcium Diss.	12	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Calcium Diss.	39	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Calcium Diss.	12	1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Calcium Diss.	16	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Calcium Diss.	17	1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Calcium Diss.	15	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Calcium Diss.	12	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Calcium Diss.	15	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Calcium Diss.	18	1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Calcium Diss.	16	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Calcium Diss.	29	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Calcium Diss.	29	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Calcium Diss.	11	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Calcium Diss.	11	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Calcium Diss.	17	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Calcium Diss.	11	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Calcium Diss.	14	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Calcium Diss.	12	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Calcium Diss.	17	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Calcium Diss.	12	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Calcium Diss.	15	1	mg/L
Barker Slough P.P.	C953043	12/6/95	Carbaryl	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Carbaryl	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Carbaryl	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Carbaryl	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Carbaryl	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Carbaryl	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Carbaryl	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Carbaryl	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Carbaryl	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Carbaryl	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Carbaryl	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Carbaryl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Carbaryl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Carbaryl	0	4	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Carbaryl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Carbaryl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Carbaryl	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Carbaryl	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Carbaryl	0	2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C961286	6/12/96	Carbaryl	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Carbaryl	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Carbaryl	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Carbaryl	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Carbaryl	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Carbaryl	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Carbofuran	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Carbofuran	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Carbofuran	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Carbofuran	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Carbofuran	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Carbofuran	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Carbofuran	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Carbofuran	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Carbofuran	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Carbofuran	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Carbofuran	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Carbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Carbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Carbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Carbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Carbofuran	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Carbofuran	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Carbofuran	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Carbofuran	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Carbofuran	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Carbofuran	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Carbofuran	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Carbofuran	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Carbofuran	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Carbofuran	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Carbon tetrachloride	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Carbon tetrachloride	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Carbon tetrachloride	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Carbon tetrachloride	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Carbon tetrachloride	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Carbon tetrachloride	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Carbon tetrachloride	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Carbon tetrachloride	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Carbon tetrachloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Carbon tetrachloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Carbon tetrachloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Carbon tetrachloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Carbon tetrachloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Carbon tetrachloride	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Carbon tetrachloride	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Carbon tetrachloride	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Carbon tetrachloride	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Carbon tetrachloride	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Carbon tetrachloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Carbon tetrachloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Carbon tetrachloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Carbon tetrachloride	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Chloral_Hydrate	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Chloral_Hydrate	0	2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C961403	6/6/96	Chloral_Hydrate	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Chloral_Hydrate	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Chloral_Hydrate	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chloral_Hydrate	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chloral_Hydrate	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Chloral_Hydrate	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Chloral_Hydrate	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Chloral_Hydrate	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chloral_Hydrate	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Chloral_Hydrate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chloral_Hydrate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chloral_Hydrate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chloral_Hydrate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chloral_Hydrate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chloral_Hydrate	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Chloral_Hydrate	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Chloral_Hydrate	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Chloral_Hydrate	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Chloral_Hydrate	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Chloral_Hydrate	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chloral_Hydrate	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chloral_Hydrate	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chloral_Hydrate	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Chlordane	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	Chlordane	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	Chlordane	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	Chlordane	0	0.1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Chlordane	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chlordane	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chlordane	0	0.1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Chlordane	0	0.1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Chlordane	0	0.1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Chlordane	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chlordane	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Chlordane	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chlordane	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chlordane	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chlordane	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chlordane	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chlordane	0	0.1	µg/L
Old River at Bacon Island	C953054	12/6/95	Chlordane	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	Chlordane	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	Chlordane	0	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	Chlordane	0	0.1	µg/L
Old River at Bacon Island	C962333	12/11/96	Chlordane	0	0.1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chlordane	0	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chlordane	0	0.1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chlordane	0	0.1	µg/L
Barker Slough P.P.	C953043	12/6/95	Chloride, Diss.	19	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Chloride, Diss.	19	1	mg/L
Barker Slough P.P.	C961830	9/5/96	Chloride, Diss.	16	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Chloride, Diss.	35	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Chloride, Diss.	18	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Chloride, Diss.	113	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Chloride, Diss.	37	1	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP Number 01	C962323	12/5/96	Chloride, Diss.	136	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Chloride, Diss.	39	1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Chloride, Diss.	30	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Chloride, Diss.	26	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Chloride, Diss.	68	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chloride, Diss.	35	1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chloride, Diss.	32	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Chloride, Diss.	67	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Chloride, Diss.	66	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Chloride, Diss.	22	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Chloride, Diss.	15	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Chloride, Diss.	34	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Chloride, Diss.	23	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Chloride, Diss.	89	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Chloride, Diss.	19	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Chloride, Diss.	37	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Chloride, Diss.	23	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Chloride, Diss.	91	1	mg/L
Barker Slough P.P.	C953043	12/6/95	Chlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Chlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Chlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Chlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Chlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Chlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Chlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Chlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Chlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Chlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Chlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Chloroethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Chloroethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Chloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Chloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chloroethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chloroethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Chloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chloroethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Chloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chloroethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chloroethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Chloroethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C960420	3/13/96	Chloroethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Chloroethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Chloroethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Chloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chloroethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chloroethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Chloroform	320	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Chloroform	1400	10	µg/L
Barker Slough P.P.	C961403	6/6/96	Chloroform	0	10	µg/L
Barker Slough P.P.	C961974	9/30/96	Chloroform	390	10	ug/L
Barker Slough P.P.	C962321	12/5/96	Chloroform	360	10	ug/L
Contra Costa PP Number 01	C953045	12/6/95	Chloroform	280	10	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chloroform	630	10	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chloroform	0	10	µg/L
Contra Costa PP Number 01	C961832	9/5/96	Chloroform	220	10	ug/L
Contra Costa PP Number 01	C962323	12/5/96	Chloroform	130	10	ug/L
Delta P.P. Headworks	C953062	12/7/95	Chloroform	240	10	µg/L
Delta P.P. Headworks	C960428	3/14/96	Chloroform	400	10	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chloroform	0	10	µg/L
Delta P.P. Headworks	C961859	9/12/96	Chloroform	240	10	ug/L
Delta P.P. Headworks	C962346	12/12/96	Chloroform	240	10	ug/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chloroform	300	10	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chloroform	400	10	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chloroform	0	10	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chloroform	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Chloroform	220	10	ug/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Chloroform	340	10	ug/L
Old River at Bacon Island	C953054	12/6/95	Chloroform	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Chloroform	280	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Chloroform	0	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Chloroform	440	10	µg/L
Old River at Bacon Island	C961286	6/12/96	Chloroform	0	0.5	µg/L
Old River at Bacon Island	C961851	9/11/96	Chloroform	210	10	ug/L
Old River at Bacon Island	C962282	12/8/96	Chloroform	170	10	ug/L
Old River at Bacon Island	C962339	12/11/96	Chloroform	200	10	ug/L
Old River nr. Byron (St 9)	C953051	12/6/95	Chloroform	320	10	µg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Chloroform	400	10	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chloroform	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chloroform	0	0.5	µg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Chloroform	260	10	ug/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chloroform	0	0.5	µg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Chloroform	230	10	ug/L
Barker Slough P.P.	C953043	12/6/95	Chloromethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Chloromethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Chloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Chloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chloromethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Chloromethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chloromethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Chloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chloromethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chloromethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Chloromethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Chloromethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Chloromethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Chloromethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Chloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chloromethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Chloropicrin	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Chloropicrin	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Chloropicrin	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Chloropicrin	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Chloropicrin	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chloropicrin	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chloropicrin	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Chloropicrin	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Chloropicrin	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Chloropicrin	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chloropicrin	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Chloropicrin	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chloropicrin	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chloropicrin	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chloropicrin	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chloropicrin	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chloropicrin	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Chloropicrin	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Chloropicrin	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Chloropicrin	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Chloropicrin	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Chloropicrin	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chloropicrin	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chloropicrin	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chloropicrin	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Chlorothalonil	0	5	µg/L
Barker Slough P.P.	C960401	3/7/96	Chlorothalonil	0	5	µg/L
Barker Slough P.P.	C961403	6/6/96	Chlorothalonil	0	5	µg/L
Barker Slough P.P.	C962329	12/5/96	Chlorothalonil	0	5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Chlorothalonil	0	5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Chlorothalonil	0	5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Chlorothalonil	0	5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Chlorothalonil	0	5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Chlorothalonil	0	5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Chlorothalonil	0	5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Chlorothalonil	0	5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Chlorothalonil	0	5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chlorothalonil	0	5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chlorothalonil	0	5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chlorothalonil	0	5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chlorothalonil	0	5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chlorothalonil	0	5	µg/L
Old River at Bacon Island	C953054	12/6/95	Chlorothalonil	0	5	µg/L
Old River at Bacon Island	C960420	3/13/96	Chlorothalonil	0	5	µg/L
Old River at Bacon Island	C961286	6/12/96	Chlorothalonil	0	5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C961845	9/11/96	Chlorothalonil	0	5	µg/L
Old River at Bacon Island	C962333	12/11/96	Chlorothalonil	0	5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chlorothalonil	0	5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chlorothalonil	0	5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chlorothalonil	0	5	µg/L
Barker Slough P.P.	C961974	9/30/96	Chlorpropham	0	0.02	µg/L
Barker Slough P.P.	C961974	9/30/96	Chlorpyrifos	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Chromium. Diss.	0	0.005	mg/L
Barker Slough P.P.	C960401	3/7/96	Chromium. Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Chromium. Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Chromium. Diss.	0	0.005	mg/L
Delta P.P. Headworks	C953062	12/7/95	Chromium. Diss.	0	0.005	mg/L
Delta P.P. Headworks	C960428	3/14/96	Chromium. Diss.	0	0.005	mg/L
Delta P.P. Headworks	C961406	6/13/96	Chromium. Diss.	0	0.005	mg/L
Delta P.P. Headworks	C961853	9/12/96	Chromium. Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Chromium. Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Chromium. Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Chromium. Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Chromium. Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Chromium. Diss.	0	0.005	mg/L
Old River at Bacon Island	C953054	12/6/95	Chromium. Diss.	0	0.005	mg/L
Old River at Bacon Island	C961286	6/12/96	Chromium. Diss.	0	0.005	mg/L
Old River at Bacon Island	C961845	9/11/96	Chromium. Diss.	0	0.005	mg/L
Old River at Bacon Island	C962333	12/11/96	Chromium. Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chromium. Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Chromium. Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Chromium. Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Chromium. Diss.	0	0.005	mg/L
Barker Slough P.P.	C953043	12/6/95	cis-1,2-Dichloroethene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	cis-1,2-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	cis-1,2-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	cis-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	cis-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	cis-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	cis-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	cis-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	cis-1,2-Dichloroethene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	cis-1,3-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	cis-1,3-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	cis-1,3-Dichloropropene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP Number 01	C961404	6/6/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	cis-1,3-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	cis-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	cis-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	cis-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	cis-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	cis-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	cis-1,3-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Copper, Diss.	0	0.005	mg/L
Barker Slough P.P.	C960401	3/7/96	Copper, Diss.	0	0.005	mg/L
Barker Slough P.P.	C961830	9/5/96	Copper, Diss.	0	0.005	mg/L
Barker Slough P.P.	C962321	12/5/96	Copper, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Copper, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Copper, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Copper, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Copper, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C953062	12/7/95	Copper, Diss.	0.008	0.005	mg/L
Delta P.P. Headworks	C960428	3/14/96	Copper, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C961859	9/12/96	Copper, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C962346	12/12/96	Copper, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Copper, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Copper, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Copper, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Copper, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Copper, Diss.	0	0.005	mg/L
Old River at Bacon Island	C953054	12/6/95	Copper, Diss.	0	0.005	mg/L
Old River at Bacon Island	C960420	3/13/96	Copper, Diss.	0	0.005	mg/L
Old River at Bacon Island	C961286	6/12/96	Copper, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Copper, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Copper, Diss.	0	0.005	mg/L
Barker Slough P.P.	C953043	12/6/95	Dalapon	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	Dalapon	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	Dalapon	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Dalapon	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dalapon	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dalapon	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dalapon	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Dalapon	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dalapon	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dalapon	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dalapon	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dalapon	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dalapon	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dalapon	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dalapon	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dalapon	0	1	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dalapon	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Dalapon	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	Dalapon	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	Dalapon	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	Dalapon	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Dalapon	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dalapon	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dalapon	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dalapon	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	Demeton	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Demeton	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Demeton	0	0.5	µg/L
Barker Slough P.P.	C961974	9/30/96	Demeton	0	0.02	µg/L
Barker Slough P.P.	C962329	12/5/96	Demeton	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Demeton	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Demeton	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Demeton	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Demeton	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Demeton	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Demeton	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Demeton	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Demeton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Demeton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Demeton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Demeton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Demeton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Demeton	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Demeton	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Demeton	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Demeton	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Demeton	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Demeton	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Demeton	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Demeton	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Demeton	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Diazinon	0	0.25	µg/L
Barker Slough P.P.	C960401	3/7/96	Diazinon	0	0.25	µg/L
Barker Slough P.P.	C961403	6/6/96	Diazinon	0	0.25	µg/L
Barker Slough P.P.	C961974	9/30/96	Diazinon	0.05	0.01	µg/L
Barker Slough P.P.	C962329	12/5/96	Diazinon	0	0.25	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Diazinon	0	0.25	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Diazinon	0	0.25	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Diazinon	0	0.25	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Diazinon	0	0.25	µg/L
Delta P.P. Headworks	C953062	12/7/95	Diazinon	0	0.25	µg/L
Delta P.P. Headworks	C960428	3/14/96	Diazinon	0	0.25	µg/L
Delta P.P. Headworks	C961406	6/13/96	Diazinon	0	0.25	µg/L
Delta P.P. Headworks	C961853	9/12/96	Diazinon	0	0.25	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Diazinon	0	0.25	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Diazinon	0	0.25	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Diazinon	0	0.25	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Diazinon	0	0.25	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Diazinon	0	0.25	µg/L
Old River at Bacon Island	C953054	12/6/95	Diazinon	0	0.25	µg/L
Old River at Bacon Island	C960420	3/13/96	Diazinon	0	0.25	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C961286	6/12/96	Diazinon	0	0.25	µg/L
Old River at Bacon Island	C961845	9/11/96	Diazinon	0	0.25	µg/L
Old River at Bacon Island	C962333	12/11/96	Diazinon	0	0.25	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Diazinon	0	0.25	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Diazinon	0	0.25	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Diazinon	0	0.25	µg/L
Barker Slough P.P.	C953043	12/6/95	Dibromoacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Dibromoacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Dibromoacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C962329	12/5/96	Dibromoacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dibromoacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dibromoacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dibromoacetonitrile	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Dibromoacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dibromoacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dibromoacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dibromoacetonitrile	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dibromoacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dibromoacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dibromoacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dibromoacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dibromoacetonitrile	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dibromoacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Dibromoacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Dibromoacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Dibromoacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Dibromoacetonitrile	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Dibromoacetonitrile	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dibromoacetonitrile	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dibromoacetonitrile	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dibromoacetonitrile	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Dibromochloromethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Dibromochloromethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Dibromochloromethane	0	0.5	µg/L
Barker Slough P.P.	C961830	9/5/96	Dibromochloromethane	0	10	ug/L
Barker Slough P.P.	C961974	9/30/96	Dibromochloromethane	0	10	ug/L
Barker Slough P.P.	C962321	12/5/96	Dibromochloromethane	0	0.5	ug/L
Contra Costa PP Number 01	C953045	12/6/95	Dibromochloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dibromochloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dibromochloromethane	47	10	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dibromochloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dibromochloromethane	0	0.5	µg/L
Contra Costa PP Number 01	C961832	9/5/96	Dibromochloromethane	17	10	ug/L
Contra Costa PP Number 01	C962323	12/5/96	Dibromochloromethane	82	10	ug/L
Delta P.P. Headworks	C953062	12/7/95	Dibromochloromethane	0	10	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dibromochloromethane	0	10	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dibromochloromethane	0	0.5	µg/L
Delta P.P. Headworks	C961859	9/12/96	Dibromochloromethane	12	10	ug/L
Delta P.P. Headworks	C961853	9/12/96	Dibromochloromethane	0	0.5	µg/L
Delta P.P. Headworks	C962346	12/12/96	Dibromochloromethane	31	10	ug/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dibromochloromethane	0	10	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dibromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dibromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dibromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dibromochloromethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dibromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Dibromochloromethane	39	10	ug/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dibromochloromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Dibromochloromethane	37	10	ug/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Dibromochloromethane	0	10	ug/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dibromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Dibromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Dibromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Dibromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Dibromochloromethane	0	0.5	µg/L
Old River at Bacon Island	C961851	9/11/96	Dibromochloromethane	0	10	ug/L
Old River at Bacon Island	C962282	12/8/96	Dibromochloromethane	60	10	ug/L
Old River at Bacon Island	C962339	12/11/96	Dibromochloromethane	52	10	ug/L
Old River nr. Byron (St 9)	C953051	12/6/95	Dibromochloromethane	0	10	µg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Dibromochloromethane	0	10	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dibromochloromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Dibromochloromethane	47	10	ug/L
Barker Slough P.P.	C953043	12/6/95	Dibromomethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Dibromomethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Dibromomethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dibromomethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dibromomethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dibromomethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dibromomethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dibromomethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dibromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dibromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dibromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dibromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dibromomethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dibromomethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Dibromomethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Dibromomethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Dibromomethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Dibromomethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Dibromomethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dibromomethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dibromomethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dibromomethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Dicamba	0	0.081	µg/L
Barker Slough P.P.	C960401	3/7/96	Dicamba	0	0.081	µg/L
Barker Slough P.P.	C961403	6/6/96	Dicamba	0	0.081	µg/L
Barker Slough P.P.	C962329	12/5/96	Dicamba	0	0.081	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dicamba	0	0.081	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dicamba	0	0.081	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dicamba	0	0.081	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Dicamba	0	0.081	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dicamba	0	0.081	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dicamba	0	0.081	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dicamba	0	0.081	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dicamba	0	0.081	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dicamba	0	0.081	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dicamba	0	0.081	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dicamba	0	0.081	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dicamba	0	0.081	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dicamba	0	0.081	µg/L
Old River at Bacon Island	C953054	12/6/95	Dicamba	0	0.081	µg/L
Old River at Bacon Island	C960420	3/13/96	Dicamba	0	0.081	µg/L
Old River at Bacon Island	C961286	6/12/96	Dicamba	0	0.081	µg/L
Old River at Bacon Island	C961845	9/11/96	Dicamba	0	0.081	µg/L
Old River at Bacon Island	C962333	12/11/96	Dicamba	0	0.081	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dicamba	0	0.081	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dicamba	0	0.081	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dicamba	0	0.081	µg/L
Barker Slough P.P.	C961974	9/30/96	Dichloran	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Dichloroacetonitrile	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	Dichloroacetonitrile	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	Dichloroacetonitrile	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Dichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Dichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Dichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	Dichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	Dichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	Dichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Dichloroacetonitrile	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dichloroacetonitrile	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dichloroacetonitrile	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dichloroacetonitrile	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	Dichlorodifluoromethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Dichlorodifluoromethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Dichlorodifluoromethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dichlorodifluoromethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dichlorodifluoromethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dichlorodifluoromethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dichlorodifluoromethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dichlorodifluoromethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dichlorodifluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dichlorodifluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dichlorodifluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dichlorodifluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dichlorodifluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dichlorodifluoromethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Dichlorodifluoromethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Dichlorodifluoromethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Dichlorodifluoromethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Dichlorodifluoromethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Dichlorodifluoromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dichlorodifluoromethane	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C961844	9/11/96	Dichlorodifluoromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dichlorodifluoromethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Dieldrin	0	0.02	µg/L
Barker Slough P.P.	C960401	3/7/96	Dieldrin	0	0.02	µg/L
Barker Slough P.P.	C961403	6/6/96	Dieldrin	0	0.02	µg/L
Barker Slough P.P.	C961974	9/30/96	Dieldrin	0	0.01	µg/L
Barker Slough P.P.	C962329	12/5/96	Dieldrin	0	0.075	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dieldrin	0	0.02	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dieldrin	0	0.02	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dieldrin	0	0.02	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Dieldrin	0	0.075	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dieldrin	0	0.02	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dieldrin	0	0.02	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dieldrin	0	0.02	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dieldrin	0	0.075	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dieldrin	0	0.02	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dieldrin	0	0.02	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dieldrin	0	0.02	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dieldrin	0	0.075	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dieldrin	0	0.075	µg/L
Old River at Bacon Island	C953054	12/6/95	Dieldrin	0	0.02	µg/L
Old River at Bacon Island	C960420	3/13/96	Dieldrin	0	0.02	µg/L
Old River at Bacon Island	C961286	6/12/96	Dieldrin	0	0.02	µg/L
Old River at Bacon Island	C961845	9/11/96	Dieldrin	0	0.075	µg/L
Old River at Bacon Island	C962333	12/11/96	Dieldrin	0	0.075	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dieldrin	0	0.02	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dieldrin	0	0.075	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dieldrin	0	0.075	µg/L
Barker Slough P.P.	C953043	12/6/95	Dimethoate	0	10	µg/L
Barker Slough P.P.	C960401	3/7/96	Dimethoate	0	10	µg/L
Barker Slough P.P.	C961403	6/6/96	Dimethoate	0	10	µg/L
Barker Slough P.P.	C962329	12/5/96	Dimethoate	0	10	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dimethoate	0	10	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dimethoate	0	10	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dimethoate	0	10	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Dimethoate	0	10	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dimethoate	0	10	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dimethoate	0	10	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dimethoate	0	10	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dimethoate	0	10	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dimethoate	0	10	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dimethoate	0	10	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dimethoate	0	10	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dimethoate	0	10	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dimethoate	0	10	µg/L
Old River at Bacon Island	C953054	12/6/95	Dimethoate	0	10	µg/L
Old River at Bacon Island	C960420	3/13/96	Dimethoate	0	10	µg/L
Old River at Bacon Island	C961286	6/12/96	Dimethoate	0	10	µg/L
Old River at Bacon Island	C961845	9/11/96	Dimethoate	0	10	µg/L
Old River at Bacon Island	C962333	12/11/96	Dimethoate	0	10	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dimethoate	0	10	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dimethoate	0	10	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dimethoate	0	10	µg/L
Barker Slough P.P.	C953043	12/6/95	Dinoseb	0	0.2	µg/L
Barker Slough P.P.	C960401	3/7/96	Dinoseb	0	0.2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C961403	6/6/96	Dinoseb	0	0.2	µg/L
Barker Slough P.P.	C962329	12/5/96	Dinoseb	0	0.2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Dinoseb	0	0.2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Dinoseb	0	0.2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Dinoseb	0	0.2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Dinoseb	0	0.2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Dinoseb	0	0.2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Dinoseb	0	0.2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Dinoseb	0	0.2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Dinoseb	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dinoseb	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Dinoseb	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Dinoseb	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Dinoseb	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Dinoseb	0	0.2	µg/L
Old River at Bacon Island	C953054	12/6/95	Dinoseb	0	0.2	µg/L
Old River at Bacon Island	C960420	3/13/96	Dinoseb	0	0.2	µg/L
Old River at Bacon Island	C961286	6/12/96	Dinoseb	0	0.2	µg/L
Old River at Bacon Island	C961845	9/11/96	Dinoseb	0	0.2	µg/L
Old River at Bacon Island	C962333	12/11/96	Dinoseb	0	0.2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Dinoseb	0	0.2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Dinoseb	0	0.2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Dinoseb	0	0.2	µg/L
Barker Slough P.P.	C953043	12/6/95	Diquat	0	4	µg/L
Barker Slough P.P.	C960401	3/7/96	Diquat	0	4	µg/L
Barker Slough P.P.	C961403	6/6/96	Diquat	0	4	µg/L
Barker Slough P.P.	C962329	12/5/96	Diquat	0	4	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Diquat	0	4	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Diquat	0	4	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Diquat	0	4	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Diquat	0	4	µg/L
Delta P.P. Headworks	C953062	12/7/95	Diquat	0	4	µg/L
Delta P.P. Headworks	C960428	3/14/96	Diquat	0	4	µg/L
Delta P.P. Headworks	C961406	6/13/96	Diquat	0	4	µg/L
Delta P.P. Headworks	C961853	9/12/96	Diquat	0	4	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Diquat	0	4	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Diquat	0	4	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Diquat	0	4	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Diquat	0	4	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Diquat	0	4	µg/L
Old River at Bacon Island	C953054	12/6/95	Diquat	0	4	µg/L
Old River at Bacon Island	C960420	3/13/96	Diquat	0	4	µg/L
Old River at Bacon Island	C961286	6/12/96	Diquat	0	4	µg/L
Old River at Bacon Island	C961845	9/11/96	Diquat	0	4	µg/L
Old River at Bacon Island	C962333	12/11/96	Diquat	0	4	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Diquat	0	4	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Diquat	0	4	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Diquat	0	4	µg/L
Barker Slough P.P.	C953043	12/6/95	Dissolved Organic Carbon	3.8	0.1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Dissolved Organic Carbon	3	0.1	mg/l
Delta P.P. Headworks	C953062	12/7/95	Dissolved Organic Carbon	2.9	0.1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Dissolved Organic Carbon	4.3	0.1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Dissolved Organic Carbon	3.3	0.1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Dissolved Organic Carbon	4.4	0.1	mg/L
Old River at Bacon Island	C953054	12/6/95	Dissolved Organic Carbon	3.1	0.1	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C962281	12/5/96	Dissolved Organic Carbon	3.5	0.1	mg/L
Old River at Bacon Island	C962282	12/8/96	Dissolved Organic Carbon	3.2	0.1	mg/L
Old River at Bacon Island	C962285	12/10/96	Dissolved Organic Carbon	3.3	0.1	mg/L
Old River at Bacon Island	C962286	12/12/96	Dissolved Organic Carbon	4	0.1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Dissolved Organic Carbon	3.5	0.1	mg/L
Barker Slough P.P.	C953043	12/6/95	Disulfoton	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Disulfoton	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Disulfoton	0	0.5	µg/L
Barker Slough P.P.	C962329	12/5/96	Disulfoton	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Disulfoton	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Disulfoton	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Disulfoton	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Disulfoton	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Disulfoton	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Disulfoton	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Disulfoton	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Disulfoton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Disulfoton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Disulfoton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Disulfoton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Disulfoton	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Disulfoton	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Disulfoton	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Disulfoton	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Disulfoton	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Disulfoton	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Disulfoton	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Disulfoton	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Disulfoton	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Disulfoton	0	0.5	µg/L
Barker Slough P.P.	C961974	9/30/96	Diuron	0	0.25	µg/L
Barker Slough P.P.	C961974	9/30/96	Endosulfan sulfate	0	0.01	µg/L
Barker Slough P.P.	C961974	9/30/96	Endosulfan-I	0	0.01	µg/L
Barker Slough P.P.	C961974	9/30/96	Endosulfan-II	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Endothall	0	45	µg/L
Barker Slough P.P.	C960401	3/7/96	Endothall	0	45	µg/L
Barker Slough P.P.	C961403	6/6/96	Endothall	0	45	µg/L
Barker Slough P.P.	C962329	12/5/96	Endothall	0	45	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Endothall	0	45	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Endothall	0	45	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Endothall	0	45	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Endothall	0	45	µg/L
Delta P.P. Headworks	C953062	12/7/95	Endothall	0	45	µg/L
Delta P.P. Headworks	C960428	3/14/96	Endothall	0	45	µg/L
Delta P.P. Headworks	C961406	6/13/96	Endothall	0	45	µg/L
Delta P.P. Headworks	C961853	9/12/96	Endothall	0	45	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Endothall	0	45	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Endothall	0	45	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Endothall	0	45	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Endothall	0	45	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Endothall	0	45	µg/L
Old River at Bacon Island	C953054	12/6/95	Endothall	0	45	µg/L
Old River at Bacon Island	C960420	3/13/96	Endothall	0	45	µg/L
Old River at Bacon Island	C961286	6/12/96	Endothall	0	45	µg/L
Old River at Bacon Island	C961845	9/11/96	Endothall	0	45	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C962333	12/11/96	Endothall	0	45	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Endothall	0	45	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Endothall	0	45	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Endothall	0	45	µg/L
Barker Slough P.P.	C953043	12/6/95	Endrin	0	0.01	µg/L
Barker Slough P.P.	C960401	3/7/96	Endrin	0	0.01	µg/L
Barker Slough P.P.	C961403	6/6/96	Endrin	0	0.01	µg/L
Barker Slough P.P.	C961974	9/30/96	Endrin	0	0.01	µg/L
Barker Slough P.P.	C962329	12/5/96	Endrin	0	0.1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Endrin	0	0.01	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Endrin	0	0.01	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Endrin	0	0.01	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Endrin	0	0.1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Endrin	0	0.01	µg/L
Delta P.P. Headworks	C960428	3/14/96	Endrin	0	0.01	µg/L
Delta P.P. Headworks	C961406	6/13/96	Endrin	0	0.01	µg/L
Delta P.P. Headworks	C961853	9/12/96	Endrin	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Endrin	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Endrin	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Endrin	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Endrin	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Endrin	0	0.1	µg/L
Old River at Bacon Island	C953054	12/6/95	Endrin	0	0.01	µg/L
Old River at Bacon Island	C960420	3/13/96	Endrin	0	0.01	µg/L
Old River at Bacon Island	C961286	6/12/96	Endrin	0	0.01	µg/L
Old River at Bacon Island	C961845	9/11/96	Endrin	0	0.1	µg/L
Old River at Bacon Island	C962333	12/11/96	Endrin	0	0.1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Endrin	0	0.01	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Endrin	0	0.1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Endrin	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	Endrin aldehyde	0	0.01	µg/L
Barker Slough P.P.	C961974	9/30/96	Ethion	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Ethyl benzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Ethyl benzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Ethyl benzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Ethyl benzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Ethyl benzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Ethyl benzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Ethyl benzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Ethyl benzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Ethyl benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Ethyl benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Ethyl benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Ethyl benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Ethyl benzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Ethyl benzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Ethyl benzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Ethyl benzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Ethyl benzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Ethyl benzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Ethyl benzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Ethyl benzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Ethyl benzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Ethyl benzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Ethylene Thiourea	0	25	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C960401	3/7/96	Ethylene Thiourea	0	5	µg/L
Barker Slough P.P.	C962329	12/5/96	Ethylene Thiourea	0	5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Ethylene Thiourea	0	50	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Ethylene Thiourea	0	5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Ethylene Thiourea	0	5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Ethylene Thiourea	0	25	µg/L
Delta P.P. Headworks	C960428	3/14/96	Ethylene Thiourea	0	5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Ethylene Thiourea	0	5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Ethylene Thiourea	0	25	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Ethylene Thiourea	0	5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Ethylene Thiourea	0	5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Ethylene Thiourea	0	5	µg/L
Old River at Bacon Island	C953054	12/6/95	Ethylene Thiourea	0	25	µg/L
Old River at Bacon Island	C960420	3/13/96	Ethylene Thiourea	0	5	µg/L
Old River at Bacon Island	C961286	6/12/96	Ethylene Thiourea	0	5	µg/L
Old River at Bacon Island	C961845	9/11/96	Ethylene Thiourea	0	5	µg/L
Old River at Bacon Island	C962333	12/11/96	Ethylene Thiourea	0	5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Ethylene Thiourea	0	5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Ethylene Thiourea	0	5	µg/L
Barker Slough P.P.	C953043	12/6/95	Formetanate hydrochloride	0	100	µg/L
Barker Slough P.P.	C960401	3/7/96	Formetanate hydrochloride	0	100	µg/L
Barker Slough P.P.	C961403	6/6/96	Formetanate hydrochloride	100	100	µg/L
Barker Slough P.P.	C962329	12/5/96	Formetanate hydrochloride	0	100	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Formetanate hydrochloride	0	100	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Formetanate hydrochloride	0	100	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Formetanate hydrochloride	100	100	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Formetanate hydrochloride	0	100	µg/L
Delta P.P. Headworks	C953062	12/7/95	Formetanate hydrochloride	0	100	µg/L
Delta P.P. Headworks	C960428	3/14/96	Formetanate hydrochloride	0	100	µg/L
Delta P.P. Headworks	C961406	6/13/96	Formetanate hydrochloride	0	100	µg/L
Delta P.P. Headworks	C961853	9/12/96	Formetanate hydrochloride	0	100	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Formetanate hydrochloride	0	100	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Formetanate hydrochloride	0	100	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Formetanate hydrochloride	0	100	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Formetanate hydrochloride	0	100	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Formetanate hydrochloride	0	100	µg/L
Old River at Bacon Island	C953054	12/6/95	Formetanate hydrochloride	0	100	µg/L
Old River at Bacon Island	C960420	3/13/96	Formetanate hydrochloride	0	100	µg/L
Old River at Bacon Island	C961286	6/12/96	Formetanate hydrochloride	0	100	µg/L
Old River at Bacon Island	C961845	9/11/96	Formetanate hydrochloride	0	100	µg/L
Old River at Bacon Island	C962333	12/11/96	Formetanate hydrochloride	0	100	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Formetanate hydrochloride	0	100	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Formetanate hydrochloride	0	100	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Formetanate hydrochloride	0	100	µg/L
Barker Slough P.P.	C953043	12/6/95	Glyphosate	0	100	µg/L
Barker Slough P.P.	C960401	3/7/96	Glyphosate	0	100	µg/L
Barker Slough P.P.	C961403	6/6/96	Glyphosate	0	100	µg/L
Barker Slough P.P.	C962329	12/5/96	Glyphosate	0	100	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Glyphosate	0	100	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Glyphosate	0	100	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Glyphosate	0	100	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Glyphosate	0	100	µg/L
Delta P.P. Headworks	C953062	12/7/95	Glyphosate	0	100	µg/L
Delta P.P. Headworks	C960428	3/14/96	Glyphosate	0	100	µg/L
Delta P.P. Headworks	C961406	6/13/96	Glyphosate	0	100	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C961853	9/12/96	Glyphosate	0	100	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Glyphosate	0	100	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Glyphosate	0	100	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Glyphosate	0	100	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Glyphosate	0	100	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Glyphosate	0	100	µg/L
Old River at Bacon Island	C953054	12/6/95	Glyphosate	0	100	µg/L
Old River at Bacon Island	C960420	3/13/96	Glyphosate	0	100	µg/L
Old River at Bacon Island	C961286	6/12/96	Glyphosate	0	100	µg/L
Old River at Bacon Island	C961845	9/11/96	Glyphosate	0	100	µg/L
Old River at Bacon Island	C962333	12/11/96	Glyphosate	0	100	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Glyphosate	0	100	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Glyphosate	100	100	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Glyphosate	0	100	µg/L
Barker Slough P.P.	C953043	12/6/95	Hardness, (mg/L as CaCO3)	87	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Hardness, (mg/L as CaCO3)	91	1	mg/L
Barker Slough P.P.	C961830	9/5/96	Hardness, (mg/L as CaCO3)	84	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Hardness, (mg/L as CaCO3)	111	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Hardness, (mg/L as CaCO3)	63	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Hardness, (mg/L as CaCO3)	217	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Hardness, (mg/L as CaCO3)	63	1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Hardness, (mg/L as CaCO3)	106	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Hardness, (mg/L as CaCO3)	80	1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Hardness, (mg/L as CaCO3)	70	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Hardness, (mg/L as CaCO3)	63	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Hardness, (mg/L as CaCO3)	78	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Hardness, (mg/L as CaCO3)	86	1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Hardness, (mg/L as CaCO3)	73	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Hardness, (mg/L as CaCO3)	130	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Hardness, (mg/L as CaCO3)	130	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Hardness, (mg/L as CaCO3)	48	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Hardness, (mg/L as CaCO3)	52	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Hardness, (mg/L as CaCO3)	80	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Hardness, (mg/L as CaCO3)	56	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Hardness, (mg/L as CaCO3)	84	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Hardness, (mg/L as CaCO3)	63	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Hardness, (mg/L as CaCO3)	80	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Hardness, (mg/L as CaCO3)	63	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Hardness, (mg/L as CaCO3)	87	1	mg/L
Barker Slough P.P.	C953043	12/6/95	Heptachlor	0	0.01	µg/L
Barker Slough P.P.	C960401	3/7/96	Heptachlor	0	0.01	µg/L
Barker Slough P.P.	C961403	6/6/96	Heptachlor	0	0.01	µg/L
Barker Slough P.P.	C962329	12/5/96	Heptachlor	0	0.01	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Heptachlor	0	0.01	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Heptachlor	0	0.01	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Heptachlor	0	0.01	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Heptachlor	0	0.01	µg/L
Delta P.P. Headworks	C953062	12/7/95	Heptachlor	0	0.01	µg/L
Delta P.P. Headworks	C960428	3/14/96	Heptachlor	0	0.01	µg/L
Delta P.P. Headworks	C961406	6/13/96	Heptachlor	0	0.01	µg/L
Delta P.P. Headworks	C961853	9/12/96	Heptachlor	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Heptachlor	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Heptachlor	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Heptachlor	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Heptachlor	0	0.01	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Heptachlor	0	0.01	µg/L
Old River at Bacon Island	C953054	12/6/95	Heptachlor	0	0.01	µg/L
Old River at Bacon Island	C960420	3/13/96	Heptachlor	0	0.01	µg/L
Old River at Bacon Island	C961286	6/12/96	Heptachlor	0	0.01	µg/L
Old River at Bacon Island	C961845	9/11/96	Heptachlor	0	0.01	µg/L
Old River at Bacon Island	C962333	12/11/96	Heptachlor	0	0.01	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Heptachlor	0	0.01	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Heptachlor	0	0.01	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Heptachlor	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Heptachlor_epoxide	0	0.01	µg/L
Barker Slough P.P.	C960401	3/7/96	Heptachlor_epoxide	0	0.01	µg/L
Barker Slough P.P.	C961403	6/6/96	Heptachlor_epoxide	0	0.01	µg/L
Barker Slough P.P.	C962329	12/5/96	Heptachlor_epoxide	0	0.01	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Heptachlor_epoxide	0	0.01	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Heptachlor_epoxide	0	0.01	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Heptachlor_epoxide	0	0.01	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Heptachlor_epoxide	0	0.01	µg/L
Delta P.P. Headworks	C953062	12/7/95	Heptachlor_epoxide	0	0.01	µg/L
Delta P.P. Headworks	C960428	3/14/96	Heptachlor_epoxide	0	0.01	µg/L
Delta P.P. Headworks	C961406	6/13/96	Heptachlor_epoxide	0	0.01	µg/L
Delta P.P. Headworks	C961853	9/12/96	Heptachlor_epoxide	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Heptachlor_epoxide	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Heptachlor_epoxide	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Heptachlor_epoxide	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Heptachlor_epoxide	0	0.01	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Heptachlor_epoxide	0	0.01	µg/L
Old River at Bacon Island	C953054	12/6/95	Heptachlor_epoxide	0	0.01	µg/L
Old River at Bacon Island	C960420	3/13/96	Heptachlor_epoxide	0	0.01	µg/L
Old River at Bacon Island	C961286	6/12/96	Heptachlor_epoxide	0	0.01	µg/L
Old River at Bacon Island	C961845	9/11/96	Heptachlor_epoxide	0	0.01	µg/L
Old River at Bacon Island	C962333	12/11/96	Heptachlor_epoxide	0	0.01	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Heptachlor_epoxide	0	0.01	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Heptachlor_epoxide	0	0.01	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Heptachlor_epoxide	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Hexachlorobenzene	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	Hexachlorobenzene	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	Hexachlorobenzene	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	Hexachlorobenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Hexachlorobenzene	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Hexachlorobenzene	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Hexachlorobenzene	0	0.1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Hexachlorobenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Hexachlorobenzene	0	0.1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Hexachlorobenzene	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Hexachlorobenzene	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Hexachlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Hexachlorobenzene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Hexachlorobenzene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Hexachlorobenzene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Hexachlorobenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Hexachlorobenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Hexachlorobenzene	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	Hexachlorobenzene	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	Hexachlorobenzene	0	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	Hexachlorobenzene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C962333	12/11/96	Hexachlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Hexachlorobenzene	0	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Hexachlorobenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Hexachlorobenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Hexachlorobutadiene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Hexachlorobutadiene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Hexachlorobutadiene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Hexachlorobutadiene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Hexachlorobutadiene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Hexachlorobutadiene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Hexachlorobutadiene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Hexachlorobutadiene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Hexachlorobutadiene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Hexachlorobutadiene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Hexachlorobutadiene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Hexachlorobutadiene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Hexachlorobutadiene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Hexachlorobutadiene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Hexachlorobutadiene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Hexachlorobutadiene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Hexachlorobutadiene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Hexachlorobutadiene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Hexachlorobutadiene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Hexachlorobutadiene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Hexachlorobutadiene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Hexachlorobutadiene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Hexachlorocyclopentadiene	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	Hexachlorocyclopentadiene	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Hexachlorocyclopentadiene	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Hexachlorocyclopentadiene	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Hexachlorocyclopentadiene	0	0.1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Hexachlorocyclopentadiene	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Hexachlorocyclopentadiene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Hexachlorocyclopentadiene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Hexachlorocyclopentadiene	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Hexachlorocyclopentadiene	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Hexachlorocyclopentadiene	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Hexachlorocyclopentadiene	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	Hexachlorocyclopentadiene	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Hexachlorocyclopentadiene	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Hexachlorocyclopentadiene	0	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Hexachlorocyclopentadiene	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Hexachlorocyclopentadiene	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	Isopropylbenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Isopropylbenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Isopropylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Isopropylbenzene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP Number 01	C960403	3/7/96	Isopropylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Isopropylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Isopropylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Isopropylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Isopropylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Isopropylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Isopropylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Isopropylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Isopropylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Isopropylbenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Isopropylbenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Isopropylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Isopropylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Isopropylbenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Isopropylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Isopropylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Isopropylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Isopropylbenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Lindane	0	0.04	µg/L
Barker Slough P.P.	C960401	3/7/96	Lindane	0	0.04	µg/L
Barker Slough P.P.	C961403	6/6/96	Lindane	0	0.04	µg/L
Barker Slough P.P.	C962329	12/5/96	Lindane	0	0.2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Lindane	0	0.04	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Lindane	0	0.04	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Lindane	0	0.04	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Lindane	0	0.2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Lindane	0	0.04	µg/L
Delta P.P. Headworks	C960428	3/14/96	Lindane	0	0.04	µg/L
Delta P.P. Headworks	C961406	6/13/96	Lindane	0	0.04	µg/L
Delta P.P. Headworks	C961853	9/12/96	Lindane	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Lindane	0	0.04	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Lindane	0	0.04	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Lindane	0	0.04	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Lindane	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Lindane	0	0.2	µg/L
Old River at Bacon Island	C953054	12/6/95	Lindane	0	0.04	µg/L
Old River at Bacon Island	C960420	3/13/96	Lindane	0	0.04	µg/L
Old River at Bacon Island	C961286	6/12/96	Lindane	0	0.04	µg/L
Old River at Bacon Island	C961845	9/11/96	Lindane	0	0.2	µg/L
Old River at Bacon Island	C962333	12/11/96	Lindane	0	0.2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Lindane	0	0.04	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Lindane	0	0.2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Lindane	0	0.2	µg/L
Barker Slough P.P.	C953043	12/6/95	m-Xylene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	m-Xylene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	m-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	m-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	m-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	m-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	m-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	m-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	m-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	m-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	m-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	m-Xylene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961852	9/12/96	m-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	m-Xylene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	m-Xylene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	m-Xylene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	m-Xylene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	m-Xylene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	m-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	m-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	m-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	m-Xylene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Magnesium Diss.	12	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Magnesium Diss.	13	1	mg/L
Barker Slough P.P.	C961830	9/5/96	Magnesium Diss.	12	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Magnesium Diss.	16	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Magnesium Diss.	8	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Magnesium Diss.	29	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Magnesium Diss.	8	1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Magnesium Diss.	16	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Magnesium Diss.	9	1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Magnesium Diss.	8	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Magnesium Diss.	8	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Magnesium Diss.	10	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Magnesium Diss.	10	1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Magnesium Diss.	8	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Magnesium Diss.	14	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Magnesium Diss.	14	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Magnesium Diss.	5	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Magnesium Diss.	6	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Magnesium Diss.	9	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Magnesium Diss.	7	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Magnesium Diss.	12	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Magnesium Diss.	8	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Magnesium Diss.	9	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Magnesium Diss.	8	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Magnesium Diss.	12	1	mg/L
Barker Slough P.P.	C953043	12/6/95	Manganese, Diss.	0.043	0.005	mg/L
Barker Slough P.P.	C960401	3/7/96	Manganese, Diss.	0.016	0.005	mg/L
Barker Slough P.P.	C961974	9/30/96	Manganese, Diss.	0.017	0.005	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Manganese, Diss.	0.011	0.005	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Manganese, Diss.	0.015	0.005	mg/L
Delta P.P. Headworks	C953062	12/7/95	Manganese, Diss.	0.008	0.005	mg/L
Delta P.P. Headworks	C960428	3/14/96	Manganese, Diss.	0.033	0.005	mg/L
Delta P.P. Headworks	C961406	6/13/96	Manganese, Diss.	0.026	0.005	mg/L
Delta P.P. Headworks	C961853	9/12/96	Manganese, Diss.	0.012	0.005	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Manganese, Diss.	0.018	0.005	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Manganese, Diss.	0.032	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Manganese, Diss.	0.022	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Manganese, Diss.	0.026	0.005	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Manganese, Diss.	0.022	0.005	mg/L
Old River at Bacon Island	C953054	12/6/95	Manganese, Diss.	0.007	0.005	mg/L
Old River at Bacon Island	C960420	3/13/96	Manganese, Diss.	0.03	0.005	mg/L
Old River at Bacon Island	C961286	6/12/96	Manganese, Diss.	0.01	0.005	mg/L
Old River at Bacon Island	C961845	9/11/96	Manganese, Diss.	0.01	0.005	mg/L
Old River at Bacon Island	C962333	12/11/96	Manganese, Diss.	0.008	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Manganese, Diss.	0.026	0.005	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C961285	6/12/96	Manganese, Diss.	0.026	0.005	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Manganese, Diss.	0.018	0.005	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Manganese, Diss.	0.017	0.005	mg/L
Barker Slough P.P.	C953043	12/6/95	Mercury, Diss.	0	0.001	mg/L
Barker Slough P.P.	C960401	3/7/96	Mercury, Diss.	0	0.001	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Mercury, Diss.	0	0.001	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Mercury, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C953062	12/7/95	Mercury, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C960428	3/14/96	Mercury, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C961406	6/13/96	Mercury, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C961853	9/12/96	Mercury, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Mercury, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Mercury, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Mercury, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Mercury, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Mercury, Diss.	0	0.001	mg/L
Old River at Bacon Island	C953054	12/6/95	Mercury, Diss.	0	0.001	mg/L
Old River at Bacon Island	C960420	3/13/96	Mercury, Diss.	0	0.001	mg/L
Old River at Bacon Island	C961286	6/12/96	Mercury, Diss.	0	0.001	mg/L
Old River at Bacon Island	C961845	9/11/96	Mercury, Diss.	0	0.001	mg/L
Old River at Bacon Island	C962333	12/11/96	Mercury, Diss.	0	0.001	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Mercury, Diss.	0	0.001	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Mercury, Diss.	0	0.001	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Mercury, Diss.	0	0.001	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Mercury, Diss.	0	0.001	mg/L
Barker Slough P.P.	C953043	12/6/95	Methiocarb	0	4	µg/L
Barker Slough P.P.	C960401	3/7/96	Methiocarb	0	4	µg/L
Barker Slough P.P.	C961403	6/6/96	Methiocarb	0	4	µg/L
Barker Slough P.P.	C962329	12/5/96	Methiocarb	0	4	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Methiocarb	0	4	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Methiocarb	0	4	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Methiocarb	0	4	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Methiocarb	0	4	µg/L
Delta P.P. Headworks	C953062	12/7/95	Methiocarb	0	4	µg/L
Delta P.P. Headworks	C960428	3/14/96	Methiocarb	0	4	µg/L
Delta P.P. Headworks	C961406	6/13/96	Methiocarb	0	4	µg/L
Delta P.P. Headworks	C961853	9/12/96	Methiocarb	0	4	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Methiocarb	0	4	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Methiocarb	0	4	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Methiocarb	0	4	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Methiocarb	0	4	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Methiocarb	0	4	µg/L
Old River at Bacon Island	C953054	12/6/95	Methiocarb	0	4	µg/L
Old River at Bacon Island	C960420	3/13/96	Methiocarb	0	4	µg/L
Old River at Bacon Island	C961286	6/12/96	Methiocarb	0	4	µg/L
Old River at Bacon Island	C961845	9/11/96	Methiocarb	0	4	µg/L
Old River at Bacon Island	C962333	12/11/96	Methiocarb	0	4	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Methiocarb	0	4	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Methiocarb	0	4	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Methiocarb	0	4	µg/L
Barker Slough P.P.	C953043	12/6/95	Methomyl	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Methomyl	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Methomyl	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Methomyl	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Methomyl	0	2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP Number 01	C960403	3/7/96	Methomyl	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Methomyl	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Methomyl	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Methomyl	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Methomyl	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Methomyl	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Methomyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Methomyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Methomyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Methomyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Methomyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Methomyl	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Methomyl	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Methomyl	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Methomyl	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Methomyl	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Methomyl	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Methomyl	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Methomyl	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Methomyl	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Methoxychlor	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	Methoxychlor	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	Methoxychlor	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	Methoxychlor	0	0.01	µg/L
Barker Slough P.P.	C962329	12/5/96	Methoxychlor	0	10	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Methoxychlor	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Methoxychlor	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Methoxychlor	0	0.1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Methoxychlor	0	10	µg/L
Delta P.P. Headworks	C953062	12/7/95	Methoxychlor	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Methoxychlor	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Methoxychlor	0	10	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Methoxychlor	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Methoxychlor	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Methoxychlor	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Methoxychlor	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Methoxychlor	0	10	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Methoxychlor	0	10	µg/L
Old River at Bacon Island	C953054	12/6/95	Methoxychlor	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	Methoxychlor	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	Methoxychlor	0	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	Methoxychlor	0	10	µg/L
Old River at Bacon Island	C962333	12/11/96	Methoxychlor	0	10	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Methoxychlor	0	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Methoxychlor	0	10	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Methoxychlor	0	10	µg/L
Barker Slough P.P.	C961974	9/30/96	Methyl Parathion	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Methylene chloride	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Methylene chloride	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Methylene chloride	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Methylene chloride	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Methylene chloride	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Methylene chloride	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Methylene chloride	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Methylene chloride	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C961853	9/12/96	Methylene chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Methylene chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Methylene chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Methylene chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Methylene chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Methylene chloride	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Methylene chloride	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Methylene chloride	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Methylene chloride	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Methylene chloride	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Methylene chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Methylene chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Methylene chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Methylene chloride	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Metolachlor	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Metolachlor	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Metolachlor	0	0.5	µg/L
Barker Slough P.P.	C961974	9/30/96	Metolachlor	0	0.2	µg/L
Barker Slough P.P.	C962329	12/5/96	Metolachlor	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Metolachlor	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Metolachlor	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Metolachlor	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Metolachlor	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Metolachlor	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Metolachlor	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Metolachlor	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Metolachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Metolachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Metolachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Metolachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Metolachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Metolachlor	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Metolachlor	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Metolachlor	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Metolachlor	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Metolachlor	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Metolachlor	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Metolachlor	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Metolachlor	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Metolachlor	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Metribuzin	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Metribuzin	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Metribuzin	0	0.5	µg/L
Barker Slough P.P.	C962329	12/5/96	Metribuzin	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Metribuzin	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Metribuzin	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Metribuzin	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Metribuzin	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Metribuzin	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Metribuzin	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Metribuzin	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Metribuzin	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Metribuzin	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Metribuzin	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Metribuzin	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Metribuzin	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Metribuzin	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Metribuzin	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Metribuzin	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Metribuzin	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Metribuzin	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Metribuzin	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Metribuzin	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Metribuzin	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Metribuzin	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Molinate	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Molinate	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Molinate	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Molinate	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Molinate	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Molinate	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Molinate	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Molinate	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Molinate	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Molinate	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Molinate	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Molinate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Molinate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Molinate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Molinate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Molinate	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Molinate	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Molinate	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Molinate	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Molinate	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Molinate	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Molinate	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Molinate	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Molinate	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Molinate	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Molybdenum	0	0.005	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Molybdenum	0	0.005	mg/L
Delta P.P. Headworks	C953062	12/7/95	Molybdenum	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Molybdenum	0	0.005	mg/L
Old River at Bacon Island	C953054	12/6/95	Molybdenum	0	0.005	mg/L
Barker Slough P.P.	C960401	3/7/96	Molybdenum, dissolved	0	0.005	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Molybdenum, dissolved	0	0.005	mg/L
Delta P.P. Headworks	C960428	3/14/96	Molybdenum, dissolved	0	0.005	mg/L
Delta P.P. Headworks	C961406	6/13/96	Molybdenum, dissolved	0	0.005	mg/L
Delta P.P. Headworks	C961853	9/12/96	Molybdenum, dissolved	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Molybdenum, dissolved	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Molybdenum, dissolved	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Molybdenum, dissolved	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Molybdenum, dissolved	0	0.005	mg/L
Old River at Bacon Island	C960420	3/13/96	Molybdenum, dissolved	0	0.005	mg/L
Old River at Bacon Island	C961286	6/12/96	Molybdenum, dissolved	0	0.005	mg/L
Old River at Bacon Island	C961845	9/11/96	Molybdenum, dissolved	0	0.005	mg/L
Old River at Bacon Island	C962333	12/11/96	Molybdenum, dissolved	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Molybdenum, dissolved	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Molybdenum, dissolved	0	0.005	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C961844	9/11/96	Molybdenum, dissolved	0	0.005	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Molybdenum, dissolved	0	0.005	mg/L
Barker Slough P.P.	C953043	12/6/95	n-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	n-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	n-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	n-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	n-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	n-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	n-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	n-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	n-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	n-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	n-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	n-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	n-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	n-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	n-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	n-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	n-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	n-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	n-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	n-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	n-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	n-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	n-Propylbenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	n-Propylbenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	n-Propylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	n-Propylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	n-Propylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	n-Propylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	n-Propylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	n-Propylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	n-Propylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	n-Propylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	n-Propylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	n-Propylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	n-Propylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	n-Propylbenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	n-Propylbenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	n-Propylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	n-Propylbenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	n-Propylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	n-Propylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	n-Propylbenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Naphthalene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Naphthalene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Naphthalene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Naphthalene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Naphthalene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Naphthalene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Naphthalene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Naphthalene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Naphthalene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Naphthalene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Naphthalene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Naphthalene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Naphthalene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Naphthalene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Naphthalene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Naphthalene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Naphthalene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Naphthalene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Naphthalene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Naphthalene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Naphthalene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Naphthalene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Nickel, Diss.	0.005	0.005	mg/L
Barker Slough P.P.	C960401	3/7/96	Nickel, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Nickel, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Nickel, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C953062	12/7/95	Nickel, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C960428	3/14/96	Nickel, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C961406	6/13/96	Nickel, Diss.	0	0.005	mg/L
Delta P.P. Headworks	C961853	9/12/96	Nickel, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Nickel, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Nickel, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Nickel, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Nickel, Diss.	0	0.005	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Nickel, Diss.	0	0.005	mg/L
Old River at Bacon Island	C953054	12/6/95	Nickel, Diss.	0	0.005	mg/L
Old River at Bacon Island	C960420	3/13/96	Nickel, Diss.	0	0.005	mg/L
Old River at Bacon Island	C961286	6/12/96	Nickel, Diss.	0	0.005	mg/L
Old River at Bacon Island	C961845	9/11/96	Nickel, Diss.	0	0.005	mg/L
Old River at Bacon Island	C962333	12/11/96	Nickel, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nickel, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nickel, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Nickel, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Nickel, Diss.	0	0.005	mg/L
Barker Slough P.P.	C953043	12/6/95	Nitrate (as N)	0.46	0.01	mg/L
Barker Slough P.P.	C960401	3/7/96	Nitrate (as N)	1.6	0.01	mg/L
Barker Slough P.P.	C961403	6/6/96	Nitrate (as N)	0.32	0.01	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Nitrate (as N)	0.35	0.01	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Nitrate (as N)	2.4	0.01	mg/L
Contra Costa PP Number 01	C961404	6/6/96	Nitrate (as N)	0.4	0.01	mg/L
Delta P.P. Headworks	C953062	12/7/95	Nitrate (as N)	0.56	0.01	mg/L
Delta P.P. Headworks	C960428	3/14/96	Nitrate (as N)	0.59	0.01	mg/L
Delta P.P. Headworks	C961406	6/13/96	Nitrate (as N)	0.43	0.01	mg/L
Delta P.P. Headworks	C961853	9/12/96	Nitrate (as N)	0.3	0.01	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Nitrate (as N)	0.85	0.01	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Nitrate (as N)	0.6	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Nitrate (as N)	1.2	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Nitrate (as N)	2	0.01	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Nitrate (as N)	0.61	0.01	mg/L
Old River at Bacon Island	C960420	3/13/96	Nitrate (as N)	0.68	0.01	mg/L
Old River at Bacon Island	C961286	6/12/96	Nitrate (as N)	0.24	0.01	mg/L
Old River at Bacon Island	C961845	9/11/96	Nitrate (as N)	0.14	0.01	mg/L
Old River at Bacon Island	C962333	12/11/96	Nitrate (as N)	0.41	0.01	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nitrate (as N)	0.31	0.01	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nitrate (as N)	0.31	0.01	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Nitrate (as N)	0.25	0.01	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C962332	12/11/96	Nitrate (as N)	0.52	0.01	mg/L
Barker Slough P.P.	C953043	12/6/95	Nitrate + Nitrite	0.46	0.01	mg/L
Barker Slough P.P.	C960401	3/7/96	Nitrate + Nitrite	1.7	0.01	mg/L
Barker Slough P.P.	C961403	6/6/96	Nitrate + Nitrite	0.34	0.01	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Nitrate + Nitrite	0.36	0.01	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Nitrate + Nitrite	2.4	0.01	mg/L
Contra Costa PP Number 01	C961404	6/6/96	Nitrate + Nitrite	0.41	0.01	mg/L
Delta P.P. Headworks	C953062	12/7/95	Nitrate + Nitrite	0.57	0.01	mg/L
Delta P.P. Headworks	C960428	3/14/96	Nitrate + Nitrite	0.6	0.01	mg/L
Delta P.P. Headworks	C961406	6/13/96	Nitrate + Nitrite	0.44	0.01	mg/L
Delta P.P. Headworks	C961853	9/12/96	Nitrate + Nitrite	0.3	0.01	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Nitrate + Nitrite	0.86	0.01	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Nitrate + Nitrite	0.62	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Nitrate + Nitrite	1.2	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Nitrate + Nitrite	2	0.01	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Nitrate + Nitrite	0.66	0.01	mg/L
Old River at Bacon Island	C960420	3/13/96	Nitrate + Nitrite	0.69	0.01	mg/L
Old River at Bacon Island	C961286	6/12/96	Nitrate + Nitrite	0.25	0.01	mg/L
Old River at Bacon Island	C961845	9/11/96	Nitrate + Nitrite	0.14	0.01	mg/L
Old River at Bacon Island	C962333	12/11/96	Nitrate + Nitrite	0.42	0.01	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nitrate + Nitrite	0.32	0.01	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nitrate + Nitrite	0.32	0.01	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Nitrate + Nitrite	0.25	0.01	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Nitrate + Nitrite	0.54	0.01	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Nitrate, Diss. as NO3	10	0.1	mg/L
Barker Slough P.P.	C953043	12/6/95	Nitrite, Diss.	0	0.01	mg/L
Barker Slough P.P.	C960401	3/7/96	Nitrite, Diss.	0.04	0.01	mg/L
Barker Slough P.P.	C961403	6/6/96	Nitrite, Diss.	0.01	0.01	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Nitrite, Diss.	0	0.01	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Nitrite, Diss.	0.01	0.01	mg/L
Contra Costa PP Number 01	C961404	6/6/96	Nitrite, Diss.	0.01	0.01	mg/L
Delta P.P. Headworks	C953062	12/7/95	Nitrite, Diss.	0.01	0.01	mg/L
Delta P.P. Headworks	C960428	3/14/96	Nitrite, Diss.	0.01	0.01	mg/L
Delta P.P. Headworks	C961406	6/13/96	Nitrite, Diss.	0.01	0.01	mg/L
Delta P.P. Headworks	C961853	9/12/96	Nitrite, Diss.	0	0.01	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Nitrite, Diss.	0.01	0.01	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Nitrite, Diss.	0.02	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Nitrite, Diss.	0.02	0.01	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Nitrite, Diss.	0	0.01	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Nitrite, Diss.	0.05	0.01	mg/L
Old River at Bacon Island	C960420	3/13/96	Nitrite, Diss.	0.01	0.01	mg/L
Old River at Bacon Island	C961286	6/12/96	Nitrite, Diss.	0	0.01	mg/L
Old River at Bacon Island	C961845	9/11/96	Nitrite, Diss.	0	0.01	mg/L
Old River at Bacon Island	C962333	12/11/96	Nitrite, Diss.	0.02	0.01	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nitrite, Diss.	0	0.01	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Nitrite, Diss.	0	0.01	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Nitrite, Diss.	0	0.01	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Nitrite, Diss.	0.02	0.01	mg/L
Barker Slough P.P.	C953043	12/6/95	o-Xylene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	o-Xylene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	o-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	o-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	o-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	o-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	o-Xylene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C961406	6/13/96	o-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	o-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	o-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	o-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	o-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	o-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	o-Xylene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	o-Xylene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	o-Xylene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	o-Xylene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	o-Xylene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	o-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	o-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	o-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	o-Xylene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Oxamyl	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Oxamyl	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Oxamyl	0	2	µg/L
Barker Slough P.P.	C962329	12/5/96	Oxamyl	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Oxamyl	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Oxamyl	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Oxamyl	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Oxamyl	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Oxamyl	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Oxamyl	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Oxamyl	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Oxamyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Oxamyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Oxamyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Oxamyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Oxamyl	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Oxamyl	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Oxamyl	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Oxamyl	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Oxamyl	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Oxamyl	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Oxamyl	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Oxamyl	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Oxamyl	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Oxamyl	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	p-Xylene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	p-Xylene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	p-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	p-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	p-Xylene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	p-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	p-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	p-Xylene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	p-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	p-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	p-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	p-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	p-Xylene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	p-Xylene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	p-Xylene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C960420	3/13/96	p-Xylene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	p-Xylene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	p-Xylene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	p-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	p-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	p-Xylene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	p-Xylene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	PCB's:ArochlorScreen	0	0.2	µg/L
Barker Slough P.P.	C960401	3/7/96	PCB's:ArochlorScreen	0	0.2	µg/L
Barker Slough P.P.	C961403	6/6/96	PCB's:ArochlorScreen	0	0.2	µg/L
Barker Slough P.P.	C962329	12/5/96	PCB's:ArochlorScreen	0	0.2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	PCB's:ArochlorScreen	0	0.2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	PCB's:ArochlorScreen	0	0.2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	PCB's:ArochlorScreen	0	0.2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	PCB's:ArochlorScreen	0	0.2	µg/L
Delta P.P. Headworks	C953062	12/7/95	PCB's:ArochlorScreen	0	0.2	µg/L
Delta P.P. Headworks	C960428	3/14/96	PCB's:ArochlorScreen	0	0.2	µg/L
Delta P.P. Headworks	C961406	6/13/96	PCB's:ArochlorScreen	0	0.2	µg/L
Delta P.P. Headworks	C961853	9/12/96	PCB's:ArochlorScreen	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	PCB's:ArochlorScreen	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	PCB's:ArochlorScreen	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	PCB's:ArochlorScreen	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	PCB's:ArochlorScreen	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	PCB's:ArochlorScreen	0	0.2	µg/L
Old River at Bacon Island	C953054	12/6/95	PCB's:ArochlorScreen	0	0.2	µg/L
Old River at Bacon Island	C960420	3/13/96	PCB's:ArochlorScreen	0	0.2	µg/L
Old River at Bacon Island	C961286	6/12/96	PCB's:ArochlorScreen	0	0.2	µg/L
Old River at Bacon Island	C961845	9/11/96	PCB's:ArochlorScreen	0	0.2	µg/L
Old River at Bacon Island	C962333	12/11/96	PCB's:ArochlorScreen	0	0.2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	PCB's:ArochlorScreen	0	0.2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	PCB's:ArochlorScreen	0	0.2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	PCB's:ArochlorScreen	0	0.2	µg/L
Barker Slough P.P.	C961974	9/30/96	PCB-1016	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	PCB-1221	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	PCB-1232	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	PCB-1242	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	PCB-1248	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	PCB-1254	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	PCB-1260	0	0.1	µg/L
Barker Slough P.P.	C961974	9/30/96	Pendimethalin	0	5	µg/L
Barker Slough P.P.	C960401	3/7/96	Pentachlorophenol	0	0.2	µg/L
Barker Slough P.P.	C961403	6/6/96	Pentachlorophenol	0	0.2	µg/L
Barker Slough P.P.	C962329	12/5/96	Pentachlorophenol	0	0.2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Pentachlorophenol	0	0.2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Pentachlorophenol	0	0.2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Pentachlorophenol	0	0.2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Pentachlorophenol	0	0.2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Pentachlorophenol	0	0.2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Pentachlorophenol	0	0.2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Pentachlorophenol	0	0.2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Pentachlorophenol	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Pentachlorophenol	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Pentachlorophenol	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Pentachlorophenol	0	0.2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Pentachlorophenol	0	0.2	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Pentachlorophenol	0	0.2	µg/L
Old River at Bacon Island	C953054	12/6/95	Pentachlorophenol	0	0.2	µg/L
Old River at Bacon Island	C960420	3/13/96	Pentachlorophenol	0	0.2	µg/L
Old River at Bacon Island	C961286	6/12/96	Pentachlorophenol	0	0.2	µg/L
Old River at Bacon Island	C961845	9/11/96	Pentachlorophenol	0	0.2	µg/L
Old River at Bacon Island	C962333	12/11/96	Pentachlorophenol	0	0.2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Pentachlorophenol	0	0.2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Pentachlorophenol	0	0.2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Pentachlorophenol	0	0.2	µg/L
Barker Slough P.P.	C961974	9/30/96	Phorate	0	0.01	µg/L
Barker Slough P.P.	C961974	9/30/96	Phosalone	0	0.02	µg/L
Barker Slough P.P.	C961974	9/30/96	Phosmet	0	0.02	µg/L
Barker Slough P.P.	C953043	12/6/95	Picloram	0	0.1	µg/L
Barker Slough P.P.	C960401	3/7/96	Picloram	0	0.1	µg/L
Barker Slough P.P.	C961403	6/6/96	Picloram	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	Picloram	0	0.1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Picloram	0	0.1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Picloram	0	0.1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Picloram	0	0.1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Picloram	0	0.1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Picloram	0	0.1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Picloram	0	0.1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Picloram	0	0.1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Picloram	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Picloram	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Picloram	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Picloram	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Picloram	0	0.1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Picloram	0	0.1	µg/L
Old River at Bacon Island	C953054	12/6/95	Picloram	0	0.1	µg/L
Old River at Bacon Island	C960420	3/13/96	Picloram	0	0.1	µg/L
Old River at Bacon Island	C961286	6/12/96	Picloram	0	0.1	µg/L
Old River at Bacon Island	C961845	9/11/96	Picloram	0	0.1	µg/L
Old River at Bacon Island	C962333	12/11/96	Picloram	0	0.1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Picloram	0	0.1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Picloram	0	0.1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Picloram	0	0.1	µg/L
Barker Slough P.P.	C953043	12/6/95	Potassium, Diss.	1.3	0.1	mg/L
Barker Slough P.P.	C960401	3/7/96	Potassium, Diss.	2	0.1	mg/L
Barker Slough P.P.	C961830	9/5/96	Potassium, Diss.	2.1	0.1	mg/L
Barker Slough P.P.	C962321	12/5/96	Potassium, Diss.	2.5	0.1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Potassium, Diss.	1.4	0.1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Potassium, Diss.	3	0.1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Potassium, Diss.	1.8	0.1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Potassium, Diss.	3.8	0.1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Potassium, Diss.	1.6	0.1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Potassium, Diss.	2	0.1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Potassium, Diss.	1.8	0.1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Potassium, Diss.	3	0.1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Potassium, Diss.	1.4	0.1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Potassium, Diss.	1.9	0.1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Potassium, Diss.	2.7	0.1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Potassium, Diss.	2.8	0.1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Potassium, Diss.	2.3	0.1	mg/L
Old River at Bacon Island	C953054	12/6/95	Potassium, Diss.	0.8	0.1	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C960420	3/13/96	Potassium, Diss.	1.8	0.1	mg/L
Old River at Bacon Island	C961851	9/11/96	Potassium, Diss.	1.6	0.1	mg/L
Old River at Bacon Island	C962339	12/11/96	Potassium, Diss.	3.9	0.1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Potassium, Diss.	1.1	0.1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Potassium, Diss.	1.9	0.1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Potassium, Diss.	1.7	0.1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Potassium, Diss.	4	0.1	mg/L
Barker Slough P.P.	C961974	9/30/96	Profenofos	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	Prometryn	0	2	µg/L
Barker Slough P.P.	C960401	3/7/96	Prometryn	0	2	µg/L
Barker Slough P.P.	C961403	6/6/96	Prometryn	0	2	µg/L
Barker Slough P.P.	C961974	9/30/96	Prometryn	0	0.1	µg/L
Barker Slough P.P.	C962329	12/5/96	Prometryn	0	2	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Prometryn	0	2	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Prometryn	0	2	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Prometryn	0	2	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Prometryn	0	2	µg/L
Delta P.P. Headworks	C953062	12/7/95	Prometryn	0	2	µg/L
Delta P.P. Headworks	C960428	3/14/96	Prometryn	0	2	µg/L
Delta P.P. Headworks	C961406	6/13/96	Prometryn	0	2	µg/L
Delta P.P. Headworks	C961853	9/12/96	Prometryn	0	2	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Prometryn	0	2	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Prometryn	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Prometryn	0	2	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Prometryn	0	2	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Prometryn	0	2	µg/L
Old River at Bacon Island	C953054	12/6/95	Prometryn	0	2	µg/L
Old River at Bacon Island	C960420	3/13/96	Prometryn	0	2	µg/L
Old River at Bacon Island	C961286	6/12/96	Prometryn	0	2	µg/L
Old River at Bacon Island	C961845	9/11/96	Prometryn	0	2	µg/L
Old River at Bacon Island	C962333	12/11/96	Prometryn	0	2	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Prometryn	0	2	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Prometryn	0	2	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Prometryn	0	2	µg/L
Barker Slough P.P.	C953043	12/6/95	Propachlor	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Propachlor	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Propachlor	0	0.5	µg/L
Barker Slough P.P.	C962329	12/5/96	Propachlor	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Propachlor	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Propachlor	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Propachlor	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Propachlor	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Propachlor	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Propachlor	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Propachlor	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Propachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Propachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Propachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Propachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Propachlor	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Propachlor	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Propachlor	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Propachlor	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Propachlor	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Propachlor	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C962333	12/11/96	Propachlor	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Propachlor	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Propachlor	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Propachlor	0	0.5	µg/L
Barker Slough P.P.	C961974	9/30/96	Propetamphos	0	0.05	µg/L
Barker Slough P.P.	C961974	9/30/96	s,s,s-Tributyl Phosphorotrithi	0	0.01	µg/L
Barker Slough P.P.	C953043	12/6/95	sec-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	sec-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	sec-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	sec-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	sec-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	sec-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	sec-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	sec-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	sec-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	sec-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	sec-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	sec-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	sec-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	sec-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	sec-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	sec-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	sec-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	sec-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	sec-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	sec-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	sec-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	sec-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Selenium, Diss.	0	0.001	mg/L
Barker Slough P.P.	C960401	3/7/96	Selenium, Diss.	0	0.001	mg/L
Barker Slough P.P.	C961830	9/5/96	Selenium, Diss.	0	0.001	mg/L
Barker Slough P.P.	C962321	12/5/96	Selenium, Diss.	0	0.001	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Selenium, Diss.	0	0.001	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Selenium, Diss.	0	0.001	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Selenium, Diss.	0	0.001	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Selenium, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C953062	12/7/95	Selenium, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C960428	3/14/96	Selenium, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C961406	6/13/96	Selenium, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C961859	9/12/96	Selenium, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C961853	9/12/96	Selenium, Diss.	0	0.001	mg/L
Delta P.P. Headworks	C962346	12/12/96	Selenium, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Selenium, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Selenium, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Selenium, Diss.	0.001	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Selenium, Diss.	0.002	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Selenium, Diss.	0.002	0.001	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Selenium, Diss.	0.002	0.001	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Selenium, Diss.	0	0.001	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Selenium, Diss.	0	0.001	mg/L
Old River at Bacon Island	C953054	12/6/95	Selenium, Diss.	0	0.001	mg/L
Old River at Bacon Island	C960420	3/13/96	Selenium, Diss.	0	0.001	mg/L
Old River at Bacon Island	C961286	6/12/96	Selenium, Diss.	0	0.001	mg/L
Old River at Bacon Island	C961845	9/11/96	Selenium, Diss.	0	0.001	mg/L
Old River at Bacon Island	C962333	12/11/96	Selenium, Diss.	0	0.001	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C961285	6/12/96	Selenium, Diss.	0	0.001	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Selenium, Diss.	0	0.001	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Selenium, Diss.	0	0.001	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Selenium, Diss.	0	0.001	mg/L
Barker Slough P.P.	C953043	12/6/95	Simazine	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	Simazine	1.3	1	µg/L
Barker Slough P.P.	C961403	6/6/96	Simazine	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Simazine	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Simazine	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Simazine	0.7	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Simazine	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Simazine	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Simazine	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Simazine	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Simazine	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Simazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Simazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Simazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Simazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Simazine	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Simazine	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Simazine	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	Simazine	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	Simazine	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	Simazine	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Simazine	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Simazine	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Simazine	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Simazine	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	Sodium, Diss.	21	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Sodium, Diss.	27	1	mg/L
Barker Slough P.P.	C961830	9/5/96	Sodium, Diss.	19	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Sodium, Diss.	35	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Sodium, Diss.	18	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Sodium, Diss.	104	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Sodium, Diss.	29	1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Sodium, Diss.	87	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Sodium, Diss.	32	1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Sodium, Diss.	28	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Sodium, Diss.	22	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Sodium, Diss.	47	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Sodium, Diss.	30	1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Sodium, Diss.	30	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Sodium, Diss.	61	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Sodium, Diss.	61	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Sodium, Diss.	22	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Sodium, Diss.	15	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Sodium, Diss.	30	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Sodium, Diss.	19	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Sodium, Diss.	62	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Sodium, Diss.	16	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Sodium, Diss.	34	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Sodium, Diss.	19	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Sodium, Diss.	61	1	mg/L
Barker Slough P.P.	C953043	12/6/95	Spec. Conductance	285		mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C960401	3/7/96	Spec. Conductance	312		mg/L
Barker Slough P.P.	C961830	9/5/96	Spec. Conductance	261		mg/L
Barker Slough P.P.	C962321	12/5/96	Spec. Conductance	398		mg/L
Contra Costa PP Number 01	C953045	12/6/95	Spec. Conductance	213		mg/L
Contra Costa PP Number 01	C960403	3/7/96	Spec. Conductance	898		mg/L
Contra Costa PP Number 01	C961832	9/5/96	Spec. Conductance	283		mg/L
Contra Costa PP Number 01	C962323	12/5/96	Spec. Conductance	688		mg/L
Delta P.P. Headworks	C953062	12/7/95	Spec. Conductance	323		mg/L
Delta P.P. Headworks	C960428	3/14/96	Spec. Conductance	285		mg/L
Delta P.P. Headworks	C961859	9/12/96	Spec. Conductance	246		mg/L
Delta P.P. Headworks	C962346	12/12/96	Spec. Conductance	412		mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Spec. Conductance	335		mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Spec. Conductance	306		mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Spec. Conductance	602		mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Spec. Conductance	577		mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Spec. Conductance	226		mg/L
Old River at Bacon Island	C953054	12/6/95	Spec. Conductance	188		mg/L
Old River at Bacon Island	C960420	3/13/96	Spec. Conductance	320		mg/L
Old River at Bacon Island	C961851	9/11/96	Spec. Conductance	224		mg/L
Old River at Bacon Island	C962339	12/11/96	Spec. Conductance	494		mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Spec. Conductance	217		mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Spec. Conductance	325		mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Spec. Conductance	229		mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Spec. Conductance	513		mg/L
Barker Slough P.P.	C953043	12/6/95	Styrene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Styrene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Styrene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Styrene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Styrene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Styrene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Styrene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Styrene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Styrene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Styrene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Styrene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Styrene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Styrene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Styrene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Styrene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Styrene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Styrene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Styrene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Styrene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Styrene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Styrene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Styrene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Sulfate, Diss.	22	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Sulfate, Diss.	21	1	mg/L
Barker Slough P.P.	C961830	9/5/96	Sulfate, Diss.	18	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Sulfate, Diss.	31	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Sulfate, Diss.	16	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Sulfate, Diss.	125	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Sulfate, Diss.	17	1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Sulfate, Diss.	38	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Sulfate, Diss.	28	1	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C960428	3/14/96	Sulfate, Diss.	37	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Sulfate, Diss.	15	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Sulfate, Diss.	28	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Sulfate, Diss.	33	1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Sulfate, Diss.	39	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Sulfate, Diss.	73	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Sulfate, Diss.	73	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Sulfate, Diss.	23	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Sulfate, Diss.	12	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Sulfate, Diss.	44	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Sulfate, Diss.	10	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Sulfate, Diss.	24	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Sulfate, Diss.	17	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Sulfate, Diss.	42	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Sulfate, Diss.	14	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Sulfate, Diss.	28	1	mg/L
Barker Slough P.P.	C960401	3/7/96	T.Organic Carbon	12.4	0.1	mg/L
Barker Slough P.P.	C961830	9/5/96	T.Organic Carbon	4.3	0.1	mg/L
Barker Slough P.P.	C961974	9/30/96	T.Organic Carbon	4.8	0.1	mg/L
Barker Slough P.P.	C962321	12/5/96	T.Organic Carbon	4.6	0.1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	T.Organic Carbon	6.9	0.1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	T.Organic Carbon	2.4	0.1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	T.Organic Carbon	2.9	0.1	mg/L
Delta P.P. Headworks	C960428	3/14/96	T.Organic Carbon	4	0.1	mg/L
Delta P.P. Headworks	C961859	9/12/96	T.Organic Carbon	2.4	0.1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	T.Organic Carbon	3.7	0.1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	T.Organic Carbon	3	0.1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	T.Organic Carbon	3	0.1	mg/L
Old River at Bacon Island	C960420	3/13/96	T.Organic Carbon	4.2	0.1	mg/L
Old River at Bacon Island	C961851	9/11/96	T.Organic Carbon	2.3	0.1	mg/L
Old River at Bacon Island	C962339	12/11/96	T.Organic Carbon	3.6	0.1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	T.Organic Carbon	4.3	0.1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	T.Organic Carbon	2.7	0.1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	T.Organic Carbon	3.8	0.1	mg/L
Barker Slough P.P.	C953043	12/6/95	tert-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	tert-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	tert-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	tert-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	tert-Butylbenzene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	tert-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	tert-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	tert-Butylbenzene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	tert-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	tert-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	tert-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	tert-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	tert-Butylbenzene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	tert-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	tert-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	tert-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	tert-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	tert-Butylbenzene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	tert-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	tert-Butylbenzene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	tert-Butylbenzene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River nr. Byron (St 9)	C962332	12/11/96	tert-Butylbenzene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Tetrachloroethene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Tetrachloroethene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Tetrachloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Tetrachloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Tetrachloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Tetrachloroethene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Tetrachloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Tetrachloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Tetrachloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Tetrachloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Tetrachloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Tetrachloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Tetrachloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Tetrachloroethene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Tetrachloroethene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Tetrachloroethene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Tetrachloroethene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Tetrachloroethene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Tetrachloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Tetrachloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Tetrachloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Tetrachloroethene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Thallium	0	0.002	mg/L
Barker Slough P.P.	C960401	3/7/96	Thallium	0	0.002	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Thallium	0	0.002	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Thallium	0	0.002	mg/L
Delta P.P. Headworks	C953062	12/7/95	Thallium	0	0.002	mg/L
Delta P.P. Headworks	C960428	3/14/96	Thallium	0	0.002	mg/L
Delta P.P. Headworks	C961406	6/13/96	Thallium	0	0.002	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Thallium	0	0.002	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Thallium	0	0.002	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Thallium	0	0.002	mg/L
Old River at Bacon Island	C953054	12/6/95	Thallium	0	0.002	mg/L
Old River at Bacon Island	C960420	3/13/96	Thallium	0	0.002	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Thallium	0	0.002	mg/L
Barker Slough P.P.	C953043	12/6/95	Thiobencarb	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	Thiobencarb	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	Thiobencarb	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Thiobencarb	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Thiobencarb	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Thiobencarb	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Thiobencarb	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Thiobencarb	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Thiobencarb	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Thiobencarb	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Thiobencarb	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Thiobencarb	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Thiobencarb	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Thiobencarb	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Thiobencarb	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Thiobencarb	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Thiobencarb	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Thiobencarb	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	Thiobencarb	0	1	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C961286	6/12/96	Thiobencarb	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	Thiobencarb	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Thiobencarb	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Thiobencarb	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Thiobencarb	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Thiobencarb	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	Toluene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Toluene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Toluene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Toluene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Toluene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Toluene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Toluene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Toluene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Toluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Toluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Toluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Toluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Toluene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Toluene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Toluene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Toluene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Toluene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Toluene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Toluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Toluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Toluene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Toluene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Total Cyanide	0	20	µg/L
Barker Slough P.P.	C960401	3/7/96	Total Cyanide	0	20	µg/L
Barker Slough P.P.	C961403	6/6/96	Total Cyanide	0	20	µg/L
Barker Slough P.P.	C962329	12/5/96	Total Cyanide	0	20	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Total Cyanide	0	20	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Total Cyanide	0	20	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Total Cyanide	0	20	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Total Cyanide	0	20	µg/L
Delta P.P. Headworks	C953062	12/7/95	Total Cyanide	0	20	µg/L
Delta P.P. Headworks	C960428	3/14/96	Total Cyanide	0	20	µg/L
Delta P.P. Headworks	C961406	6/13/96	Total Cyanide	0	20	µg/L
Delta P.P. Headworks	C961853	9/12/96	Total Cyanide	0	20	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Total Cyanide	0	20	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Total Cyanide	0	20	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Total Cyanide	0	20	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Total Cyanide	0	20	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Total Cyanide	0	20	µg/L
Old River at Bacon Island	C953054	12/6/95	Total Cyanide	0	20	µg/L
Old River at Bacon Island	C960420	3/13/96	Total Cyanide	0	20	µg/L
Old River at Bacon Island	C961286	6/12/96	Total Cyanide	0	20	µg/L
Old River at Bacon Island	C961845	9/11/96	Total Cyanide	0	20	µg/L
Old River at Bacon Island	C962333	12/11/96	Total Cyanide	0	20	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Total Cyanide	0	20	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Total Cyanide	0	20	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Total Cyanide	0	20	µg/L
Barker Slough P.P.	C953043	12/6/95	Total Dissolved Solids	162	1	mg/L
Barker Slough P.P.	C960401	3/7/96	Total Dissolved Solids	194	1	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Slough P.P.	C961830	9/5/96	Total Dissolved Solids	157	1	mg/L
Barker Slough P.P.	C962321	12/5/96	Total Dissolved Solids	227	1	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Total Dissolved Solids	124	1	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Total Dissolved Solids	524	1	mg/L
Contra Costa PP Number 01	C961832	9/5/96	Total Dissolved Solids	155	1	mg/L
Contra Costa PP Number 01	C962323	12/5/96	Total Dissolved Solids	359	1	mg/L
Delta P.P. Headworks	C953062	12/7/95	Total Dissolved Solids	177	1	mg/L
Delta P.P. Headworks	C960428	3/14/96	Total Dissolved Solids	161	1	mg/L
Delta P.P. Headworks	C961859	9/12/96	Total Dissolved Solids	143	1	mg/L
Delta P.P. Headworks	C962346	12/12/96	Total Dissolved Solids	222	1	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Total Dissolved Solids	191	1	mg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Total Dissolved Solids	174	1	mg/L
DMC Intake @ Lindemann Rd.	C961855	9/12/96	Total Dissolved Solids	340	1	mg/L
DMC Intake @ Lindemann Rd.	C961858	9/12/96	Total Dissolved Solids	333	1	mg/L
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Total Dissolved Solids	128	1	mg/L
Old River at Bacon Island	C953054	12/6/95	Total Dissolved Solids	109	1	mg/L
Old River at Bacon Island	C960420	3/13/96	Total Dissolved Solids	180	1	mg/L
Old River at Bacon Island	C961851	9/11/96	Total Dissolved Solids	114	1	mg/L
Old River at Bacon Island	C962339	12/11/96	Total Dissolved Solids	251	1	mg/L
Old River nr. Byron (St 9)	C953051	12/6/95	Total Dissolved Solids	128	1	mg/L
Old River nr. Byron (St 9)	C960417	3/13/96	Total Dissolved Solids	184	1	mg/L
Old River nr. Byron (St 9)	C961848	9/11/96	Total Dissolved Solids	135	1	mg/L
Old River nr. Byron (St 9)	C962336	12/11/96	Total Dissolved Solids	344	1	mg/L
Barker Slough P.P.	C953043	12/6/95	Toxaphene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Toxaphene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Toxaphene	0	0.5	µg/L
Barker Slough P.P.	C961974	9/30/96	Toxaphene	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Toxaphene	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Toxaphene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Toxaphene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Toxaphene	0	0.5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Toxaphene	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Toxaphene	0	0.5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Toxaphene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Toxaphene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Toxaphene	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Toxaphene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Toxaphene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Toxaphene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Toxaphene	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Toxaphene	0	1	µg/L
Old River at Bacon Island	C953054	12/6/95	Toxaphene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Toxaphene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Toxaphene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Toxaphene	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Toxaphene	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Toxaphene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Toxaphene	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Toxaphene	0	1	µg/L
Barker Slough P.P.	C953043	12/6/95	trans-1,2-Dichloroethene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	trans-1,2-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	trans-1,2-Dichloroethene	0	0.5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta P.P. Headworks	C953062	12/7/95	trans-1,2-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	trans-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	trans-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	trans-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	trans-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	trans-1,2-Dichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	trans-1,2-Dichloroethene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	trans-1,3-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	trans-1,3-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	trans-1,3-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	trans-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	trans-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	trans-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	trans-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	trans-1,3-Dichloropropene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	trans-1,3-Dichloropropene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Trichloroacetonitrile	0	1	µg/L
Barker Slough P.P.	C960401	3/7/96	Trichloroacetonitrile	0	1	µg/L
Barker Slough P.P.	C961403	6/6/96	Trichloroacetonitrile	0	1	µg/L
Barker Slough P.P.	C962329	12/5/96	Trichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Trichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Trichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Trichloroacetonitrile	0	1	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Trichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C953062	12/7/95	Trichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C960428	3/14/96	Trichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C961406	6/13/96	Trichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Trichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Trichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Trichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Trichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Trichloroacetonitrile	0	1	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Trichloroacetonitrile	0	1	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C953054	12/6/95	Trichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C960420	3/13/96	Trichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C961286	6/12/96	Trichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C961845	9/11/96	Trichloroacetonitrile	0	1	µg/L
Old River at Bacon Island	C962333	12/11/96	Trichloroacetonitrile	0	1	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Trichloroacetonitrile	0	1	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Trichloroacetonitrile	0	1	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Trichloroacetonitrile	0	1	µg/L
Delta P.P. Headworks	C961853	9/12/96	Trichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Trichloroethene	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Trichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Trichloroethene	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Trichloroethene	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Trichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Trichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Trichloroethene	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Trichloroethene	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Trichlorofluoromethane	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Trichlorofluoromethane	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Trichlorofluoromethane	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Trichlorofluoromethane	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Trichlorofluoromethane	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Trichlorofluoromethane	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Trichlorofluoromethane	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Trichlorofluoromethane	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Trichlorofluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Trichlorofluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Trichlorofluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Trichlorofluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Trichlorofluoromethane	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Trichlorofluoromethane	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Trichlorofluoromethane	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Trichlorofluoromethane	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Trichlorofluoromethane	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Trichlorofluoromethane	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Trichlorofluoromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Trichlorofluoromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Trichlorofluoromethane	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Trichlorofluoromethane	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Trifluralin	0	5	µg/L
Barker Slough P.P.	C960401	3/7/96	Trifluralin	0	5	µg/L
Barker Slough P.P.	C961403	6/6/96	Trifluralin	0	5	µg/L
Barker Slough P.P.	C962329	12/5/96	Trifluralin	0	5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Trifluralin	0	5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Trifluralin	0	5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Trifluralin	0	5	µg/L
Contra Costa PP Number 01	C962330	12/5/96	Trifluralin	0	5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Trifluralin	0	5	µg/L
Delta P.P. Headworks	C960428	3/14/96	Trifluralin	0	5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Trifluralin	0	5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Trifluralin	0	5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Trifluralin	0	5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Trifluralin	0	5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Trifluralin	0	5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Trifluralin	0	5	µg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Trifluralin	0	5	µg/L
Old River at Bacon Island	C953054	12/6/95	Trifluralin	0	5	µg/L
Old River at Bacon Island	C960420	3/13/96	Trifluralin	0	5	µg/L
Old River at Bacon Island	C961286	6/12/96	Trifluralin	0	5	µg/L
Old River at Bacon Island	C961845	9/11/96	Trifluralin	0	5	µg/L
Old River at Bacon Island	C962333	12/11/96	Trifluralin	0	5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Trifluralin	0	5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Trifluralin	0	5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Trifluralin	0	5	µg/L
Barker Slough P.P.	C953043	12/6/95	Turbidity, Hach.	22	1	NTU
Barker Slough P.P.	C962321	12/5/96	Turbidity, Hach.	18	1	NTU
Contra Costa PP Number 01	C953045	12/6/95	Turbidity, Hach.	2	1	NTU
Contra Costa PP Number 01	C962323	12/5/96	Turbidity, Hach.	2	1	NTU
Contra Costa PP Number 01	C962323	12/5/96	Turbidity, Hach.	2	1	NTU
Delta P.P. Headworks	C953062	12/7/95	Turbidity, Hach.	2	1	NTU
Delta P.P. Headworks	C962346	12/12/96	Turbidity, Hach.	6	1	NTU
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Turbidity, Hach.	6	1	NTU
DMC Intake @ Lindemann Rd.	C962345	12/12/96	Turbidity, Hach.	18	1	NTU
Old River at Bacon Island	C953054	12/6/95	Turbidity, Hach.	5	1	NTU
Old River at Bacon Island	C962339	12/11/96	Turbidity, Hach.	7	1	NTU
Old River nr. Byron (St 9)	C953051	12/6/95	Turbidity, Hach.	5	1	NTU
Old River nr. Byron (St 9)	C962336	12/11/96	Turbidity, Hach.	10	1	NTU
Barker Slough P.P.	C953043	12/6/95	Vinyl chloride	0	0.5	µg/L
Barker Slough P.P.	C960401	3/7/96	Vinyl chloride	0	0.5	µg/L
Barker Slough P.P.	C961403	6/6/96	Vinyl chloride	0	0.5	µg/L
Contra Costa PP Number 01	C953045	12/6/95	Vinyl chloride	0	0.5	µg/L
Contra Costa PP Number 01	C960403	3/7/96	Vinyl chloride	0	0.5	µg/L
Contra Costa PP Number 01	C961404	6/6/96	Vinyl chloride	0	0.5	µg/L
Delta P.P. Headworks	C953062	12/7/95	Vinyl chloride	0	0.5	µg/L
Delta P.P. Headworks	C961406	6/13/96	Vinyl chloride	0	0.5	µg/L
Delta P.P. Headworks	C961853	9/12/96	Vinyl chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Vinyl chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Vinyl chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Vinyl chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Vinyl chloride	0	0.5	µg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Vinyl chloride	0	0.5	µg/L
Old River at Bacon Island	C953054	12/6/95	Vinyl chloride	0	0.5	µg/L
Old River at Bacon Island	C960420	3/13/96	Vinyl chloride	0	0.5	µg/L
Old River at Bacon Island	C961286	6/12/96	Vinyl chloride	0	0.5	µg/L
Old River at Bacon Island	C961845	9/11/96	Vinyl chloride	0	0.5	µg/L
Old River at Bacon Island	C962333	12/11/96	Vinyl chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Vinyl chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Vinyl chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Vinyl chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Vinyl chloride	0	0.5	µg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Vinyl chloride	0	0.5	µg/L
Barker Slough P.P.	C953043	12/6/95	Zinc, Diss.	0.008	0.005	mg/L
Barker Slough P.P.	C960401	3/7/96	Zinc, Diss.	0.028	0.005	mg/L
Contra Costa PP Number 01	C953045	12/6/95	Zinc, Diss.	0	0.005	mg/L
Contra Costa PP Number 01	C960403	3/7/96	Zinc, Diss.	0.005	0.005	mg/L
Delta P.P. Headworks	C953062	12/7/95	Zinc, Diss.	0.01	0.005	mg/L
Delta P.P. Headworks	C960428	3/14/96	Zinc, Diss.	0.012	0.005	mg/L
Delta P.P. Headworks	C961406	6/13/96	Zinc, Diss.	4.33	0.005	mg/L
Delta P.P. Headworks	C961853	9/12/96	Zinc, Diss.	0.007	0.005	mg/L
DMC Intake @ Lindemann Rd.	C953061	12/7/95	Zinc, Diss.	0.014	0.005	mg/L

Table 9-4. New Parameter Study 1995/96 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann Rd.	C960427	3/14/96	Zinc, Diss.	0.012	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961408	6/13/96	Zinc, Diss.	0.014	0.005	mg/L
DMC Intake @ Lindemann Rd.	C961852	9/12/96	Zinc, Diss.	0.018	0.005	mg/L
DMC Intake @ Lindemann Rd.	C962352	12/12/96	Zinc, Diss.	0.013	0.005	mg/L
Old River at Bacon Island	C953054	12/6/95	Zinc, Diss.	0.014	0.005	mg/L
Old River at Bacon Island	C960420	3/13/96	Zinc, Diss.	0.022	0.005	mg/L
Old River at Bacon Island	C961286	6/12/96	Zinc, Diss.	0.008	0.005	mg/L
Old River at Bacon Island	C961845	9/11/96	Zinc, Diss.	0.016	0.005	mg/L
Old River at Bacon Island	C962333	12/11/96	Zinc, Diss.	0	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Zinc, Diss.	0.008	0.005	mg/L
Old River nr. Byron (St 9)	C961285	6/12/96	Zinc, Diss.	0.008	0.005	mg/L
Old River nr. Byron (St 9)	C961844	9/11/96	Zinc, Diss.	0.013	0.005	mg/L
Old River nr. Byron (St 9)	C962332	12/11/96	Zinc, Diss.	0.007	0.005	mg/L

Chapter 10. Simulated Distribution System Testing for Disinfection Byproducts and *Escherichia coli* Data for Delta Waters

Simulated distribution system total halomethane, haloacetic acid(5), and haloacetic acid(6) results from monitoring of drinking water quality in the American, Sacramento, and San Joaquin Rivers and the Delta from April 1996 through January 1997 are reported in Table 10-1. The SDS THM results are being compared with those from the traditional DWR THMFP analyses. For clarity, plots of the SDS TTHM and SDS HAA5 concentrations (µg/L) versus date have been grouped by sampling station (see Figures 10-1 to 10- 8).

On these plots, the current MCLs and proposed Stage 1 and Stage 2 MCLs values are marked by lines. It is apparent that water quality varied widely from one sampling station to another. While some stations provided water that meets the proposed TTHM and HAA5 MCLs during parts of the year, other stations did not. The increased concentrations measured in mass/volume units for Mallard Island during the low flow months are likely due to the influence of bromide in sea water. In particular, with the HAA5 data there appears to be increases in the values during December to January sampling events. The January data were collected following the major storm event that occurred at the beginning of 1997.

DWR has a large database of THMFP results at various sampling locations. More recently, DWR performs the SDS method THM and HAA analyses. From April 1996 to January 1997, we correlated the traditional DWR THMFP analysis results with those from SDS TTHM analyses. Combining data from all stations (n = 126) on a mass concentration (µg/L) provided a correlation R(squared) of 0.72 (see Figure 10-9). This correlation is weakened by the data from the Sacramento River at Mallard Island, a sampling station that produces higher concentrations of the brominated halomethanes. With Mallard Island data deleted, the correlation R(squared) value increased to 0.82. When data from the individual sampling stations (n ~ 10 at each station) are run through the same statistical treatment, the R(squared) values ranged from ~ 0.0 to ~ 1 (see Table 10-2).

A recalculation of the SDS TTHM data of a molar concentration (µmol/L), eliminated the weighing factor of bromine versus chlorine, provided a correlation R(squared) value of 0.82 (see Figure 10-10). These comparisons are presented by sampling station so that outlying values can be identified. When compared on a mol SDS/mass FP there was no improvement in this correlation without the Mallard Island data. To see the SDS TTHM axis in µgram carbon/Liter (carbon equivalents) multiply the SDS TTHM axis values by 12 (see Figure 10-11). These comparisons indicated that the historical DWR database of THMFP values can be used to estimate what historical SDS THM and HAA values would have been.

Table 10-1. Simulated Distribution System Testing of Delta Channel Waters for Trihalomethanes and Haloacetic Acids

Sampling Site	Sample Number	Sampling Date	SDS Trihalomethanes (µg/L)					SDS Haloacetic Acids (µg/L)								Cl Dose	Cl Residual	
			CHCl3	BDCM	DBCM	CHBr3	TTHM	BAA	BCAA	CAA	DBAA	DCAA	TCAA	HAA6	HAA5	(mg/L)	(mg/L)	pH
American River at W.T.P.	C960826	4/3/96	63	<10	<10	<10	63	<1	<1	<1	<1	18	19	37	37	3	1.04	8.28
American River at W.T.P.	C961044	5/1/96	52	3	<1	<1	55	<1	1.1	<1	<1	18	18	37.1	36	3	1.59	8.27
American River at W.T.P.	C961242	6/5/96	70	2	<1	<1	72	<1	<1	<1	<1	27	28	55	55	3	1.08	8.24
American River at W.T.P.	C961634	7/10/96	65	2	<1	<1	67	<1	<1	<1	<1	18	19	37	37	3	1.62	8.25
American River at W.T.P.	C961711	8/7/96	46	2	<1	<1	48	<1	3	<1	<1	24	20	47	44	2	0.83	8.19
American River at W.T.P.	C961840	9/4/96	48	2	<1	<1	50	<1	1.4	<1	<1	18	12	31.4	30	2	0.84	8.24
American River at W.T.P.	C961984	10/2/96	50	2	<1	<1	52	<1	<1	<1	<1	15	12	27	27	2	1.1	8.22
American River at W.T.P.	C962152	11/6/96	38	2	<1	<1	40	<1	<1	<1	<1	14	12	26	26	2	1.2	8.25
American River at W.T.P.	C962313	12/4/96	48	2	<1	<1	50	<1	<1	<1	<1	18	14	32	32	2	0.86	8.22
American River at W.T.P.	C962416	1/9/97	66	1	<1	<1	67	<1	1	<1	<1	25	25	51	50	2	0.52	8.25
Banks Pumping Plant Headworks	C960846	4/11/96	76	47	19	<10	142	1	25	<1	8.1	37	37	108.1	83.1	5	1.12	8.22
Banks Pumping Plant Headworks	C961081	5/9/96	67	46	23	2	138	2.5	17	<1	3.7	26	23	72.2	55.2	5	1.5	8.24
Banks Pumping Plant Headworks	C961282	6/13/96	88	28	7	<1	123	<1	9.5	<1	<1	31	20	60.5	51	5	1.24	8.2
Banks Pumping Plant Headworks	C961664	7/18/96	78	22	5	<1	105	1.7	6.1	<1	<1	33	26	66.8	60.7	4	1.17	8.25
Banks Pumping Plant Headworks	C961724	8/15/96	72	33	11	<1	116	1	16	<1	1.4	33	36	87.4	71.4	5	1.11	8.2
Banks Pumping Plant Headworks	C961859	9/12/96	65	31	12	<1	108	<1	9.5	<1	<1	26	19	54.5	45	4	1	8.22
Banks Pumping Plant Headworks	C962034	10/10/96	62	36	16	2	116	<1	22	<1	3.4	36	25	86.4	64.4	4	1.42	8.22
Banks Pumping Plant Headworks	C962189	11/14/96	55	42	25	2	124	<1	17	<1	4.7	23	17	61.7	44.7	5	0.46	8.24
Banks Pumping Plant Headworks	C962346	12/12/96	72	60	38	4	174	1	22	<1	6.7	29	22	80.7	58.7	6	1.42	8.25
Banks Pumping Plant Headworks	C962454	1/7/97	170	27	2	<1	199	<1	8	<1	<1	53	65	126	118	7	0.56	8.28
Barker Slough Pumping Plant	C960831	4/4/96	400	35	<10	<10	435	3.1	7.7	<1	<1	120	170	300.8	293.1	13	0.8	8.24
Barker Slough Pumping Plant	C961049	5/2/96	160	43	<1	<1	203	2.7	12	<1	<1	51	59	124.7	112.7	7	1.6	8.24
Barker Slough Pumping Plant	C961247	6/6/96	130	31	<1	<1	161	<1	11	<1	<1	51	49	111	100	5	1.06	8.19
Barker Slough Pumping Plant	C961639	7/11/96	140	24	3	<1	167	1.1	6.2	<1	<1	54	49	110.3	104.1	5	1.68	8.26
Barker Slough Pumping Plant	C961773	8/7/96	150	20	<1	<1	170	1.3	7.8	<1	1	48	54	112.1	104.3	5	0.88	8.19
Barker Slough Pumping Plant	C961830	9/5/96	180	21	2	<1	203	<1	6.1	<1	<1	72	77	155.1	149	6	1.44	8.2
Barker Slough Pumping Plant	C961991	10/3/96	200	24	2	<1	226	1.4	11	<1	<1	82	81	175.4	164.4	6	1.46	8.24
Barker Slough Pumping Plant	C962216	11/7/96	140	24	3	<1	167	<1	8.7	<1	<1	50	46	104.7	96	5	0.77	8.23
Barker Slough Pumping Plant	C962321	12/5/96	150	27	3	<1	180	<1	10	<1	<1	50	54	114	104	5	0.56	8.23
Barker Slough Pumping Plant	C962424	1/9/97	470	14	<1	<1	484	<1	3	12	<1	150	200	365	362	15	0.97	8.26
Contra Costa Pumping Plant #1	C960833	4/4/96	81	61	32	<10	174	<1	16	<1	4.8	25	24	69.8	53.8	6	1.32	8.24
Contra Costa Pumping Plant #1	C951051	5/2/96	80	60	32	3	175	1.1	21	<1	5.8	31	28	86.9	65.9	6	1.55	8.25
Contra Costa Pumping Plant #1	C961249	6/6/96	99	36	9	<1	144	<1	14	<1	1.4	40	31	86.4	72.4	5	1.01	8.22
Contra Costa Pumping Plant #1	C961641	7/11/96	82	16	2	<1	100	1.2	6.5	<1	<1	35	30	72.7	66.2	4	0.91	8.27
Contra Costa Pumping Plant #1	C961775	8/7/96	62	37	16	2	117	1.8	17	<1	1.9	28	27	75.7	58.7	4	1.37	8.22
Contra Costa Pumping Plant #1	C961832	9/5/96	56	34	14	1	105	2	12	<1	1.7	21	14	50.7	38.7	3	0.69	8.24
Contra Costa Pumping Plant #1	C961993	10/3/96	53	39	22	2	116	<1	15	<1	2.9	22	10	49.9	34.9	3	0.78	8.25
Contra Costa Pumping Plant #1	C962218	11/7/96	19	38	57	23	137	1.4	16	16	<1	9.9	4.4	47.7	31.7	3	0.55	8.3
Contra Costa Pumping Plant #1	C962323	12/5/96	19	49	86	49	203	1.9	21	<1	30	11	4.5	68.4	47.4	4	0.8	8.28
Contra Costa Pumping Plant #1	C962426	1/9/97	220	72	16	<1	308	<1	19	<1	2	58	69	148	129	9	0.76	8.25
DMC Intake at Lindemann Road	C960845	4/11/96	68	37	13	<10	118	<1	11	<1	2.8	19	19	51.8	40.8	5	0.62	8.25
DMC Intake at Lindemann Road	C961080	5/9/96	57	41	22	2	122	2.5	14	<1	3.4	22	20	61.9	47.9	4	1.13	8.23
DMC Intake at Lindemann Road	C961281	6/13/96	47	47	38	6	138	1.2	21	<1	13	19	11	65.2	44.2	4	1	8.19
DMC Intake at Lindemann Road	C961663	7/18/96	48	47	33	5	133	1.3	19	<1	9	23	13	65.3	46.3	4	0.9	8.22
DMC Intake at Lindemann Road	C961723	8/15/96	48	53	43	8	152	<1	24	<1	12	22	16	74	50	5	0.85	8.16
DMC Intake at Lindemann Road	C961858	9/12/96	56	53	39	6	154	2.2	18	<1	6.3	22	12	60.5	42.5	5	1.06	8.18
DMC Intake at Lindemann Road	C962033	10/10/96	63	38	18	2	121	<1	22	<1	3.7	31	18	74.7	52.7	4	0.96	8.2
DMC Intake at Lindemann Road	C962188	11/14/96	40	40	28	5	113	<1	17	<1	5.5	20	12	54.5	37.5	4	0.49	8.24
DMC Intake at Lindemann Road	C962345	12/12/96	140	28	4	<1	172	<1	10	<1	<1	49	53	112	102	7	1.3	8.25
DMC Intake at Lindemann Road	C962453	1/7/97	160	17	<1	<1	177	<1	5	<1	<1	50	63	118	113	6	0.52	8.26
Middle River at Borden Highway	C960839	4/10/96	100	41	<10	<10	141	<1	11	<1	1.7	28	29	69.7	58.7	6	1.34	8.23
Middle River at Borden Highway	C961074	5/8/96	85	52	25	2	164	1	21	<1	5	33	32	92	71	6	1.38	8.23
Middle River at Borden Highway	C961275	6/12/96	92	30	7	<1	129	<1	9.4	<1	<1	31	28	68.4	59	5	1.66	8.22
Middle River at Borden Highway	C961647	7/17/96	66	20	5	<1	91	1.7	5.5	<1	<1	26	20	53.2	47.7	3	0.5	8.24
Middle River at Borden Highway	C961717	8/14/96	87	30	8	<1	125	1.6	16	<1	1.2	37	41	96.8	80.8	4	0.78	8.19
Middle River at Borden Highway	C961849	9/11/96	77	29	9	<1	115	<1	12	<1	<1	31	27	70	58	4	1.29	8.19
Middle River at Borden Highway	C962025	10/9/96	66	37	18	2	123	<1	16	<1	2.8	27	20	65.8	49.8	4	0.55	8.21
Middle River at Borden Highway	C962197	11/13/96	63	38	18	<1	119	<1	15	<1	2.7	27	21	65.7	50.7	5	1.04	8.25
Middle River at Borden Highway	C962337	12/11/96	87	54	22	1	164	<1	20	<1	3.2	39	32	94.2	74.2	6	1.18	8.24
Middle River at Borden Highway	C962445	1/7/97	170	21	1	<1	192	<1	6	<1	<1	55	72	133	127	7	0.56	8.29
Old River at Bacon Island	C960841	4/10/96	120	39	<10	<10	159	<1	9.3	<1	<1	30	38	77.3	68	6	1.5	8.24
Old River at Bacon Island	C961076	5/8/96	89	46	19	2	156	2.8	18	<1	3.1	39	35	97.9	79.9	5	1.38	8.25
Old River at Bacon Island	C961277	6/12/96	89	16	2	<1	107	1.1	4.8	<1	<1	34	30	69.9	65.1	4	1.13	8.21

Table 10-1. Simulated Distribution System Testing of Delta Channel Waters for Trihalomethanes and Haloacetic Acids (continued)

Sampling Site	Sample Number	Sampling Date	SDS Trihalomethanes (µg/L)					SDS Haloacetic Acids (µg/L)								Cl Dose (mg/L)	Cl Residual (mg/L)	pH
			CHCl3	BDCM	DBCM	CHBr3	TTHM	BAA	BCAA	CAA	DBAA	DCAA	TCAA	HAA6	HAA5			
Old River at Bacon Island	C961649	7/17/96	63	19	9	<1	91	<1	6.1	<1	<1	30	22	58.1	52	3	0.75	8.25
Old River at Bacon Island	C961719	8/14/96	57	34	16	2	109	1.6	16	<1	2.2	23	18	60.8	44.8	3	0.84	8.2
Old River at Bacon Island	C961851	9/11/96	57	29	10	<1	96	<1	9.8	<1	1.1	25	16	51.9	42.1	3	1.05	8.22
Old River at Bacon Island	C962027	10/9/96	48	35	20	2	105	1	23	<1	4.4	28	18	74.4	51.4	3	1.04	8.22
Old River at Bacon Island	C962199	11/13/96	31	44	46	10	131	1.2	19	<1	13	16	8.5	57.7	38.7	4	1.46	8.25
Old River at Bacon Island	C962339	12/11/96	46	63	57	13	179	1.5	26	<1	17	22	13	79.5	53.5	5	1.05	8.24
Old River at Bacon Island	C962447	1/7/97	180	18	<1	<1	198	<1	5	<1	<1	54	66	125	120	7	1	8.27
Old River near Byron	C960838	4/10/96	110	44	<10	<10	154	<1	10	<1	1.6	27	29	67.6	57.6	6	0.62	8.25
Old River near Byron	C961073	5/8/96	73	50	24	2	149	<1	17	<1	4.2	26	22	69.2	52.2	6	1.52	8.22
Old River near Byron	C961274	6/12/96	88	21	3	<1	112	<1	6.4	<1	<1	30	27	63.4	57	4	1.12	8.21
Old River near Byron	C961646	7/17/96	78	20	9	<1	107	1.3	5.5	<1	<1	33	30	69.8	64.3	4	1.18	8.25
Old River near Byron	C961716	8/14/96	67	34	12	<1	113	1.6	14	<1	1.6	30	28	75.2	61.2	4	1.18	8.2
Old River near Byron	C961848	9/12/96	76	28	10	<1	114	<1	9.1	<1	<1	29	24	62.1	53	4	1.2	8.21
Old River near Byron	C962024	10/9/96	58	36	18	2	114	1	18	<1	2.9	28	18	67.9	49.9	4	1.5	8.23
Old River near Byron	C962196	11/13/96	40	46	40	7	133	<1	19	<1	10	18	11	58	39	4	1.11	8.28
Old River near Byron	C962336	12/11/96	54	67	60	11	192	1.4	23	<1	14	22	14	74.4	51.4	5	0.64	8.25
Old River near Byron	C962444	1/7/97	170	15	<1	<1	185	<1	4	<1	<1	55	75	134	130	7	1.08	8.3
Sac. River at Greenes Landing	C960825	4/3/96	79	<10	<10	<10	79	<1	<1	<1	<1	31	32	63	63	4	0.92	8.26
Sac. River at Greenes Landing	C961043	5/1/96	47	8	<1	<1	55	1.1	2	<1	<1	19	12	34.1	32.1	3	0.7	8.24
Sac. River at Greenes Landing	C961241	6/5/96	58	7	<1	<1	65	1	1.9	<1	<1	21	19	42.9	41	4	1.17	8.27
Sac. River at Greenes Landing	C961633	7/10/96	58	8	<1	<1	66	<1	1.6	<1	<1	23	19	43.6	42	4	0.73	8.24
Sac. River at Greenes Landing	C961710	8/7/96	55	8	<1	<1	63	<1	2.2	<1	<1	26	25	53.2	51	4	1.27	8.19
Sac. River at Greenes Landing	C961839	9/4/96	50	13	3	<1	66	<1	2.9	<1	<1	19	14	35.9	33	3	0.56	8.22
Sac. River at Greenes Landing	C961983	10/2/96	49	9	1	<1	59	<1	1.7	<1	<1	16	8.6	26.3	24.6	4	0.64	8.2
Sac. River at Greenes Landing	C962151	11/6/96	62	9	<1	<1	71	<1	2.9	<1	<1	26	19	47.9	45	5	1.01	8.24
Sac. River at Greenes Landing	C962312	12/4/96	59	9	<1	<1	68	<1	3.4	<1	<1	24	18	45.4	42	5	0.55	8.22
Sac. River at Greenes Landing	C962415	1/9/97	68	2	<1	<1	70	<1	1	<1	<1	24	22	47	46	3	0.99	8.26
Sac. River at W. Sac. Intake	C960827	4/3/96	88	<10	<10	<10	88	<1	1.2	<1	<1	28	31	60.2	59	4	1.25	8.24
Sac. River at W. Sac. Intake	C961045	5/1/96	53	8	<1	<1	61	2.3	1.5	<1	<1	20	20	43.8	42.3	3	1.61	8.26
Sac. River at W. Sac. Intake	C961243	6/5/96	51	7	<1	<1	58	<1	2.4	<1	<1	22	19	43.4	41	3	1.27	8.22
Sac. River at W. Sac. Intake	C961635	7/10/96	55	6	<1	<1	61	<1	1.2	<1	<1	20	17	38.2	37	3	1.41	8.24
Sac. River at W. Sac. Intake	C961712	8/7/96	52	8	<1	<1	60	1.1	2.1	<1	<1	24	20	47.2	45.1	3	1.48	8.2
Sac. River at W. Sac. Intake	C961841	9/4/96	57	11	1	<1	69	<1	2	<1	<1	22	17	41	39	3	1.56	8.23
Sac. River at W. Sac. Intake	C961985	10/2/96	49	7	<1	<1	56	<1	1.3	<1	<1	17	14	32.3	31	3	1.45	8.22
Sac. River at W. Sac. Intake	C962153	11/6/96	66	9	<1	<1	75	<1	3.1	<1	<1	26	25	54.1	51	3	1.1	8.26
Sac. River at W. Sac. Intake	C962314	12/4/96	48	8	<1	<1	56	<1	2.8	<1	<1	20	14	36.8	34	2	1.57	8.25
Sac. River at W. Sac. Intake	C962417	1/9/97	63	2	<1	<1	65	<1	<1	<1	<1	24	25	49	49	3	1.48	8.25
San Joaquin River at Mossdale Bridge	C960843	4/11/96	63	48	25	<10	136	<1	11	<1	3.5	18	17	49.5	38.5	5	0.44	8.24
San Joaquin River at Mossdale Bridge	C961078	5/9/96	56	40	22	2	120	2.6	8.6	<1	1.8	17	10	40	31.4	4	1.02	8.25
San Joaquin River at Mossdale Bridge	C961279	6/13/96	38	45	45	11	139	1.4	22	<1	16	16	8.5	63.9	41.9	4	1.08	8.17
San Joaquin River at Mossdale Bridge	C961661	7/18/96	31	49	57	22	159	2	21	<1	19	15	7.2	64.2	43.2	4	0.64	8.21
San Joaquin River at Mossdale Bridge	C961721	8/15/96	21	30	30	12	93	6	15	<1	8.5	12	5.4	46.9	31.9	5	0.42	8.15
San Joaquin River at Mossdale Bridge	C961856	9/12/96	39	48	43	10	140	2.1	17	<1	9.6	16	7.9	52.6	35.6	5	0.64	8.21
San Joaquin River at Mossdale Bridge	C962031	10/10/96	36	48	47	13	144	1.8	24	<1	14	21	9	69.8	45.8	5	0.98	8.17
San Joaquin River at Mossdale Bridge	C962186	11/14/96	33	49	53	17	152	1.3	19	<1	14	16	7.3	57.6	38.6	7	1.16	8.23
San Joaquin River at Mossdale Bridge	C962343	12/12/96	98	13	<1	<1	111	<1	5.8	<1	<1	51	41	97.8	92	8	1.01	8.23
San Joaquin River at Mossdale Bridge	C962451	1/7/97	180	15	<1	<1	195	<1	4	<1	<1	50	63	117	113	7	0.86	8.28
San Joaquin River near Vernalis	C961725	8/15/96	62	61	46	8	177	2.8	28	<1	10	30	24	94.8	66.8	6	1.05	8.17
San Joaquin River near Vernalis	C961860	9/12/96	64	54	37	5	160	1.4	21	<1	5.4	28	18	73.8	52.8	5	1.47	8.2
San Joaquin River near Vernalis	C962035	10/10/96	58	54	43	7	162	1.4	28	<1	9.8	30	17	86.2	58.2	5	1.32	8.19
San Joaquin River near Vernalis	C962190	11/14/96	38	48	47	11	144	1.3	21	<1	14	18	10	64.3	43.3	5	0.5	8.22
San Joaquin River near Vernalis	C962347	12/12/96	290	22	<1	<1	312	<1	5.2	<1	<1	62	75	142.2	137	13	1.11	8.25
San Joaquin River near Vernalis	C962455	1/7/97	190	12	<1	<1	202	<1	3	<1	<1	51	70	124	121	7	1.28	8.27
Sac. River at Mallard Island	C960832	4/4/96	72	23	<10	<10	95	2.2	2.9	<1	<1	21	19	45.1	42.2	4	0.6	8.25
Sac. River at Mallard Island	C961050	5/2/96	60	26	9	<1	95	1.9	8.7	<1	1.1	23	21	55.7	47	4	1.15	8.23
Sac. River at Mallard Island	C961248	6/6/96	64	21	5	<1	90	1.2	6.6	<1	<1	21	18	46.8	40.2	4	1.34	8.2
Sac. River at Mallard Island	C961640	7/11/96	2	12	46	190	250	3.7	8.9	<1	46	2.7	<1	61.3	52.4	4	0.69	8.22
Sac. River at Mallard Island	C961774	8/7/96	<1	5	27	240	272	2.2	7	<1	59	<1	<1	68.2	61.2	4	0.75	8.11
Sac. River at Mallard Island	C961831	9/5/96	<1	6	28	230	264	3.6	4.4	<1	43	1.6	<1	52.6	48.2	4	1.4	8.15
Sac. River at Mallard Island	C961992	10/3/96	<1	2	18	280	300	6.5	4.6	<1	62	3.1	<1	76.2	71.6	4	0.79	8.12
Sac. River at Mallard Island	C962217	11/7/96	<1	2	18	260	280	3	2.8	<1	50	1.7	<1	57.5	54.7	4	0.49	8.14
Sac. River at Mallard Island	C962322	12/5/96	<1	3	22	300	325	4.7	5	<1	77	2.5	<1	89.2	84.2	6	1.08	8.16
Sac. River at Mallard Island	C962425	1/9/97	160	18	<1	<1	178	<1	5	<1	<1	55	64	124	119	7	0.51	8.27

Figure 10-1. SDS TTHM Concentrations at American and Sacramento Rivers

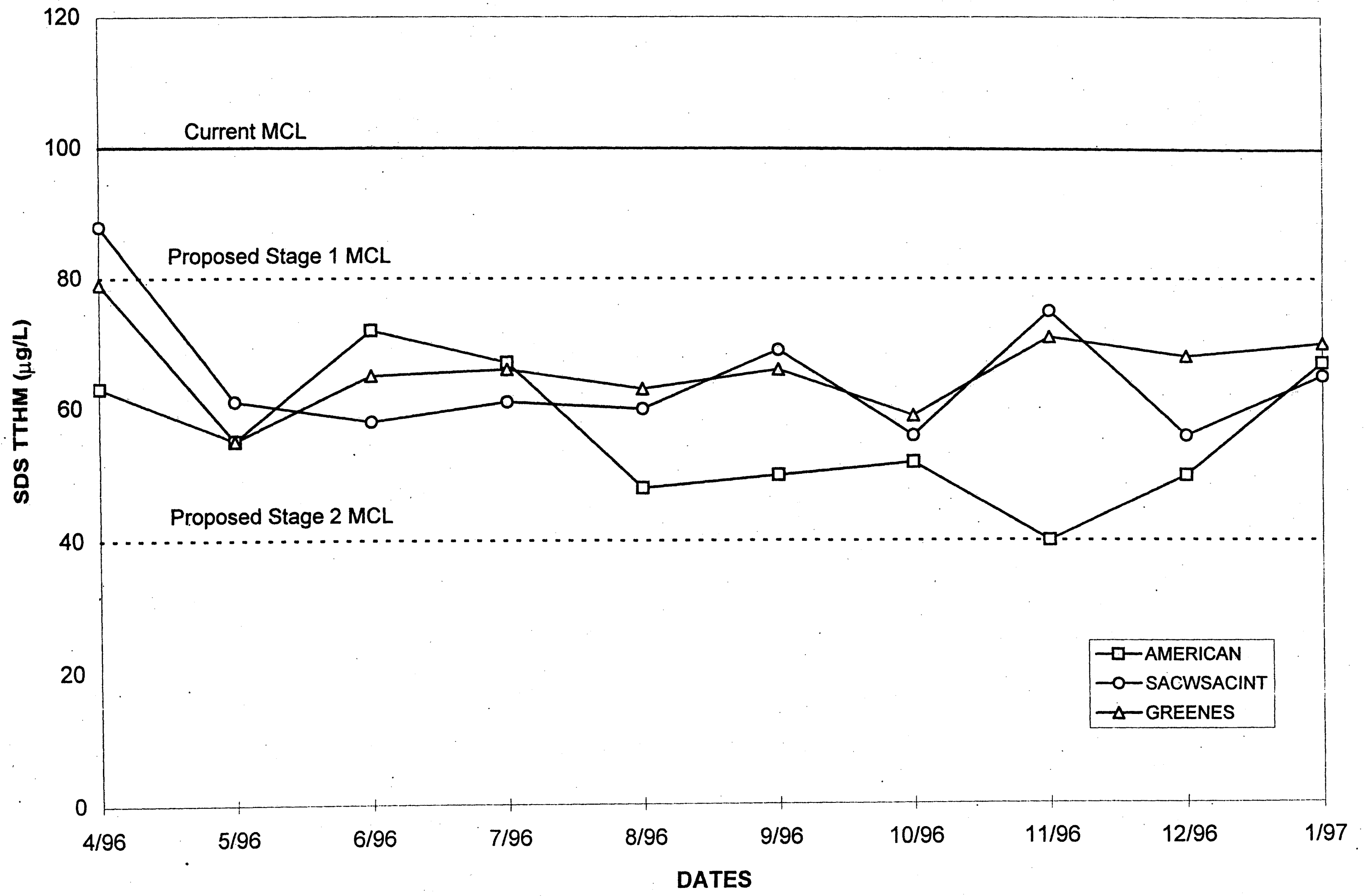


Figure 10-2. SDS TTHM Concentrations
Barker Slough Pumping Plant, Banks Pumping Plant, and Delta-Mendota Canal

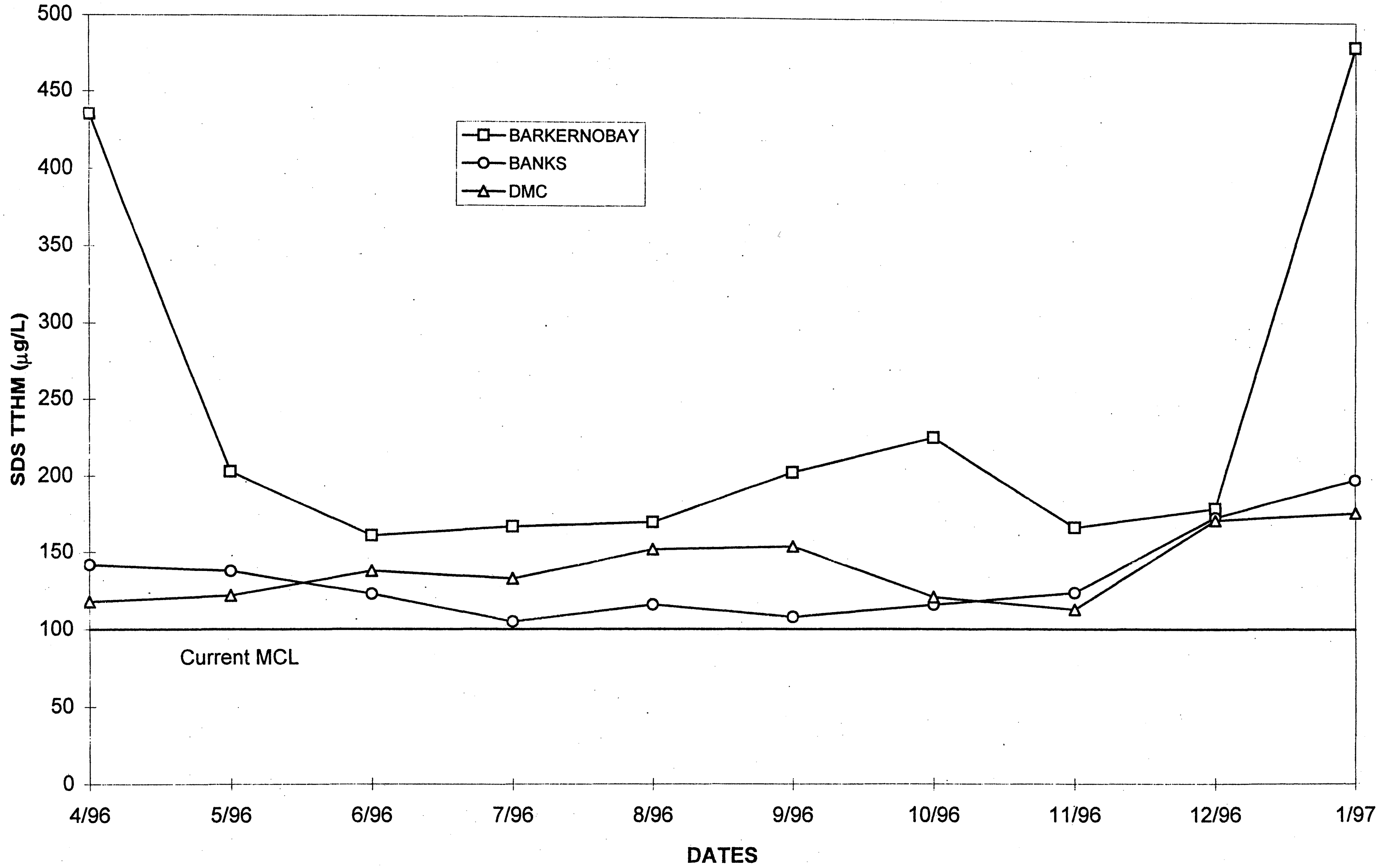


Figure 10-3. SDS TTHM Concentrations
Contra Costa Pumping Plant, Old River at Bacon Island, and Old River near Byron

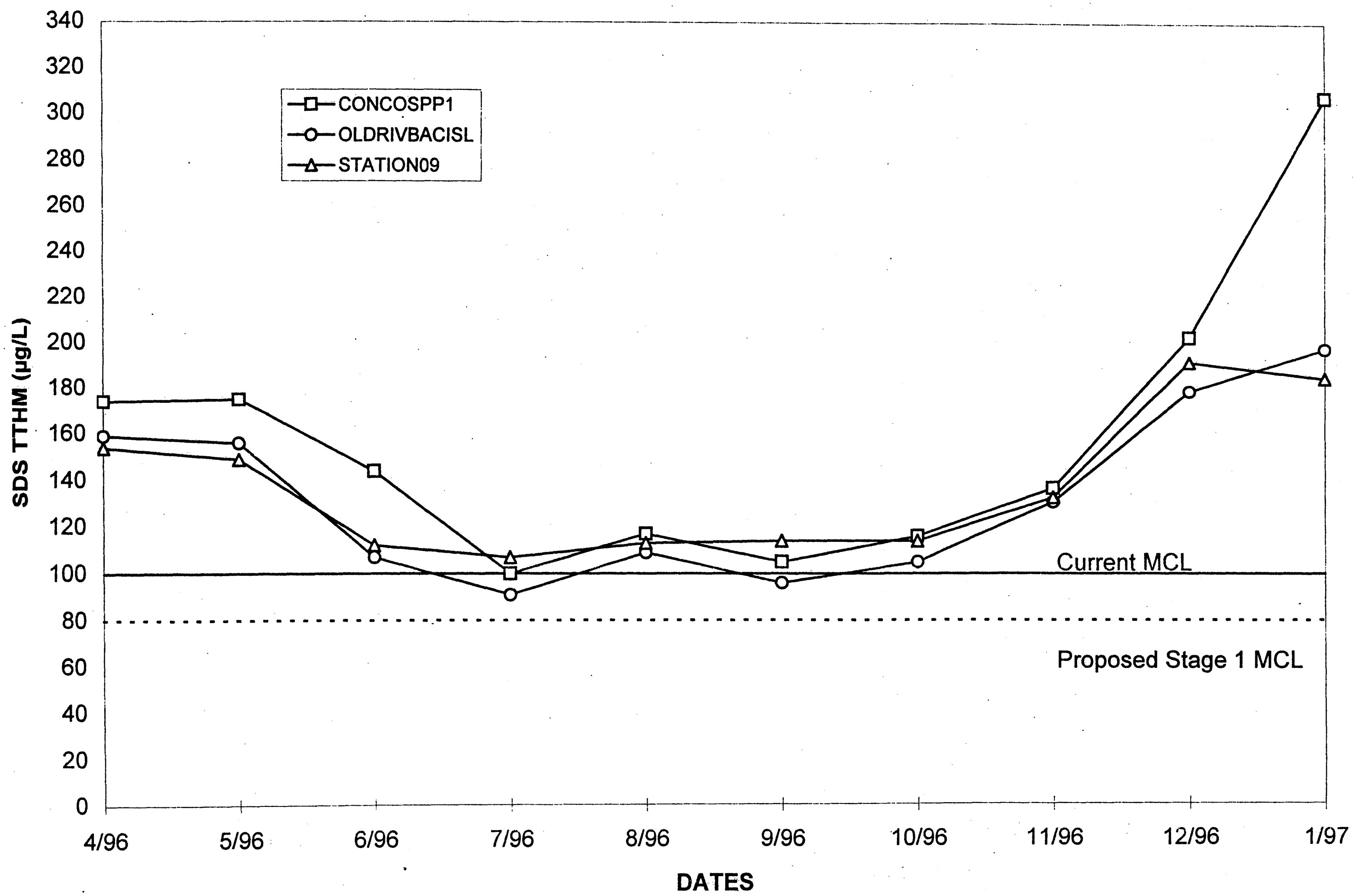


Figure 10-4. SDS TTHM Concentrations
San Joaquin River, Middle River, and Sacramento River at Mallard Island

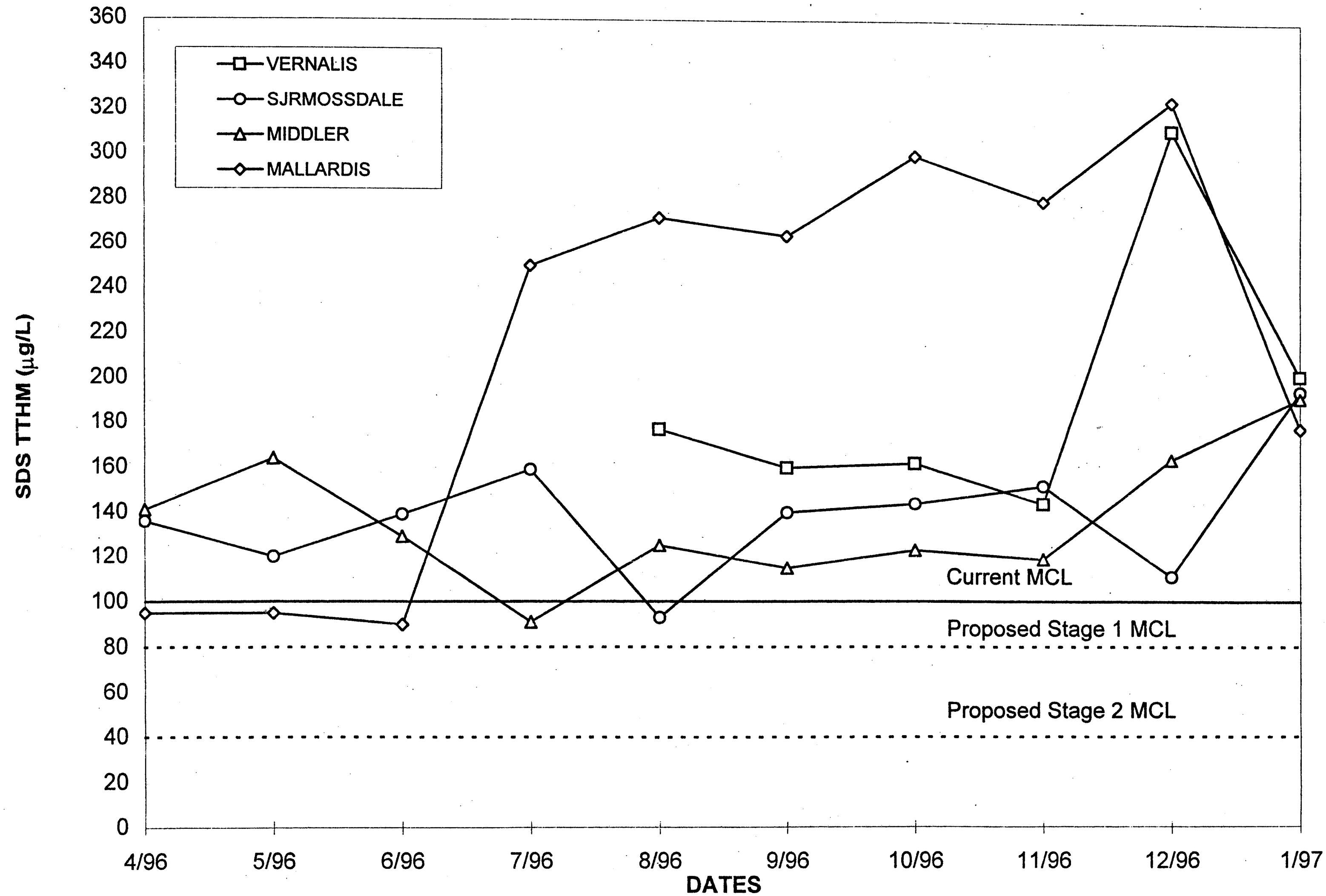


Figure 10-5. SDS HAA5 Concentrations American River and Sacramento River

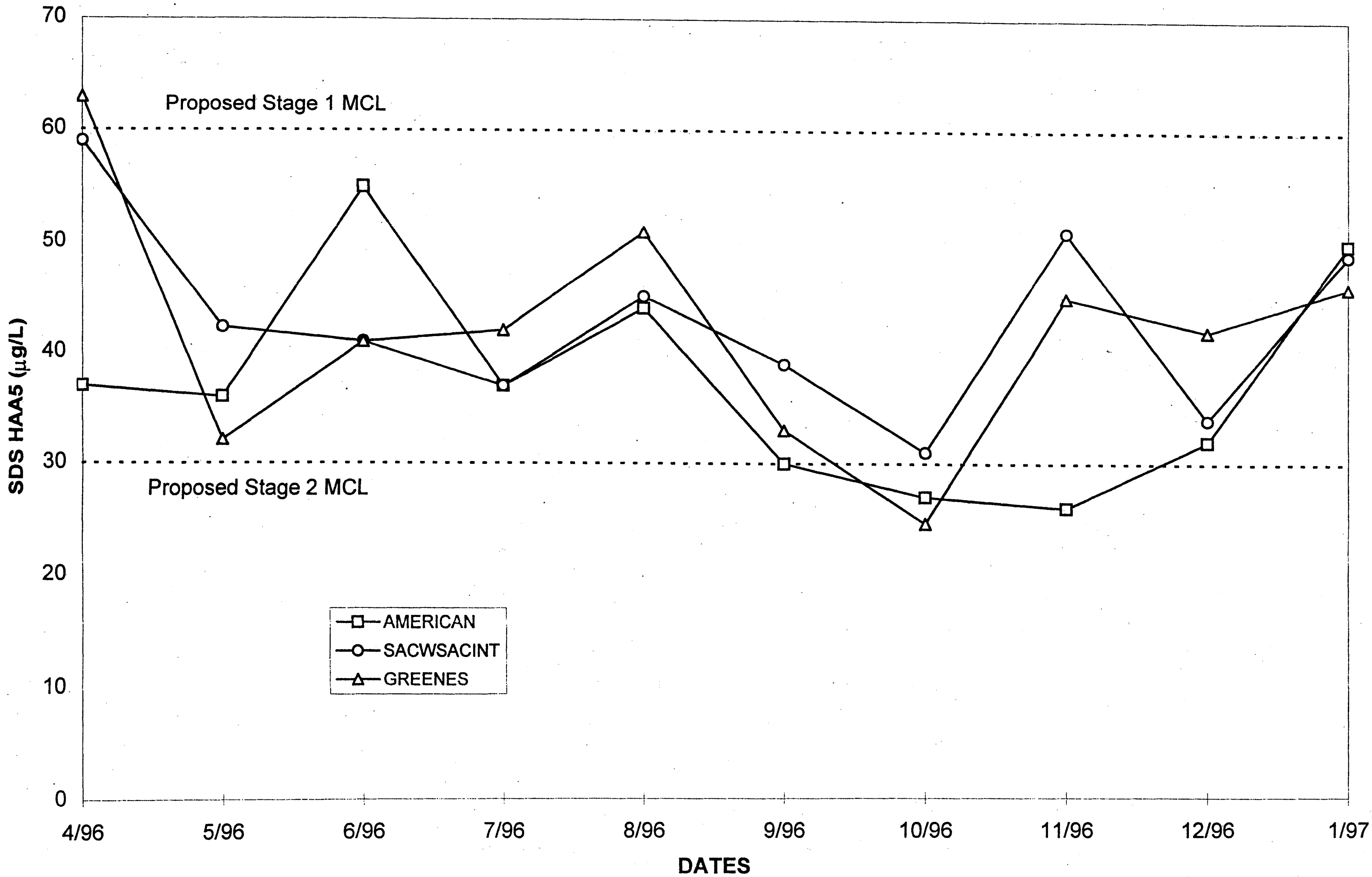


Figure 10-6. SDS HAA5 Concentrations
Barker Slough Pumping Plant, Banks Pumping Plant, and Delta-Mendota Canal

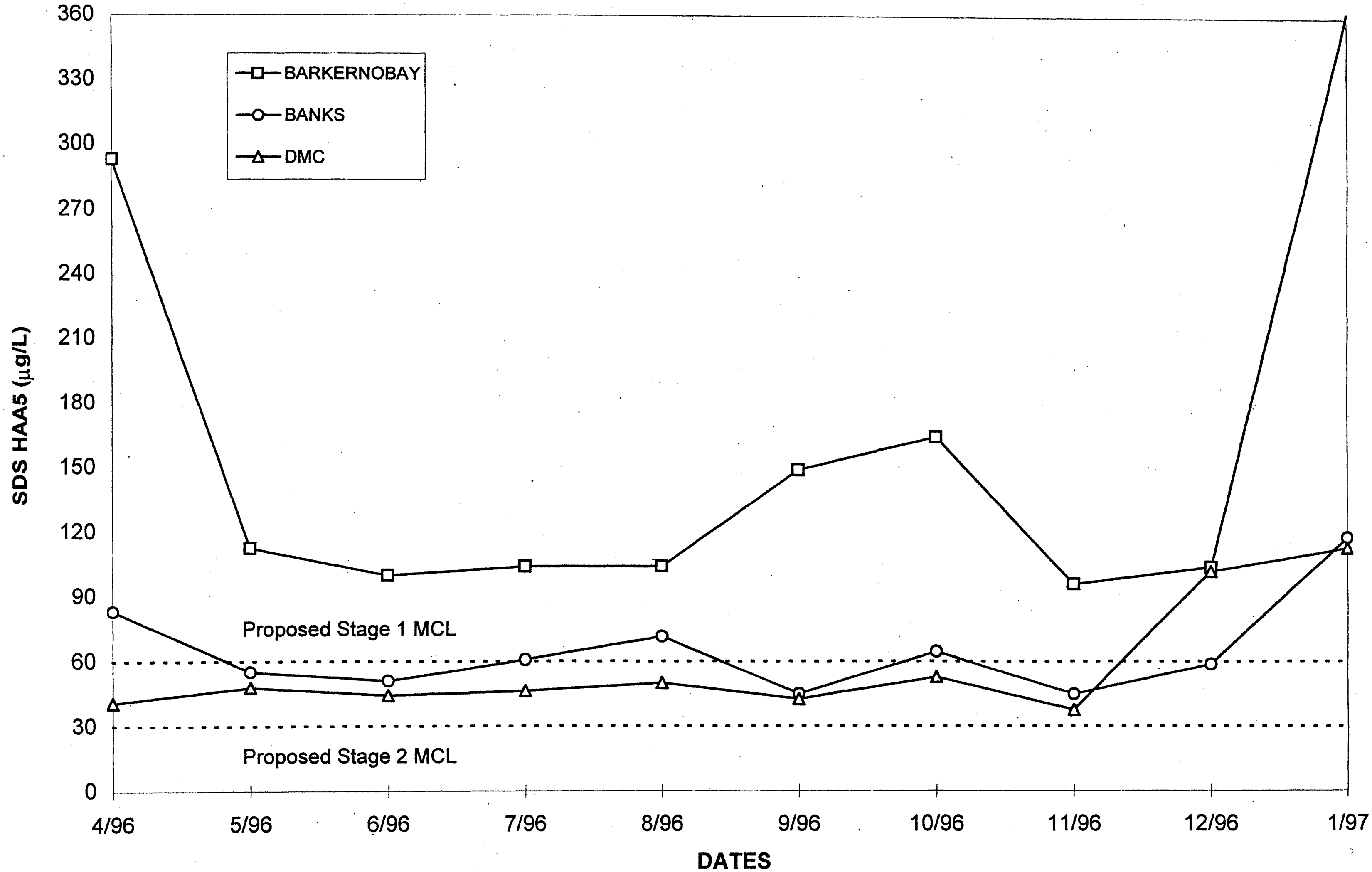


Figure 10-7. SDS HAA5 Concentrations
Contra Costa Pumping Plant, Old River at Bacon Island, and Old River near Byron

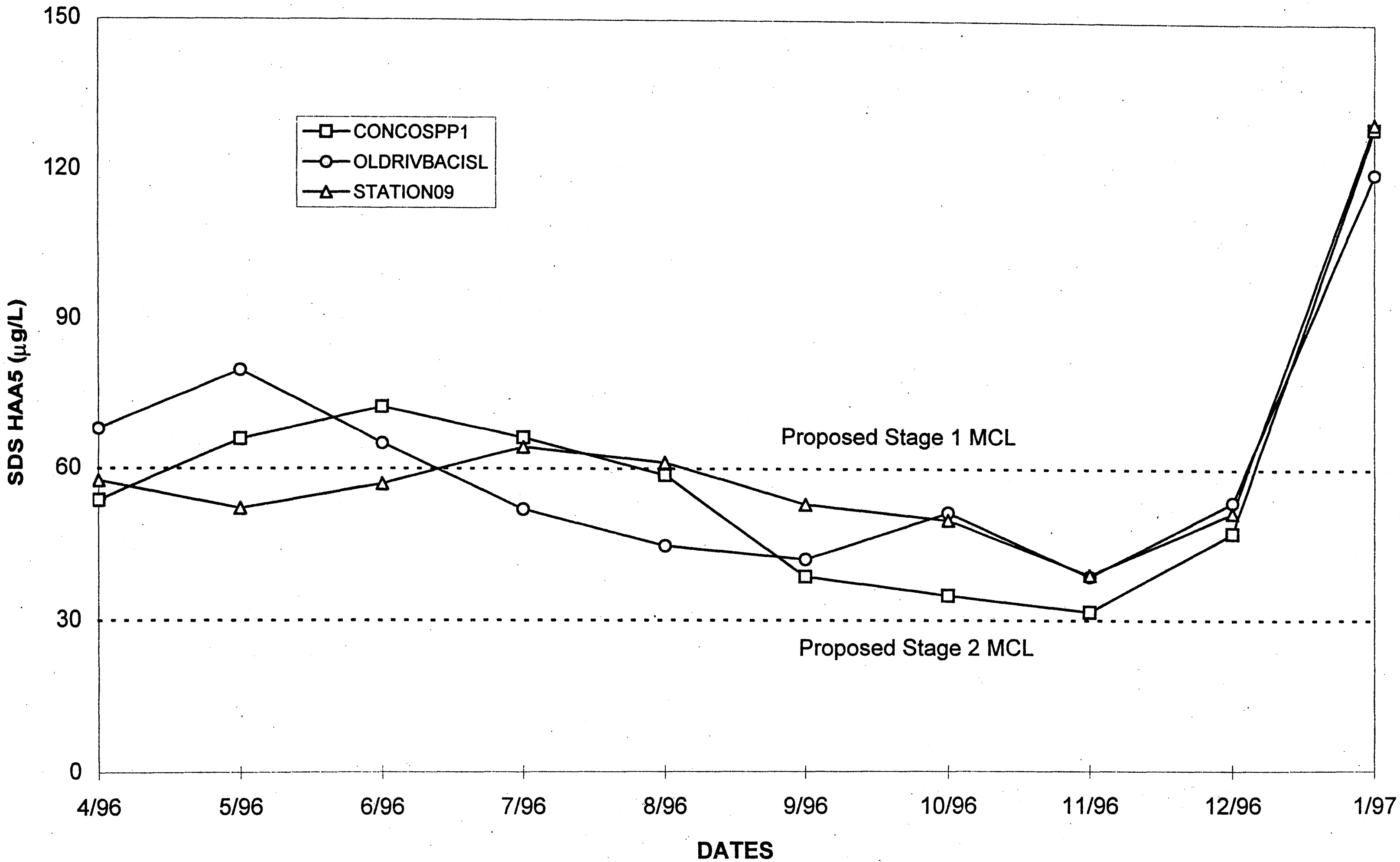


Figure 10-8. SDS HAA5 Concentrations
San Joaquin River, Middle River, and Sacramento River at Mallard Island

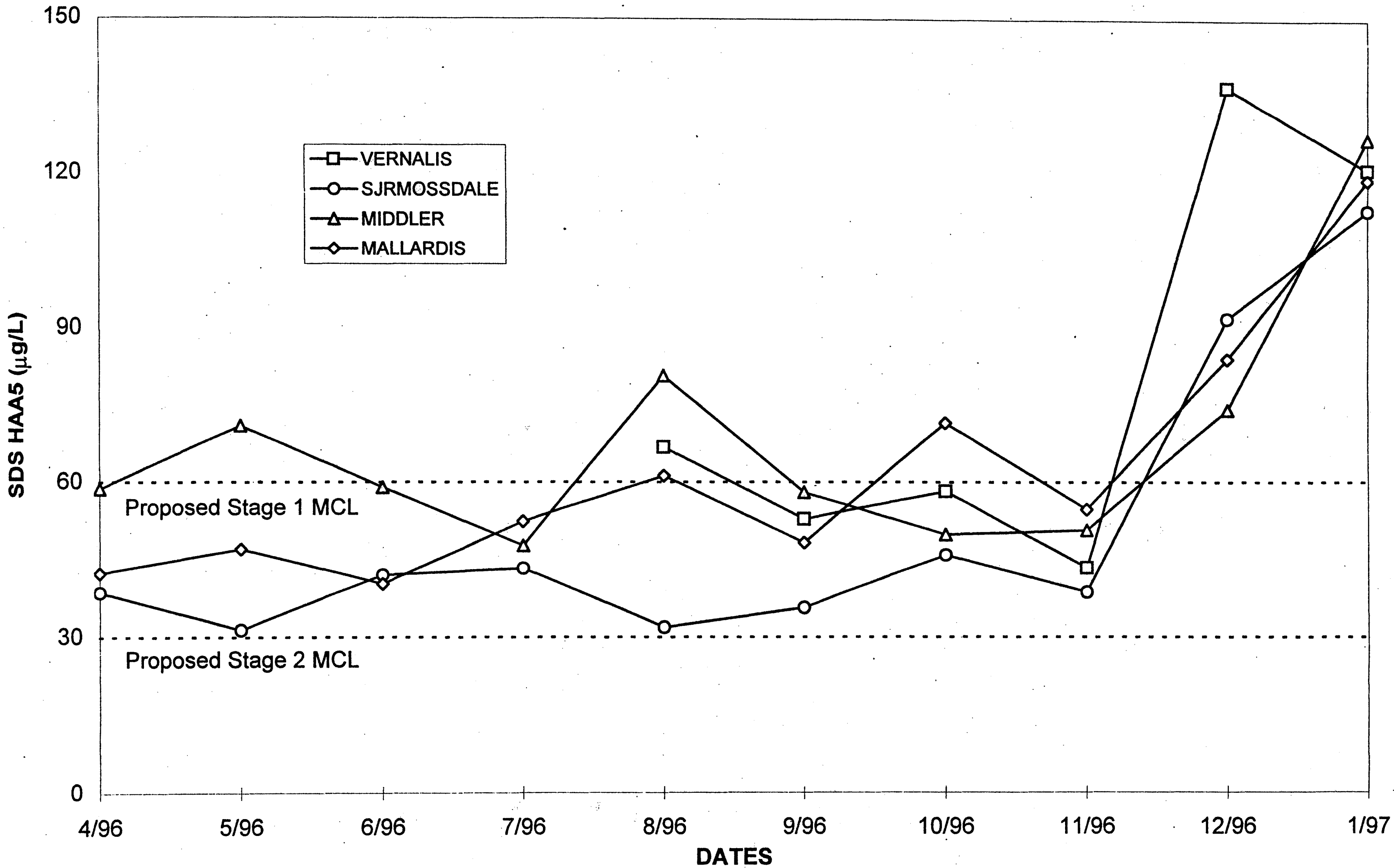


Figure 10-9. DWR THMFP versus SDS TTHM
[SDS TTHM = 0.421 (DWR THMFP) - 6.055], $r^2 = 0.72$

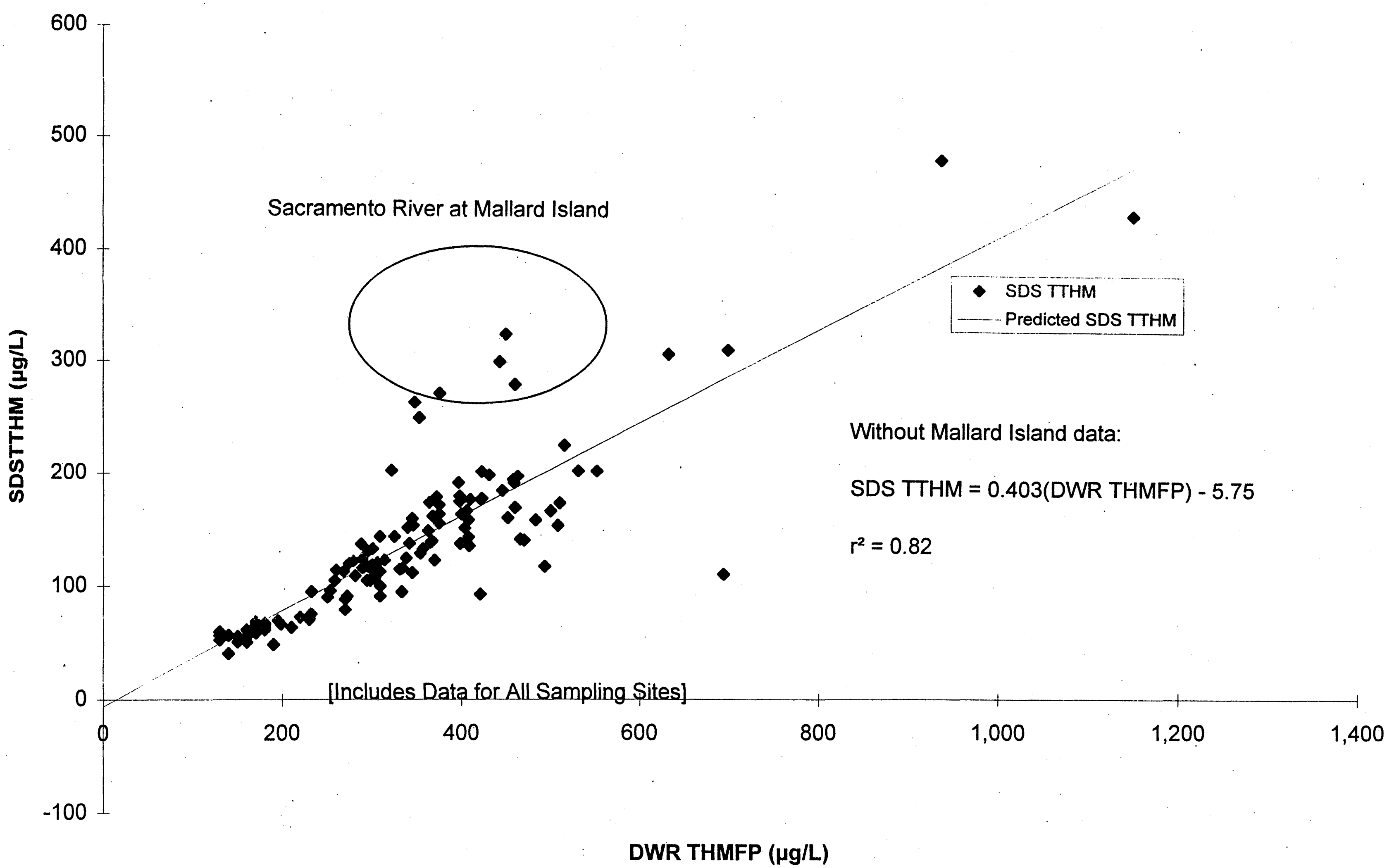


Table 10-2. DWR THMFP versus SDS TTHM - R^2 Values by Site

Station Name	Station Location	R^2 VALUE	n
AMERICAN	American River at Water Treatment Plant	0.506	10
SACWSACINT	Sacramento River at West Sacramento Intake Structure	0.930	10
GREENES	Sacramento River at Greenes Landing	0.790	10
BARKERNOBAY	Barker Slough P.P. at North Bay Aqueduct	0.887	10
BANKS	Banks P.P. Headworks	0.463	10
DMC	Delta-Mendota Canal Intake at Lindemann Rd.	0.075	10
DMC	Delta-Mendota Canal Intake at Lindemann Rd.*	0.580	9
CONCOSPP1	Contra Costa PP Number 1	0.708	10
OLDRIVBACIS	Old River at Bacon Island	0.765	10
STATION09	Old River near Byron	0.546	10
MIDDLER	Middle River at Borden Hwy.	0.595	10
SJRMOSSDALE	San Joaquin River at Mossdale Bridge	0.026	10
SJRMOSSDALE	San Joaquin River at Mossdale Bridge*	0.120	9
VERNALIS	San Joaquin River near Vernalis	0.982	6
MALLARDIS	Sacramento River at Mallard Island	0.647	10

*with one datum deleted

Figure 10-10. DWR THMFP versus SDS TTHM (μmol/L) by Sampling Location

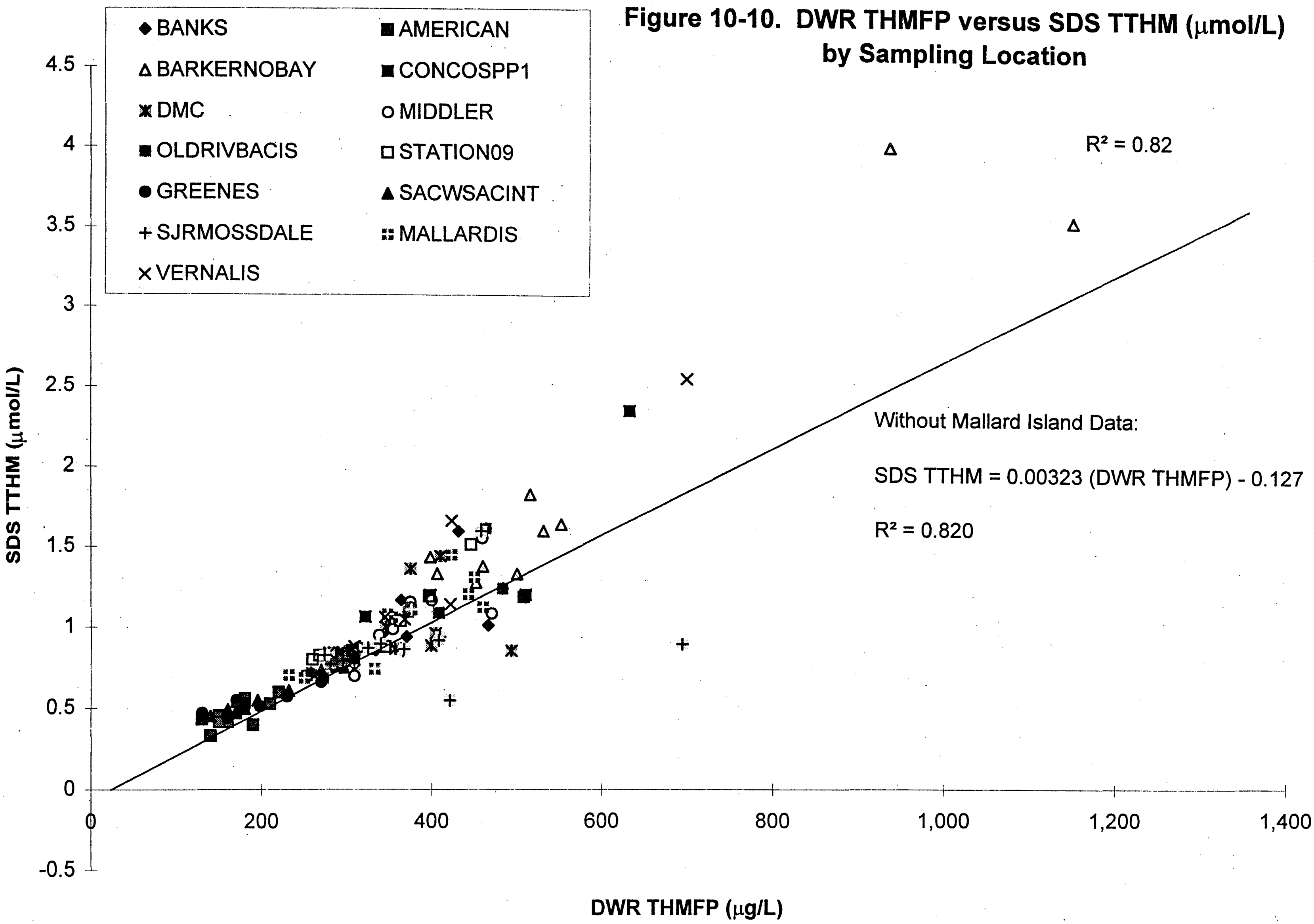
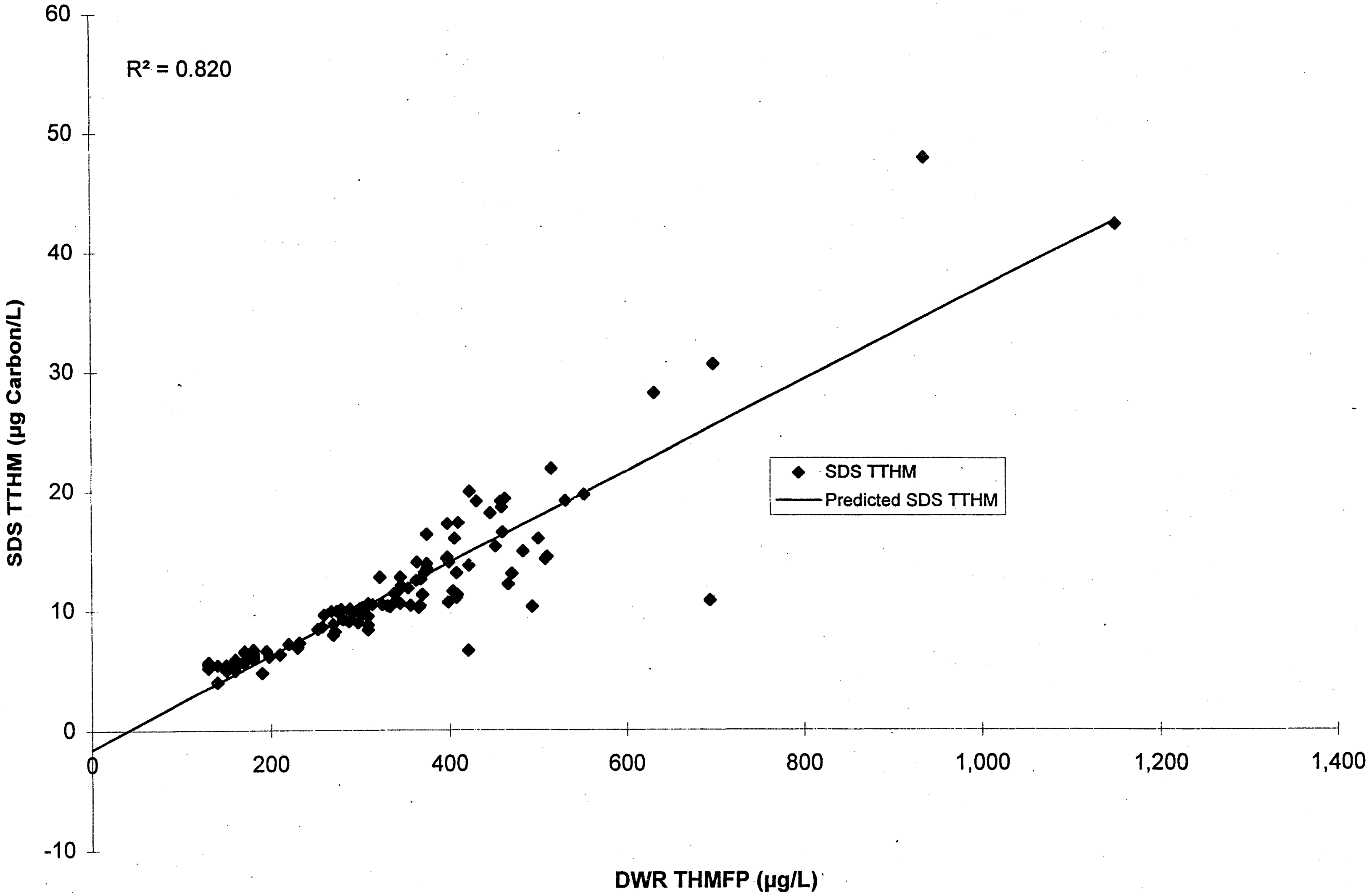


Figure 10-11. DWR THMFP versus SDS TTHM (µg Carbon/L)
SDS TTHM µg Carbon/L = 0.0379 (DWR THMFP) - 1.53]



One future option that DWR is considering is to replace the DWR THMFP analyses with Reactivity Based analyses. Should that change occur, then a similar data collection process should take place so that further correlations between Reactivity- Based results and FP results can be made.

A similar correlation of results between the SDS HAA5 and SDS TTHM has been prepared (see Figure 10-12). Combining data from all stations on a mol/L:mol/L concentration basis (μmol/L) provides only a correlation R(squared) of 0.83. It was suggested that this correlation could be improved with the two extreme data points deleted. When this exercise is performed, the correlation R(squared) value decreases to 0.68 (Figure 10-13).

According to Paul Hutton[1] of DWR's Modeling Branch, the SDS TTHM/HAA5 ratio should be somewhat constant with an average value of approximately two. This does appear to be the case, as the slope of the predicted line in Figure 10-12 does have a value of 0.53. Plots of these ratios for the various groups of sampling stations versus date are presented in Figures 10-14 to 10-17 along with overlays (right-hand axis) of average values at these stations for DOC, UVA, and Specific UVA . The averaged ratios varied from slightly greater than 1.84 to 2.82 (average ratio for each grouping of sampling stations for the time period studied noted on each figure). Seasonal variations in the ratio appears to move with the average DOC values.

---

[1]Paul Hutton is now with the Statewide Planning Branch.

Figure 10-12. SDS HAA5 (μmol/L) versus SDS TTHM (μmol/L)
SDS HAA5 = 0.531 (SDS TTHM) - 0.0798
R^2 = 0.83

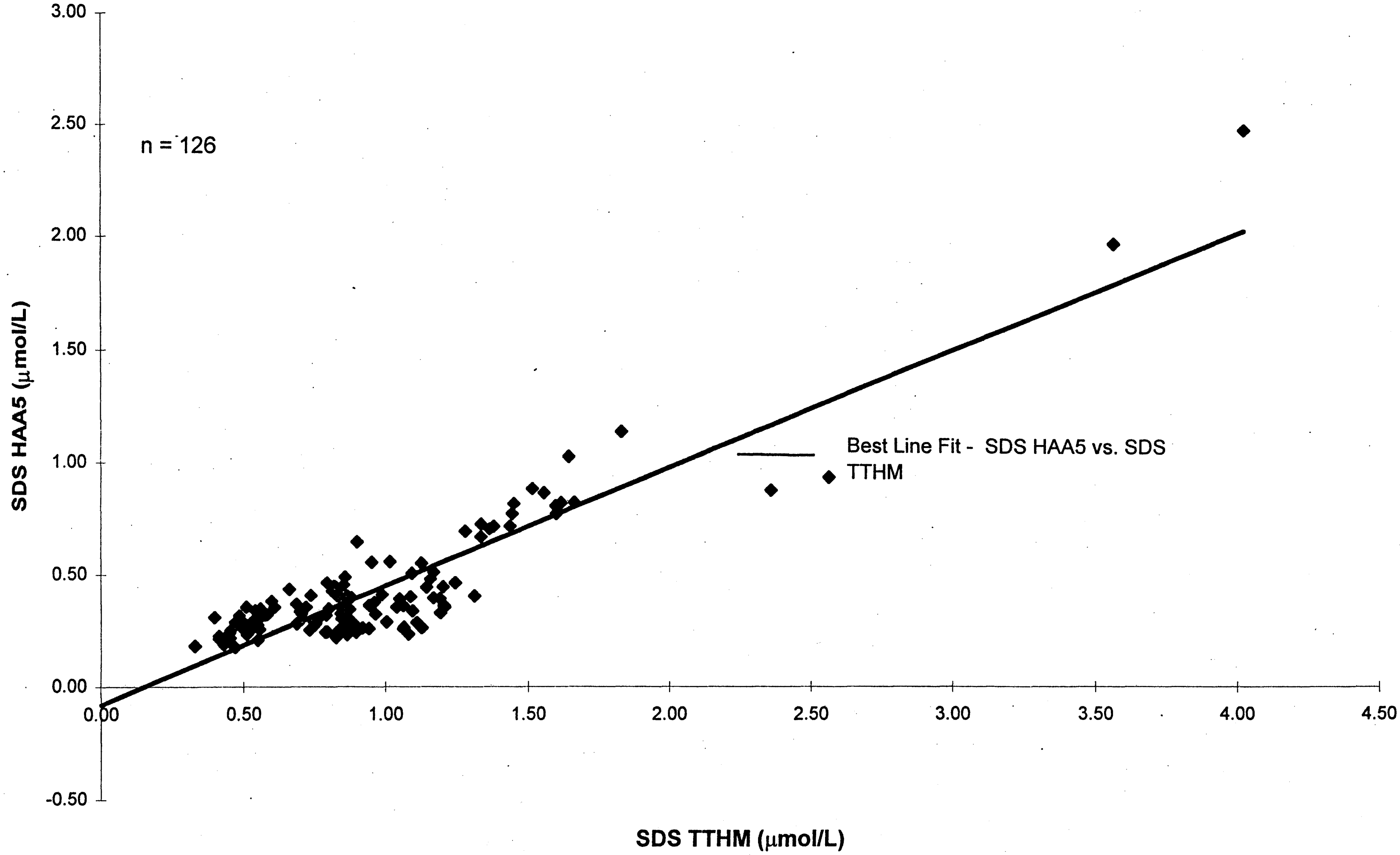


Figure 10-13. SDS HAA5(μmol/L) versus SDS TTHM (μmol/L)
SDS HAA5 = 0.428 (SDS TTHM) + 0.012
$R^2 = 0.68$

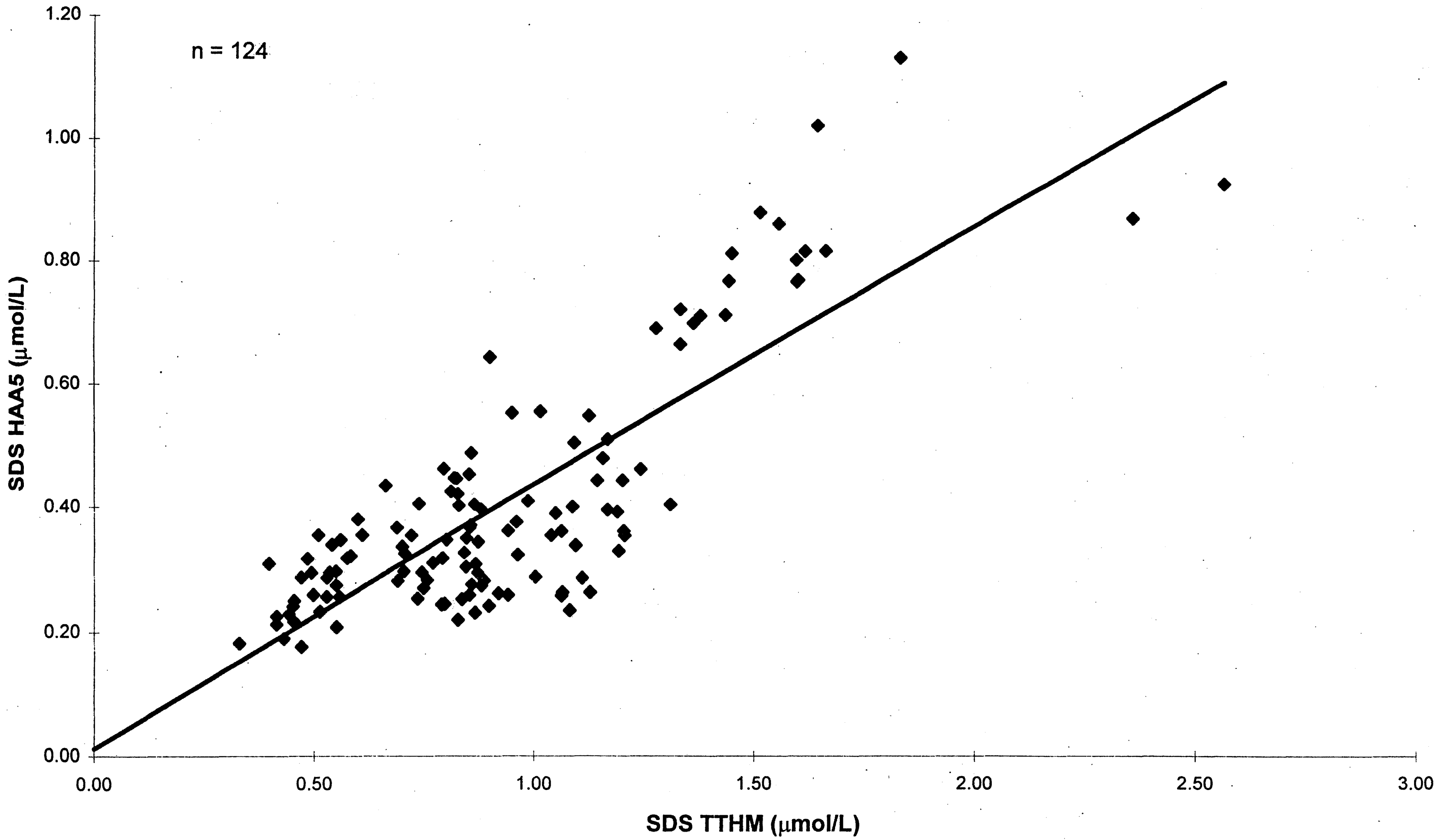


Figure 10-14. SDS TTHM/HAA5 Ratios (mol/mol) versus DOC, UVA, and Specific UVA American and Sacramento Rivers

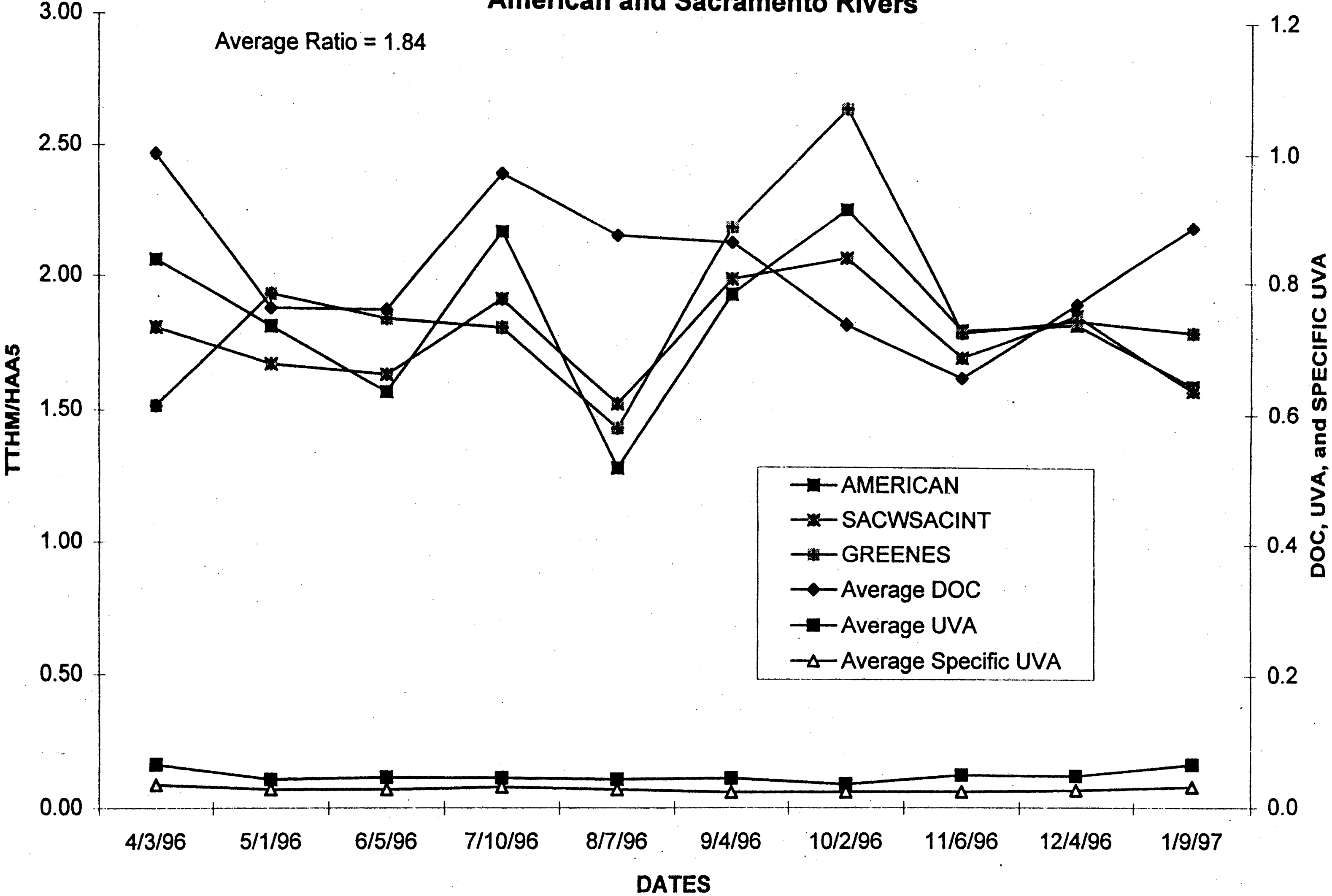


Figure 10-15. SDS TTHM/HAA5 Ratios (mol/mol)
versus DOC, UVA, and Specific UVA
Barker Slough Pumping Plant, Banks Pumping Plant, and Delta-Mendota Canal

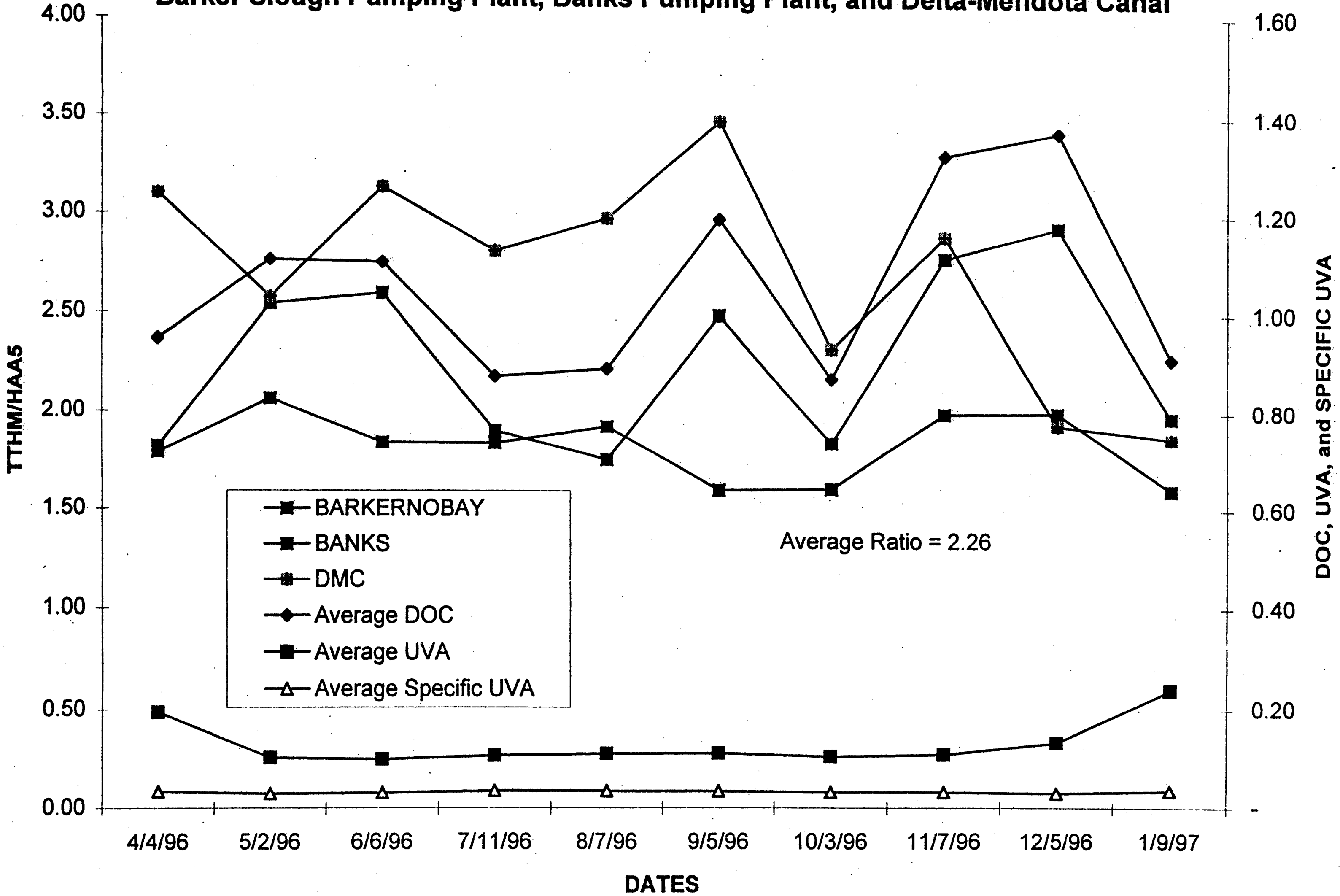


Figure 10-16. SDS TTHM/HAA5 Ratios (mol/mol) versus DOC, UVA, and Specific UVA Contra Costa Pumping Plant, Old River at Bacon Island, and Old River near Byron

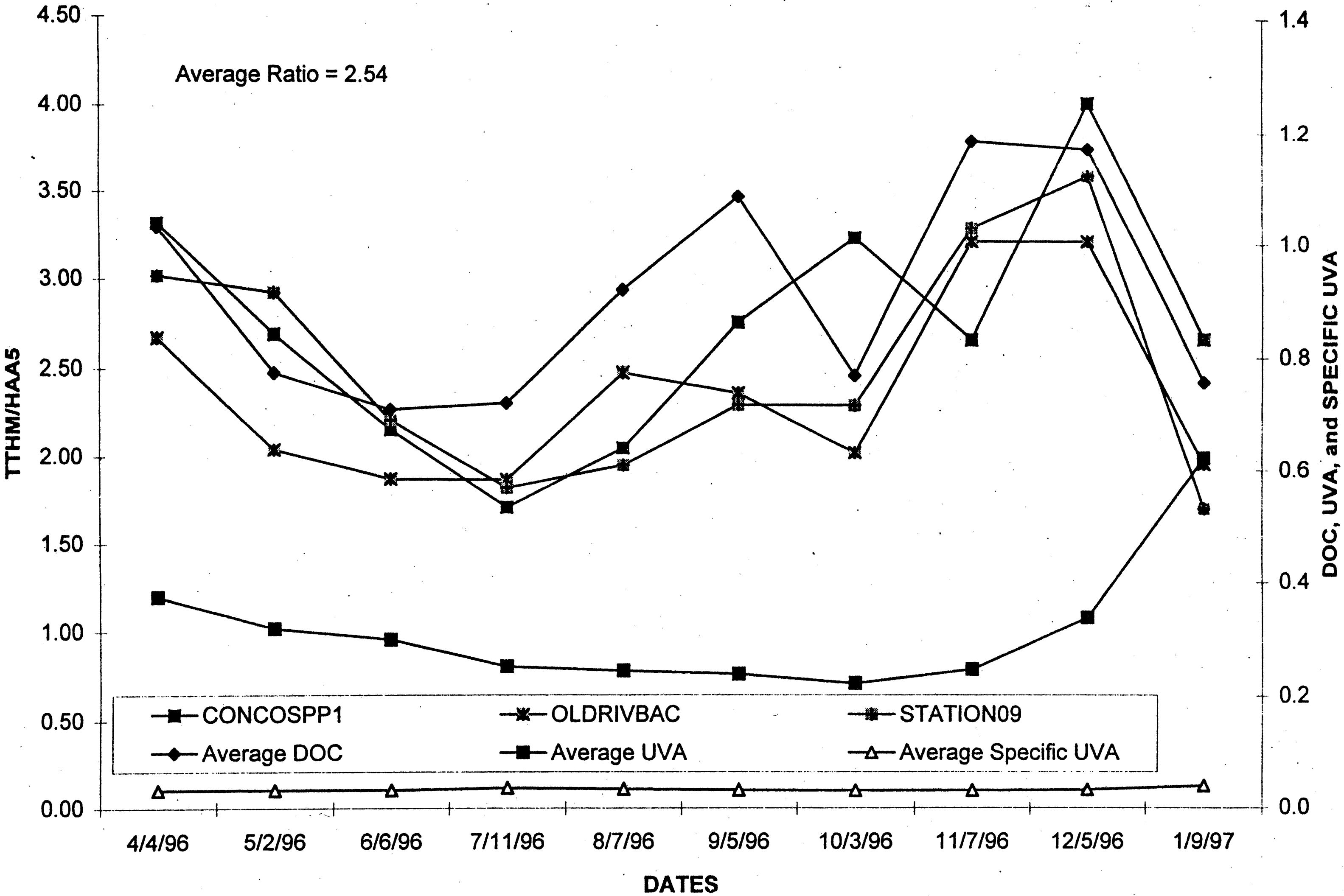
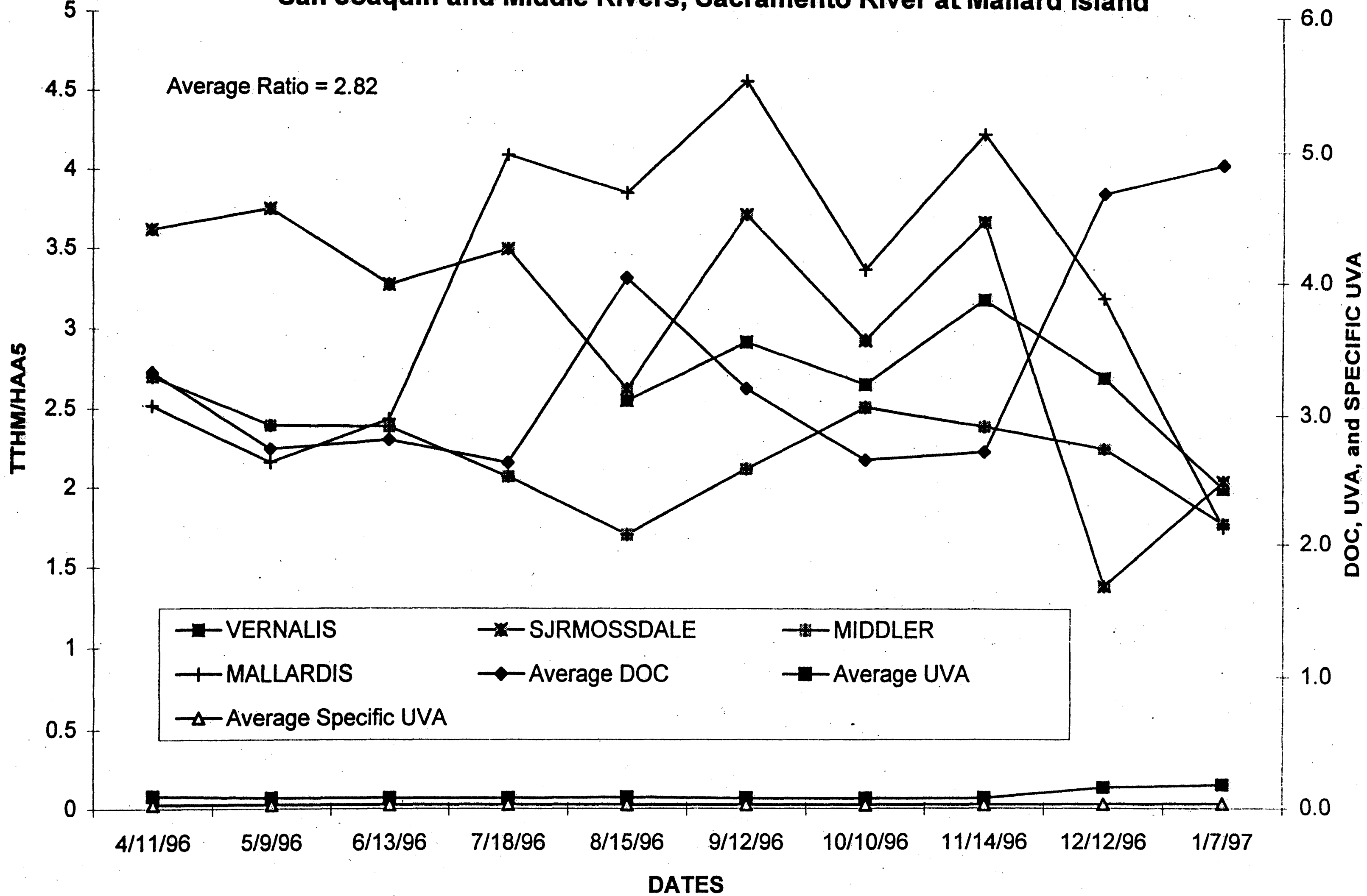


Figure 10-17. SDS TTHM/HAA5 Ratios (mol/mol) versus DOC, UVA, and Specific UVA San Joaquin and Middle Rivers, Sacramento River at Mallard Island



Chapter 11. Water Quality in the Delta and its Tributaries During the Floods of Winter 1996-97

Introduction

The high stream flows during the winter of 1996-97 had considerable influences on the water quality in and around the Delta. As shown on Figure 11-1, preliminary data indicate that the total Delta inflow for January 1997 was exceeded by only one other month in the past 76 years (March 1983). Furthermore, the inflow during March 1983 was only a few percent greater than January 1997.

Because of the availability of continuously recorded EC data, that parameter was selected as an indicator of the water quality conditions during high flow. Although some other water quality parameters may vary with flow in opposition to the variance of EC, there is some degree of correlation between EC and many of the other parameters, such as TDS, chloride, and bromide.

As shown on Figure 11-2, the EC and flow during December 1996 and January 1997 are presented for the two major Delta inflow stations as well as the outflow station. The flows used in that figure are as follows: (1) "Sacramento River at Freeport" plus "Yolo Bypass" for the Greenes Landing station, (2) "San Joaquin River near Vernalis" for the Vernalis station, and (3) "Delta Inflow" for the Mallard Island station. Because of the low concentrations in the Sacramento River, the EC variations at the Greenes Landing station are not as evident as at the other two stations. At all three stations, however, the EC values recorded during high flow were significantly less than during lower flows.

No EC data was obtained because of equipment malfunction at Greenes Landing from January 7-20, 1997. EC values were estimated from the Walnut Grove EC recorder.

Water Quality Sample Results

On January 6, 7, 8 and 9, 1997, water quality samples were collected from the American River, Sacramento River, San Joaquin River, Delta channels, and water intakes or diversion facilities. These samples were collected to get water quality information during the January 1997 flooding.

The analytical results for these samples are shown in Tables 11-1 through 11-4. Field measurements were taken at each of 13 sampling stations, and other water quality data were obtained through analytical work at DWR's Bryte Chemical Laboratory. In general, water quality at all sampling sites was good.

Figure 11-1. Ten Highest Values - Monthly Delta Inflow (October 1920 through January 1997)

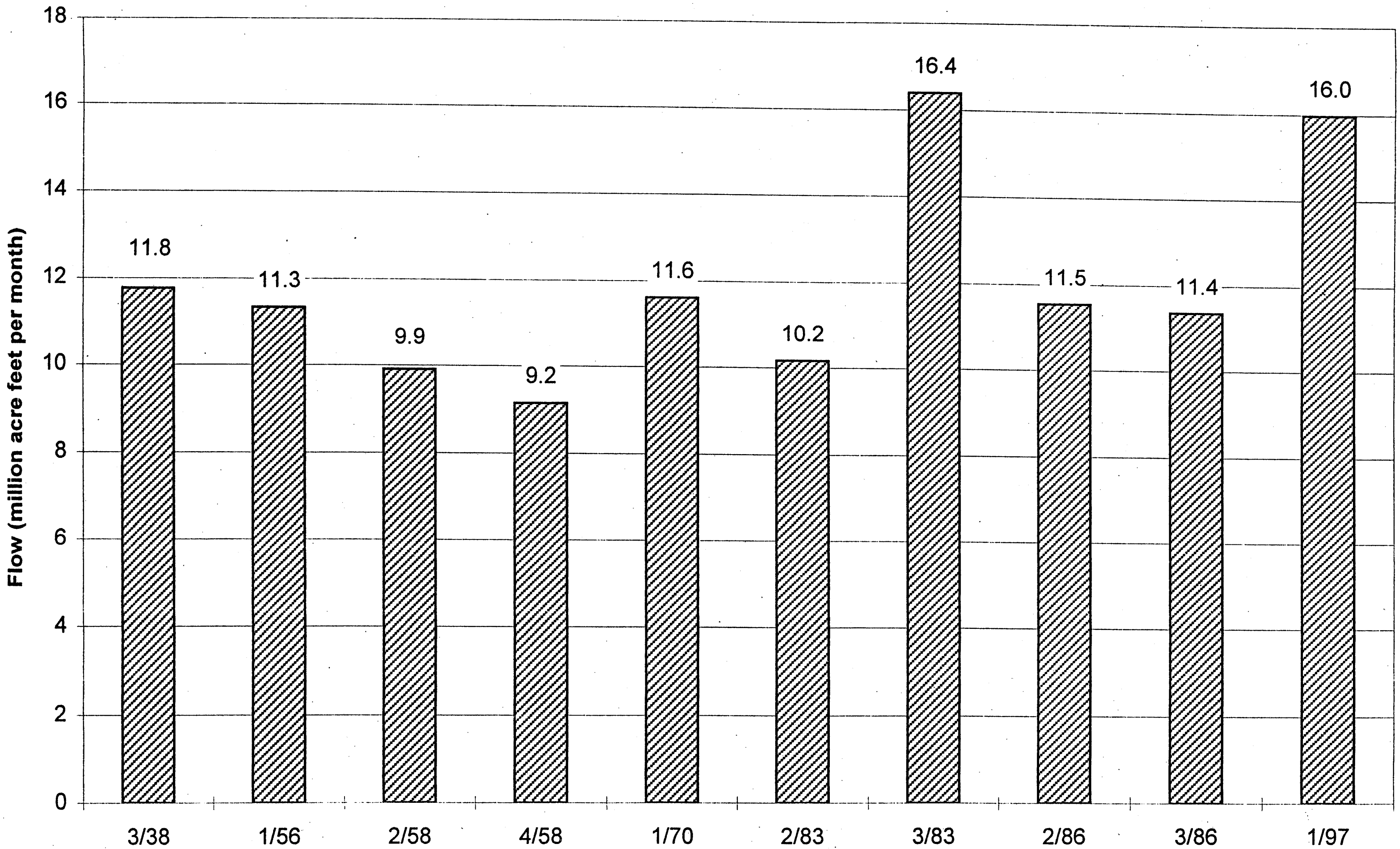


Figure 11-2. Flow versus Electrical Conductivity

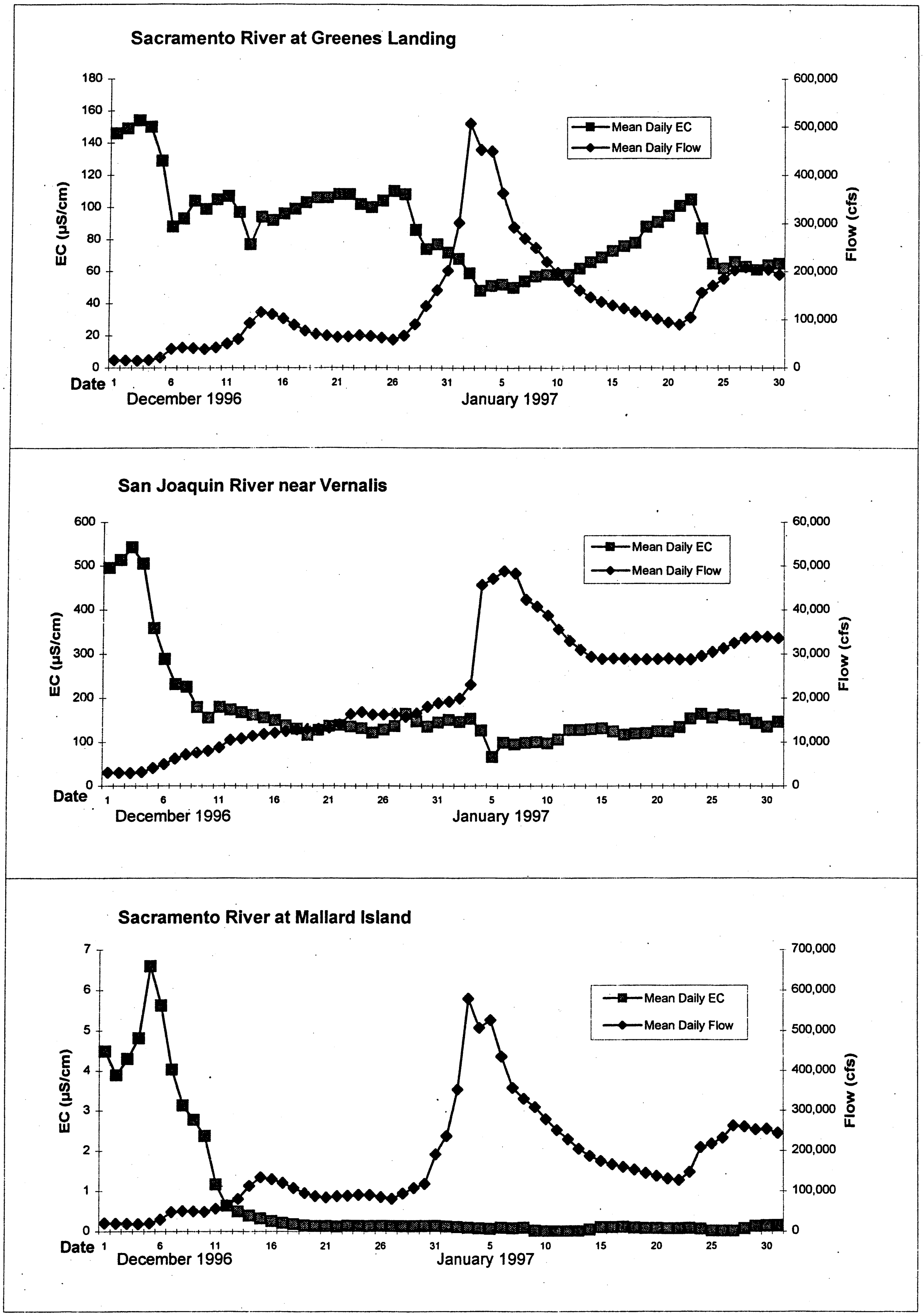


Table 11-1. WATER QUALITY DATA IN THE NORTH AND SOUTH DELTA

January 7-9, 1997

Water Quality Data in the North Delta
Sampling Date: 1/9/97

Sampling Station	Sampling Number	Sample Time (PST)
Sac. River at Greenes Landing	C962415	11:48
American River at Water Treatment Plant	C962416	12:55
Sacramento River at W. Sac Intake	C962417	13:50
Barker Slough P.P.	C962424	9:15
Sac. River at Mallard Island	C962425	10:50
Contra Costa P.P. #1	C962426	12:35

Water Quality Data in the South Delta
Sampling Date: 1/7/97

Sampling Station	Sampling Number	Sample Time (PST)
San Joaquin R. nr. Vernalis	C962455	12:00
San Joaquin R. @ Mossdale Bridge	C962451	10:45
DMC Intake at Lindemann Rd.	C962453	14:45
Banks Pumping Plant Headworks	C962454	14:08
Old River near Byron	C962444	10:25
Old River at Bacon Island	C962447	12:05
Middle River at Borden Hwy	C962445	9:50

Water Quality Data in the North Delta

Sampling Station	(µmhos/cm) E.C. (Field)	(NTU) Turbidity (Field)	(mg/L) DOC	(Abs/cm) UVA	(mg/L) Bromide	(MPN/100ml) *E. coli*	(mg/L) TDS	(mg/L) Magnesium	(mg/L) Sodium	(mg/L) Arsenic
Sac. River at Greenes Landing	67	158	2.4	0.068	<0.01	50.4	61	2	4	<0.001
American River at Water Treatment Plant	46	232	2	0.075	<0.01	32.4				
Sacramento River at W. Sac Intake	70	105	1.9	0.054	<0.01	28.8	53	3	3	<0.001
Barker Slough P.P.	96	98	11.2	0.4	<0.01	32.4	111	5	13	0.002
Sac. River at Mallard Island	151	95	4.9	0.213	0.03	78.2	106			
Contra Costa P.P. #1	497	7	6.6	0.248	0.15	6.4	242	13	58	0.002

Sampling Station	(mg/L) Alkalinity	(mg/L) Chloride	(mg/L) Sulfate	(mg/L) Nitrate	(mg/L) Boron	(mg/L) Diss. Hardness	(mg/L) Calcium	(mg/L) Potassium	(mg/L) NH3-N	(mg/L) Copper	(mg/L) Selenium
Sac. River at Greenes Landing	30	2	4	0.5	<0.1	23	6	0.9	0.03	0.006	<0.001
American River at Water Treatment Plant				0.4					<0.01		
Sacramento River at W. Sac Intake	31	2	2	0.4	<0.1	28	6	1.1	<0.01	0.005	<0.001
Barker Slough P.P.	52	7	7	0.9	0.1	38	7	2.6	0.05	0.008	<0.001
Sac. River at Mallard Island	40	12	14	3.3	<0.1				0.18		
Contra Costa P.P. #1	59	56	54	6.9	0.3	104	20	3	0.09	0.006	<0.001

Water Quality Data in the South Delta

Sampling Station	(µmhos/cm) E.C. (Field)	(NTU) Turbidity (Field)	(mg/L) DOC	(Abs/cm) UVA	(mg/L) Bromide	(MPN/100ml) *E. coli*	(mg/L) TDS	(mg/L) Magnesium	(mg/L) Sodium	(mg/L) Arsenic
San Joaquin R. nr. Vernalis	120	72	4.7	0.171	0.02	3440	92	3	10	
San Joaquin R. @ Mossdale Bridge	132	116	4.6	0.156	0.02	NA	80	4	10	0.002
DMC Intake at Lindemann Rd.	153	110	4.2	0.141	0.03	782	97	4	12	0.002
Banks Pumping Plant Headworks	.220	110	4.9	0.175	0.05	32.4	111	5	19	0.001
Old River near Byron	136	177	4.9	0.196	0.02	531	91			0.002
Old River at Bacon Island	160	130	4.2	0.179	0.03	344	113			
Middle River at Borden Hwy	122	179	5.2	0.176	0.04	560	106			

Sampling Station	(mg/L) Alkalinity	(mg/L) Chloride	(mg/L) Sulfate	(mg/L) Nitrate	(mg/L) Boron	(mg/L) Diss. Hardness	(mg/L) Calcium	(mg/L) Potassium	(mg/L) NH3-N	(mg/L) Copper	(mg/L) Selenium
San Joaquin R. nr. Vernalis	36	7	10	1.9	<0.1	32	8	2.1	0.1		
San Joaquin R. @ Mossdale Bridge	37	8	10	2	<0.1	39	9	2.4	0.2	<0.005	<0.001
DMC Intake at Lindemann Rd.	37	12	13	2.2	<0.1	39	9	2.1	0.14	<0.005	<0.001
Banks Pumping Plant Headworks	44	20	19	3.7	0.1	48	11	2.6	0.22	<0.005	<0.001
Old River near Byron	37	8	14	2.2	<0.1					<0.005	<0.001
Old River at Bacon Island	39	11	13	2.8	<0.1						
Middle River at Borden Hwy	39	16	5	3.2	<0.1						

Table 11-2. *Escherichia coli* Concentrations In Delta Channel Waters (MPN/100ml)

Station Location	Station Name	Station Number	Nov. 1996	Dec. 1996	Jan. 7-9, 1997
American River at Water Treatment Plant	AMERICAN	1	11.1	30.6	32.4
Sacramento River at W Sac. Intake	SACWSACINT	2	11.1	15	28.8
Sacramento River at Greenes Landing	GREENES	3	12.4	19.2	50.4
Sacramento River at Mallard Island	MALLARDIS	4	12.4	27.1	78.2
Contra Costa Pumping Plant #1	CONCOSPP01	5	11.1	13.7	6.4
Old River at Bacon Island	OLDRIVBACISL	6	9.9	22.2	344
Old River near Byron	STATION09	7	3.1	47.8	531
Middle River at Borden Highway	MIDDLER	8	8.7	364	560
San Joaquin River at Mossdale Bridge	SJRMOSSDALE	9	406	>2005	
San Joaquin River near Vernalis	VERNALIS	10	531	>2005	3440
DMC Intake at Lindemann Road	DMC	11	8.7	364	782
Banks Pumping Plant Headworks	BANKS	12	101.3	238	32.4
Barker Slough Pumping Plant at North Bay Aqueduct	BARKERNOBAY	13	88.5	254	32.4

Table 11-3. Pathogenic Organisms

Station Location	Station Name		Sample Date	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Total Coliforms MPN/100 mL	Fecal Coliforms MPN/100mL	*Escherichia coli* MPN/100mL
San Joaquin River near Vernalis	VERNALIS	10	1/8/97	69	9.7	6.8	11,000	2,400	1,300
Barker Slough P.P.	BARKERNOBAY	13	1/6/97	114	10.5	7.3	13,000	130	130
Mokelumne River at New Hope (Wimpy's Marina)	MOKELUMNE	14	1/8/97	45	10.7	7.1	1,100	240	240
Shag Slough at Liberty Island Bridge	SHAG	15	1/8/97	318	9.7	7.5	340	130	130
Sacramento River at Alamar Marina	ALAMAR	16	1/8/97	88	8.6	6.9	1,100	80	40
Sacramento River at Miller Park	MILLER	17	1/8/97	235			3,000	300	240
Clifton Court at West Canal Intake near Radal Gates	CLIFTONWCAN	22	1/6/97	219	12	8.1	28,000	22,000	6,000

Table 11-4. DWR Modified Trihalomethane Formation Potential and Simulated Distribution System Testing for Trihalomethanes and Haloacetic Acids of Delta Channel Waters

			SDS Trihalomethanes (µg/L)					SDS Haloacetic Acids (ug/L)								(mg/L)	(mg/L)	
Sampling Site	**Sample Number**	**Sampling Date**	**CHCl3**	**BDCM**	**DBCM**	**CHBr3**	**TTHM**	**BAA**	**BCAA**	**CAA**	**DBAA**	**DCAA**	**TCAA**	**HAA6**	**HAA5**	**I Dose**	**Residual**	**pH**
American River at W.T.P.	C962416	1/9/97	66	1	<1	<1	67	<1	1	<1	<1	25	25	51	50	2.0	0.52	8.25
Sacramento River at W. Sac. Intake	C962417	1/9/97	63	2	<1	<1	65	<1	<1	<1	<1	24	25	49	49	3.0	1.48	8.25
Sacramento River at Greenes Landing	C962415	1/9/97	68	2	<1	<1	70	<1	1	<1	<1	24	22	47	46	3.0	0.99	8.26
Sacramento River at Mallard Island	C962425	1/9/97	160	18	<1	<1	178	<1	5	<1	<1	55	64	124	119	7.0	0.51	8.27
Contra Costa Pumping Plant #1	C962426	1/9/97	220	72	16	<1	308	<1	19	<1	2	58	69	148	129	9.0	0.76	8.25
Old River at Bacon Island	C962447	1/9/97	180	18	<1	<1	198	<1	5	<1	<1	54	66	125	120	7.0	1.0	8.27
Old River near Byron	C962444	1/9/97	170	15	<1	<1	185	<1	4	<1	<1	55	75	134	130	7.0	1.08	8.3
Middle River at Borden Highway	C962445	1/9/97	170	21	1	<1	192	<1	6	<1	<1	55	72	133	127	7.0	0.56	8.29
San Joaquin River at Mossdale Bridge	C962451	1/9/97	180	15	<1	<1	195	<1	4	<1	<1	50	63	117	113	7.0	0.86	8.28
San Joaquin River near Vernalis	C962455	1/9/97	190	12	<1	<1	202	<1	3	<1	<1	51	70	124	121	7.0	1.28	8.27
DMC Intake at Lindemann Road	C962453	1/9/97	160	17	<1	<1	177	<1	5	<1	<1	50	63	118	113	6.0	0.52	8.26
Banks Pumping Plant Headworks	C962454	1/9/97	170	27	2	<1	199	<1	8	<1	<1	53	65	126	118	7.0	0.56	8.28
Barker Slough P.P. at North Bay Aqueduct	C962424	1/9/97	470	14	<1	<1	484	<1	3	12	<1	150	200	365	362	15.0	0.97	8.26

			DWR Trihalomethanes Formation Potential (µg					(mg/L)	(mg/L)	(mg/L)	Abs/cm	UVA/DOC
Sampling Site	**Sample Number**	**Sampling Date**	**CHCl3**	**BDCM**	**DBCM**	**CHBr3**	**TTHM**	**DOC**	**Br**	**NH3-N**	**UVA**	
American River at W.T.P.	C962416	1/9/97	180	<10	<10	<10	180	2	<0.01	<0.01	0.075	0.0375
Sacramento River at W. Sac. Intake	C962417	1/9/97	170	<10	<10	<10	170	1.9	<0.01	<0.01	0.054	0.0284
Sacramento River at Greenes Landing	C962415	1/9/97	230	<10	<10	<10	230	2.4	<0.01	0.03	0.068	0.0283
Sacramento River at Mallard Island	C962425	1/9/97	400	23	<10	<10	423	4.9	0.03	0.18	0.213	0.0435
Contra Costa Pumping Plant #1	C962426	1/9/97	520	100	12	<10	632	6.6	0.15	0.09	0.248	0.0376
Old River at Bacon Island	C962447	1/7/97	440	23	<10	<10	463	4.2	0.03		0.179	0.0426
Old River near Byron	C962444	1/7/97	430	16	<10	<10	446	4.9	0.02		0.196	0.0400
Middle River at Borden Highway	C962445	1/7/97	430	29	<10	<10	459	5.2	0.04		0.176	0.0338
San Joaquin River at Mossdale Bridge	C962451	1/7/97	440	18	<10	<10	458	4.6	0.02	0.2	0.156	0.0339
San Joaquin River near Vernalis	C962455	1/9/97	410	13	<10	<10	423	4.7	0.02	0.1	0.171	0.0364
DMC Intake at Lindemann Road	C962453	1/7/97	390	20	<10	<10	410	4.2	0.03	0.14	0.141	0.0336
Banks Pumping Plant Headworks	C962454	1/7/97	400	31	<10	<10	431	4.9	0.05	0.22	0.175	0.0357
Barker Slough P.P. at North Bay Aqueduct	C962424	1/9/97	920	16	<10	<10	936	11.2	<0.01	0.05	0.4	0.0357

Legend

CHCl3 = Chloroform
BDCM = Bromodichloromethane
DBCM = Dibromochloromethane
CHBr3 = Bromoform
TTHM = Total Trihalomethanes

BAA = Bromoacetic Acid
BCAA = Bromochloroacetic Acid
CAA = Chloroacetic Acid
DBAA = Dibromoacetic Acid
DCAA = Dichloroacetic Acid
TCAA = Trichloroacetic Acid
THAA = Total Haloacetic Acids

Microbiological Contaminants

On January 7 and 9, 1997, sampling for *E. coli* was collected under the MWQI Program. The highest *E. coli* concentration was measured in the San Joaquin River (3,440 MPN/100 ml). However, *E. coli* concentration in the San Joaquin River was already at similarly high levels in December 1996. The January 1997 storm event *E. coli* concentrations are summarized in Table 11-2 and illustrated in Figure 11-3.

On January 6 and 8, 1997, samples were collected from selected sites for pathogenic organisms as part of the CPMP. As shown on Figure 11-4, *Giardia* cysts were detected in the San Joaquin River, Barker Slough, Sacramento River at Alamar Marina, Sacramento River at Miller Park, and Clifton Court West Canal Intake. *Cryptosporidium* oocysts were detected only in the San Joaquin River, Barker Slough, and Shag Slough.

EC, TDS and Metals

As expected with high Delta outflows, EC and TDS generally decreased to the low end of normal expected values for all sites. As shown on Figures 11-5 and 11-6, significant reductions in EC and TDS concentrations were observed at Mallard Island. The low EC and TDS concentrations at this sampling site indicate that there was no salt water intrusion during high Delta outflow. As shown on Figure 11-7, bromide concentrations at all sites (except Contra Costa Pumping Plant) were at or below expected typical low values, which is another indication of no salt water intrusion. Copper, arsenic and selenium concentrations were at very low levels as shown in Table 11-1.

DOC and DWR THMFP

DWR THMFP and DOC concentrations are shown on Figures 11-8 and 11-9. THMFP and DOC data are presented in Table 11-4. At all sites, THMFP and DOC concentrations were within the typical range for each station.

Figure 11-3. *Escherichia coli* Concentrations at DWR Sampling Stations

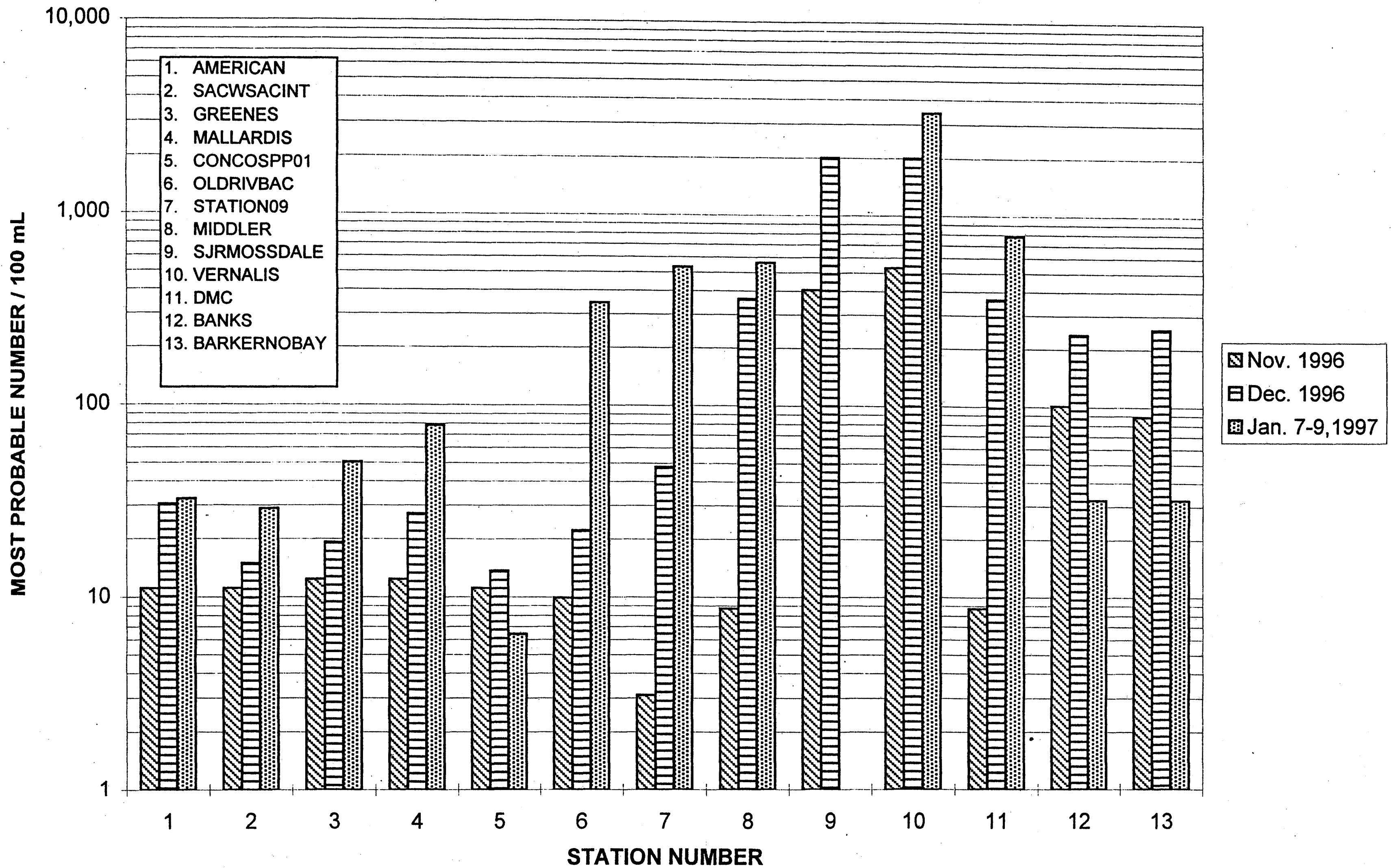
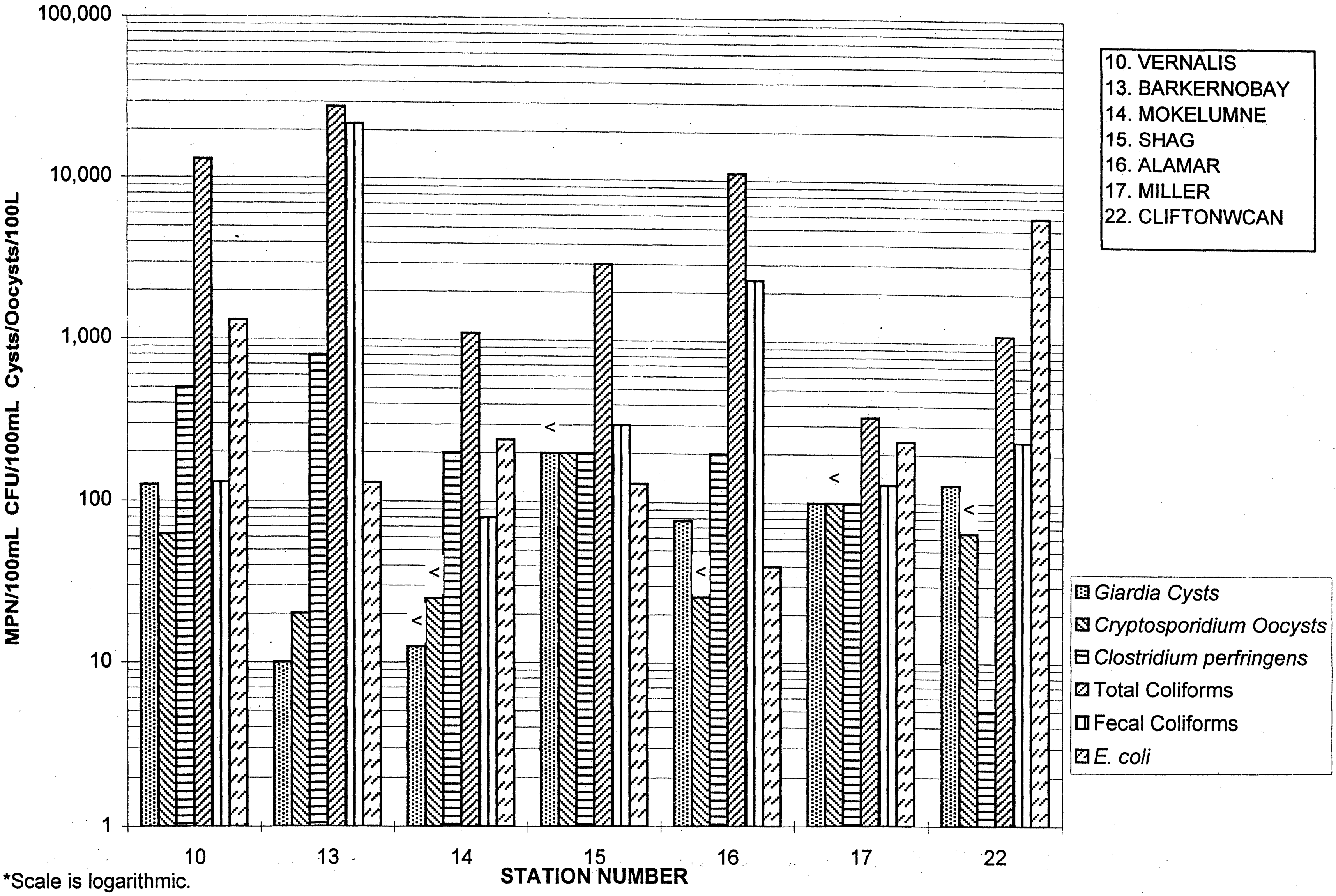


Figure 11-4. Pathogenic Organisms - January 6 - 8, 1997



*Scale is logarithmic.

Figure 11-5. Electrical Conductivity Levels in Delta Channel Waters

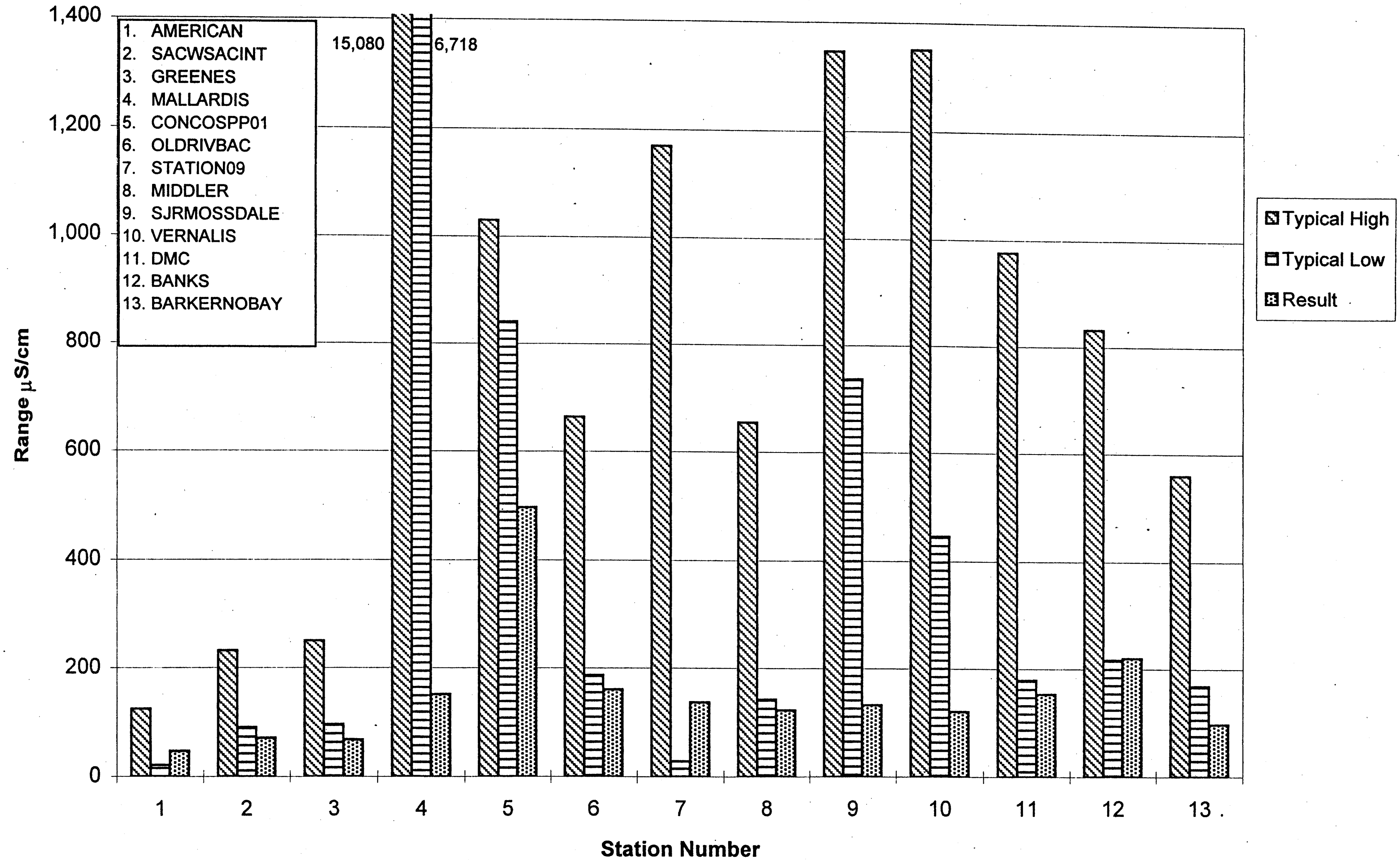
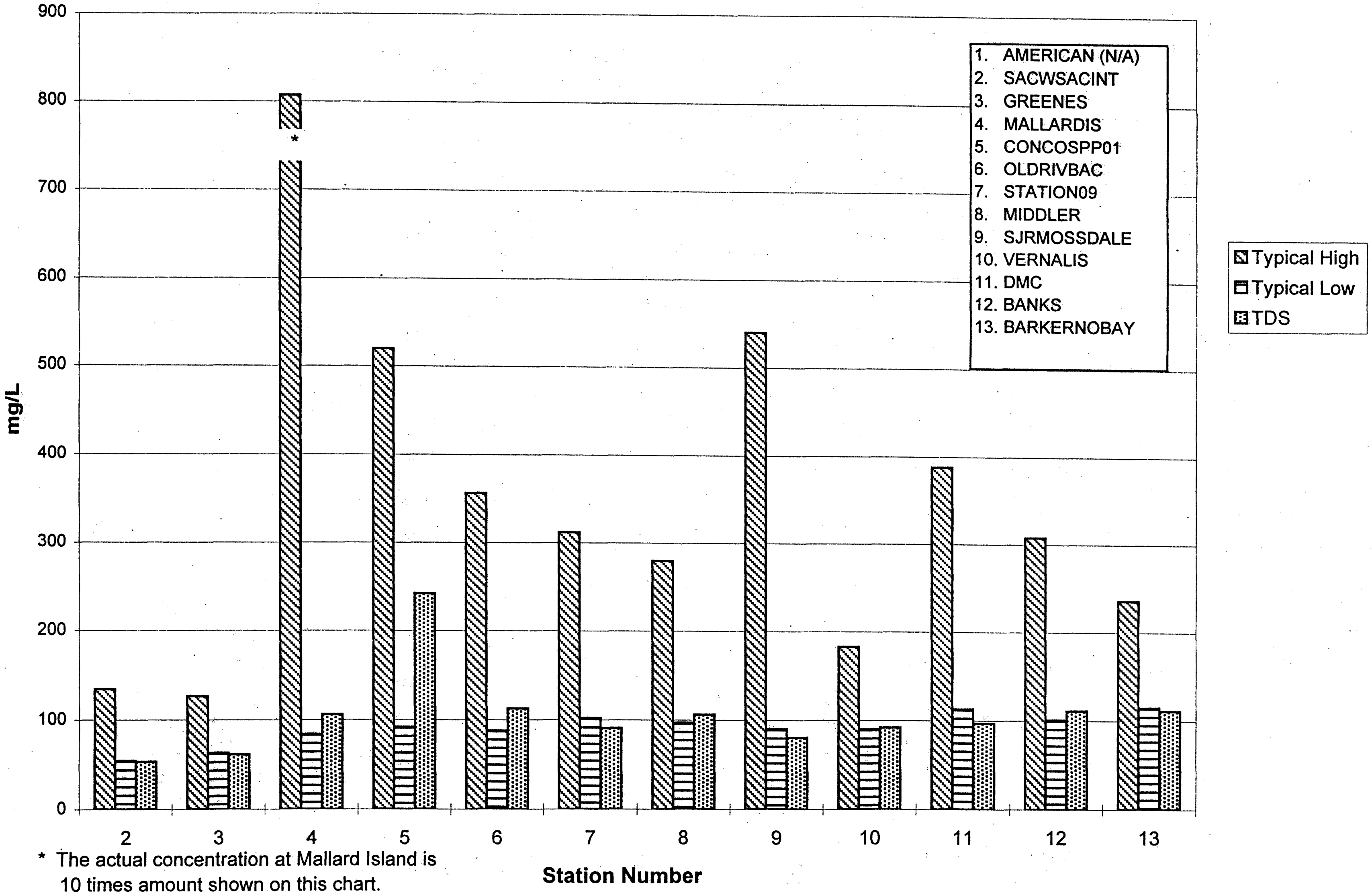


Figure 11-6. Total Dissolved Solids in Delta Channel Waters



* The actual concentration at Mallard Island is 10 times amount shown on this chart.

Figure 11-7. Bromide Levels in Delta Channel Waters

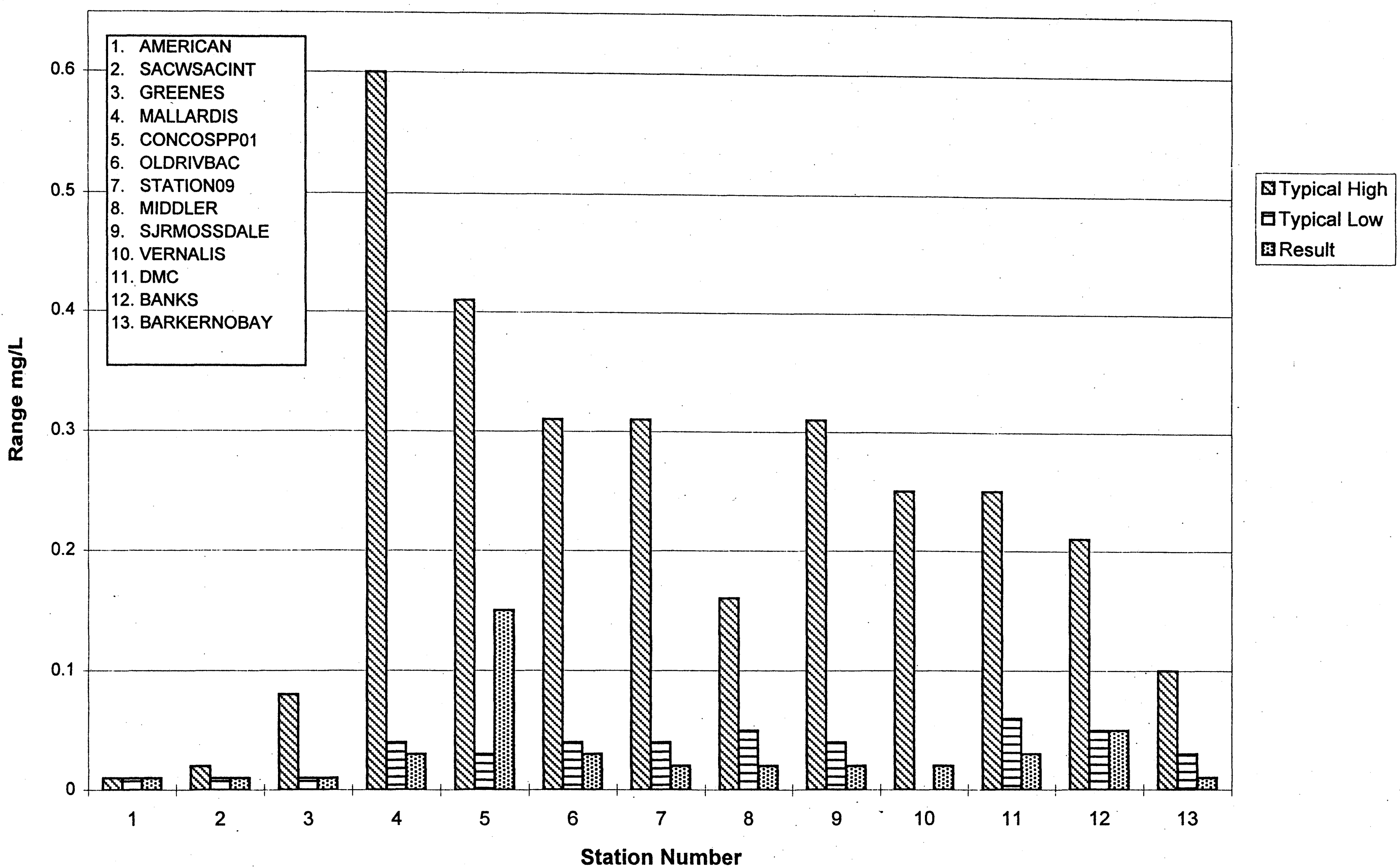


Figure 11-8. Total Trihalomethane Formation Potential in Delta Channel Waters

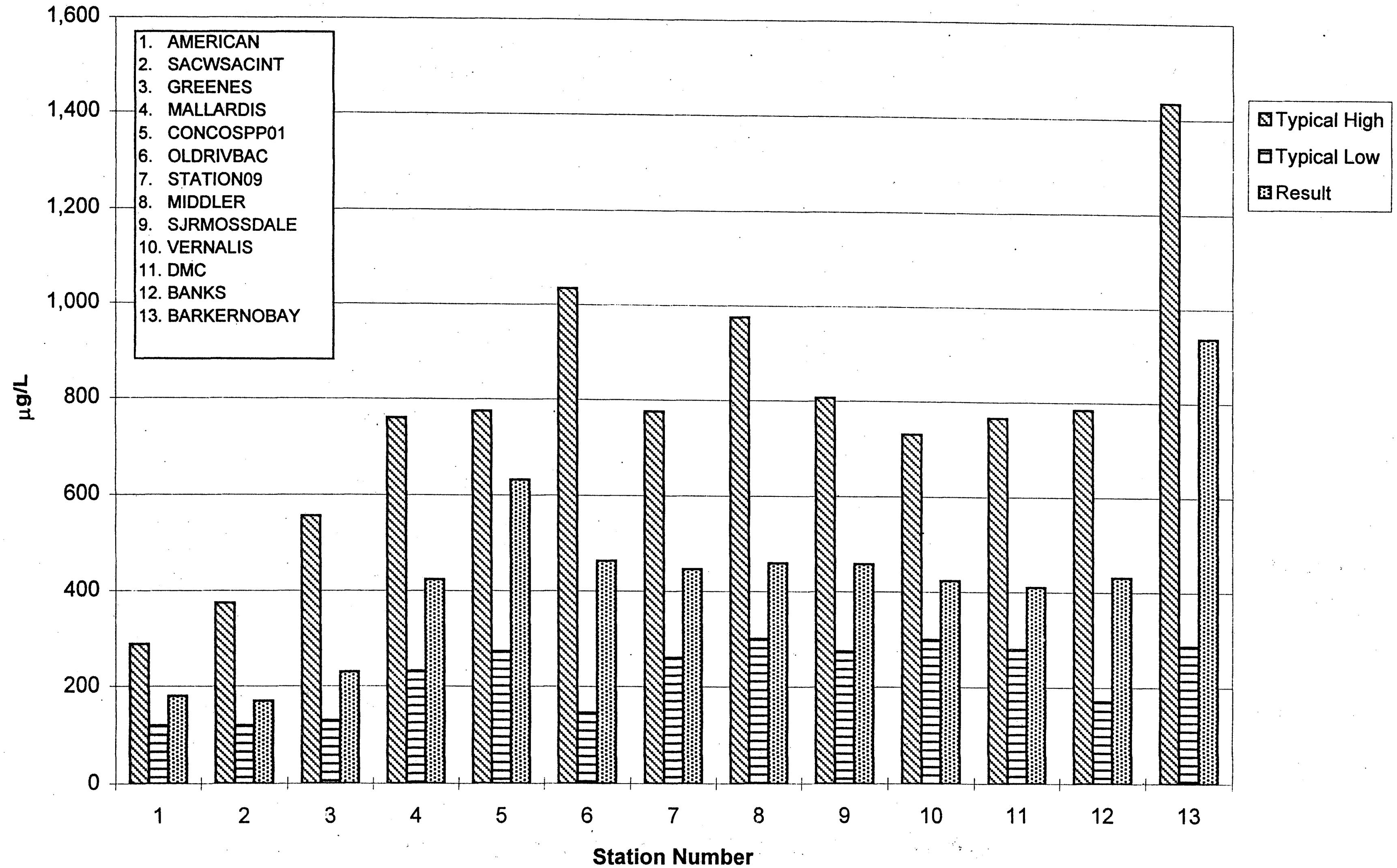
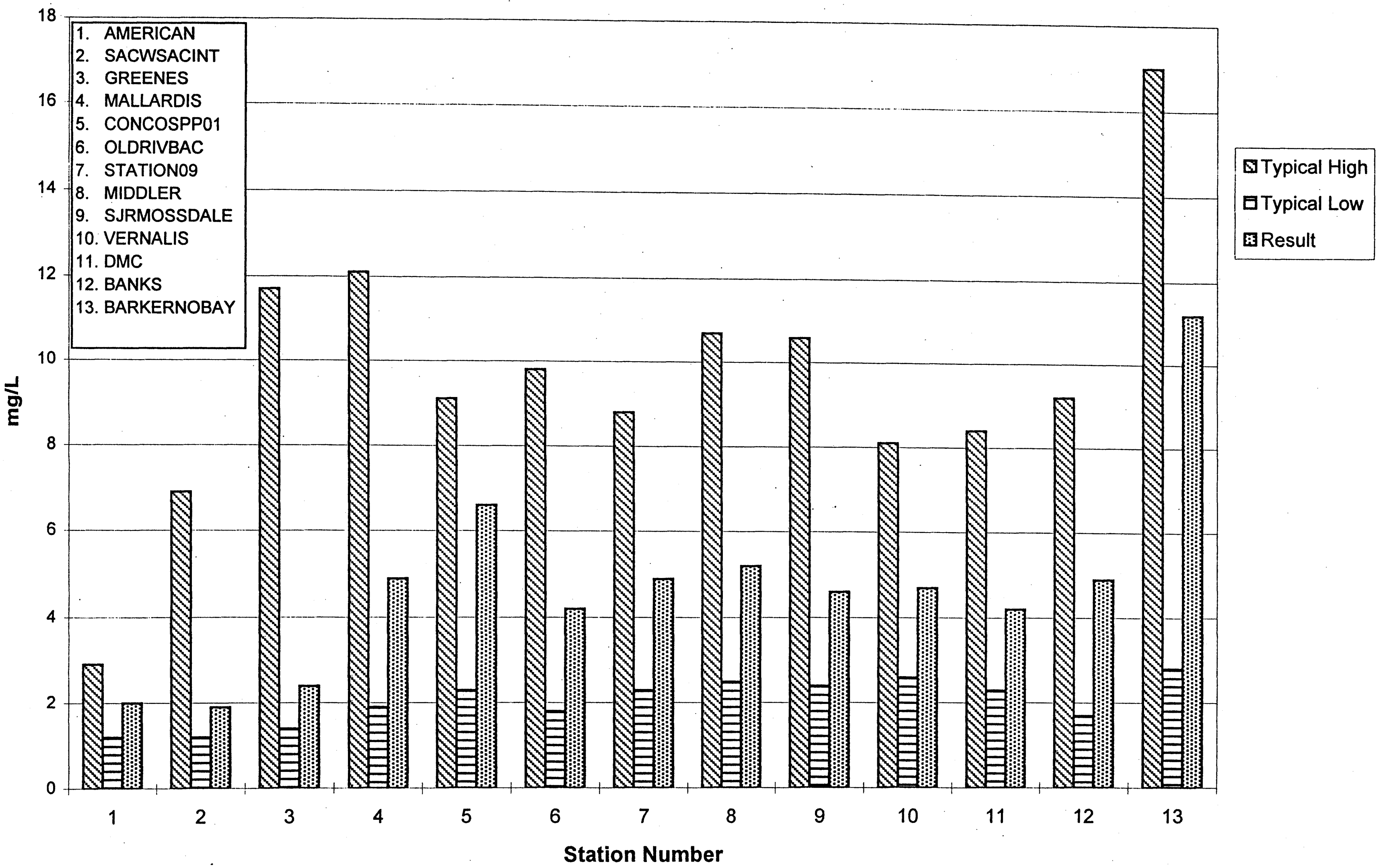


Figure 11-9. Dissolved Organic Carbon in Delta Channel Waters



Chapter 12. Municipal Water Quality Investigations Monitoring Data

Introduction

The MWQI Program has monitored the water quality of major channels and agricultural drains in the Sacramento-San Joaquin Delta since 1983 for many drinking water parameters. Water quality samples for as many as 70 Delta stations have been analyzed for DBP precursors, minerals, nutrients, ultraviolet absorbance, minor elements and other parameters. Sufficient data to evaluate regional trends were obtained at many stations. As a result, during the 1995 program year, the number of monitoring stations was reduced. During the 1996 water year and first quarter of the 1997 water year, 13 major channel stations and 6 agricultural drains were monitored (see Figure 12-1). These stations were selected because they represented the major intakes and diversions of the Delta and were representative of the major regions within the Delta.

The Delta monitoring data are evaluated in this chapter. The hydrology of the 1996 water year and first quarter of the 1997 water year is compared to trends seen in the water quality. Seasonal average electrical conductivities and monthly average TDS concentrations were calculated for all monitoring stations. DOC, ultraviolet absorbance and THMFP data for the entire time period are given. Specific absorbance, used to determine the fraction of organic matter likely to form DBP, was calculated.

<u>Grab Sample Data</u>

The MWQI schedule for collecting grab sample data is given in Table 12-1. Grab samples were collected monthly. The grab samples were collected within as short time, usually a four-day period. In this way, a synoptic view of the Delta for a particular chemical constituent was obtained.

<u>Autosampler Data</u>

In order to examine fluctuations in DBP precursors more frequently, autosamplers were used at several different stations in the Delta (see Table 12-2). Autosamplers were located at Sacramento River at Greenes Landing, Barker Slough Pumping Plant, Twitchell Island agricultural drain, Old River at Bacon Island and Banks Pumping Plant. The autosampler at the Sacramento River at Greenes Landing was removed at the end of the 1996 water year, and replaced with manual weekly sampling. The autosamplers were programmed to collect samples every 52 hours,

Figure 12-1
MWQI Monitoring Stations

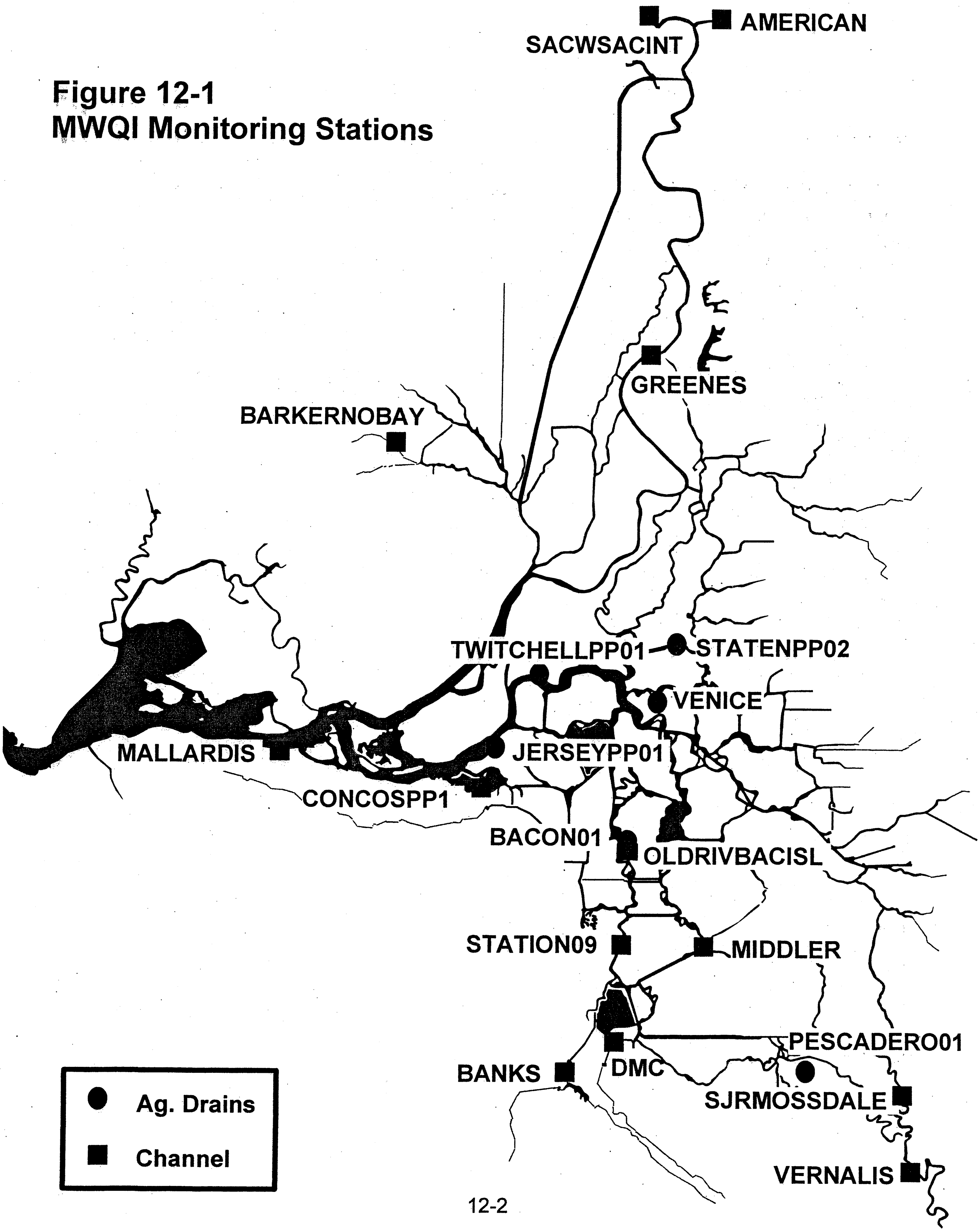


Table 12-1. Delta Monitoring (Grab Samples)

Sampling Run	Station	Analyses
North Delta Day One	Venice Ag. Drain	UVA, DOC, THMFP
	Staten Island Ag. Drain	UVA, DOC, THMFP
	Sac. River @ Greenes Landing	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	American River @ W.T.P. Intake	Bromide, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Sac. River @ West Sac. Intake	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
North Delta Day Two	Barker Slough P.P.	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Sac. River @ Mallard Island	Minerals, Turbidity, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Contra Costa P.P. No. 1	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Jersey Island Ag. Drain	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP
	Twitchell Island Ag. Drain	UVA, DOC, THMFP
South Delta Day One	Old River near Byron Tract	Minerals, Turbidity, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Middle River @ Borden Hwy.	Minerals, Turbidity, Bromide, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Bacon Island Ag. Drain	UVA, DOC, THMFP
	Old River @ Bacon Island	Minerals, Turbidity, Bromide, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
South Delta Day Two	San Joaquin River @ Mossdale	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Pescadero Tract Ag. Drain	UVA, DOC, THMFP
	DMC Intake @ Lindemann Rd.	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	Delta P.P. Headworks	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia
	San Joaquin River near Vernalis	Minerals, Turbidity, As, Cu, Se, UVA, DOC, THMFP, SDS for THMs and HAAs, Ammonia

Table 12-2. Delta Monitoring (Autosampler Samples)

Sampling Run	Station	Analyses
Autosampler Day One	Twitchell Island Ag. Drain	UVA, DOC, THMFP*
	Sac. River @ Greenes	UVA, DOC, THMFP*
	Barker Slough Pumping Plant	UVA, DOC, THMFP*
Autosampler Day Two	Banks Pumping Plant	UVA, DOC, THMFP*
	Old River @ Bacon Island	UVA, DOC, THMFP*

*Three samples are collected per week for each station. THMFP analysis is only performed on the third sample collected.

so that three samples were collected a week.[1] $UVA_{254\,nm}$ and DOC analyses were performed on all the samples. The third sample collected each week was also analyzed for THMFP.

<u>SDS for THMs and HAAs Data</u>

During the 1996 water year, SDS testing for THMs and HAAs was conducted in addition to the DWR-modified THMFP analysis on samples from the thirteen channel monitoring stations. The SDS data were analyzed to provide information on more realistic DBP levels which may be produced by using Delta waters as source water.

<u>Future Sampling</u>

Proposed changes in the Delta monitoring for the 1997 water year include the possible substitution of reactivity-based THMFP for the DWR-modified THMFP test. Depending upon the results of a feasibility Study, a DOC autoanalyzer may be placed at Banks Pumping Plant to obtain near real-time DOC data at this major Delta output station. The use of autosamplers will likely be discontinued for regular Delta monitoring. Instead, autosamplers may be used to provide information for selected MWQI special studies.

Hydrology

Water year 1996 (October 1, 1995 - September 30, 1996) was classified as a wet year. From preliminary data, the Sacramento River Index was 22.2 million-acre feet. This is greater than the 50-year average (1941-1990) Sacramento River Index of 18.4 MAF which is classified as above normal (DWR, Bulletin 160-93, October 1994). The Sacramento River Index is the sum of unimpaired runoff from the Sacramento River at Bend Bridge, Feather River inflow to Oroville, Yuba River at Smartville and American River inflow to Folsom. From the first quarter of the 1997 water year (October 1996-December 1996), it appears that the 1997 water year will be classified as "wet" (DWR, Bulletin 120-97, Report 3, April 1997).[2]

[1]The samples were collected and stored in polyethylene bottles in the autosampler for up to one week. In all cases, the samples were kept cool and dark. One of the autosamplers was a refrigerated autosampler, in which case, the samples were refrigerated.

[2] As of the May 1, 1997 forecast, the 1997 water year was still classified as "wet". Personal Communication: Maurice Roos, Chief Hydrologist.

Delta inflow, net Delta outflow index and SWP/CVP export pumping rates from October 1, 1995 to December 31, 1996 are shown in Figures 12-2 through 12-4. These data were compiled by Kate Le (Environmental Services Office) who compiled daily flow data obtained from DWR's O&M Monitoring and Compliance Branch. Delta inflow is defined as the sum of Sacramento River, San Joaquin River, eastside streams and Yolo Bypass flows. Net Delta outflow is a calculated value representing the water that flows through the Delta past Chipps Island to San Francisco Bay. For water year 1996, inflows to the Delta were approximately 32.2 MAF. The first quarter of the 1997 water year added another 7.0 MAF to the total Delta inflow. For comparison, the Delta inflow for the first quarter of 1996 was 4.1 MAF. Therefore, the first quarter of 1997 was twice as wet as the first quarter of 1996.

The net Delta outflow averaged about 36,000 cfs/day for water year 1996 and peaked in February 1996 at about 216,000 cfs/day. For the first quarter of the 1997 water year, the statistics were similar with average Delta outflow at 30,000 cfs/day and a peak in December 1996 of about 219,000 cfs/day. In general, outflow was highest during February through April 1996.

Average export rates were 3,600 cfs/day for both SWP and CVP for water year 1996. For the first quarter of water year 1997, the average export rate for SWP was 5,000 cfs/day and for CVP was 4,000 cfs/day. The high pumping in December 1996 was due to record inflows and precipitation in northern California.

EC

EC, or the measure of a solution's conductance of an electrical current, is an indicator of the salinity of water. EC is a relatively simple and inexpensive parameter to monitor. Salinity in the Delta is increased by seawater intrusion, evaporation and concentration of salts in agricultural drainage and other waters, and from nonpoint source runoff.

<u>Channel Stations</u>

EC values for the 1996 water year and first quarter of the 1997 water year were calculated and plotted in box and whisker plots. The box and whisker plots show the distribution of the data. The median value is indicated by the small central box, three quarters of the data fall within the larger box and the maximum and minimum values are the opposite endpoints outside the boxes. Figure 12-5 shows EC values for channel stations in the Delta and Figure 12-6 shows EC values for selected channel stations in the South Delta. The American River at the Water Treatment Plant intake and the Sacramento River at both the West Sacramento intake and at Greenes Landing had the lowest median EC values of the channel stations (56, 132 and 132 mS/cm, respectively) (see Figure 12-5). EC values were highest at the Sacramento River at

Figure 12-2. Delta Inflow and Net Delta Outflow
for Water Year 1996 and First Quarter of Water Year 1997

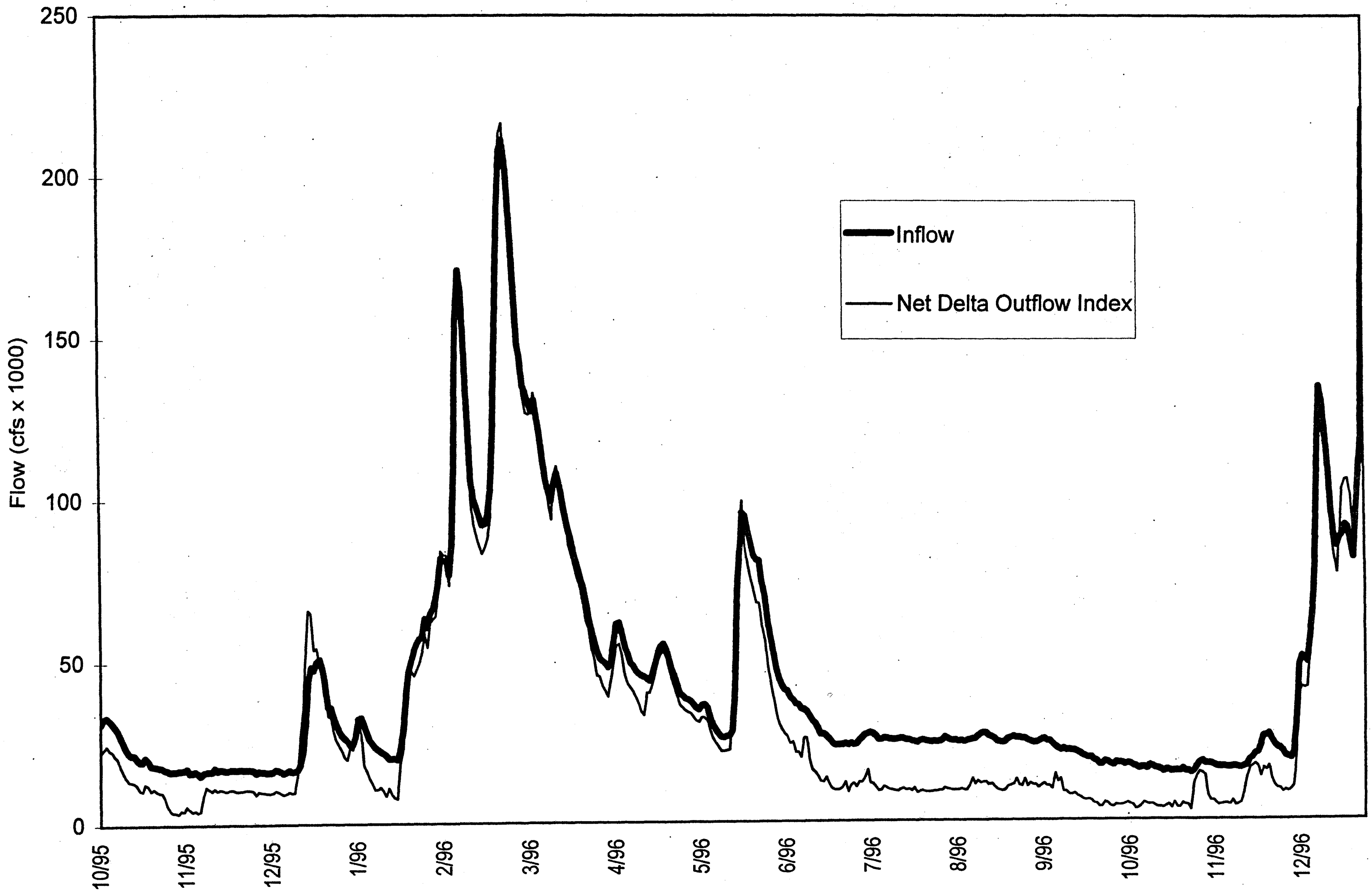


Figure 12-3. State Water Project Export Pumping

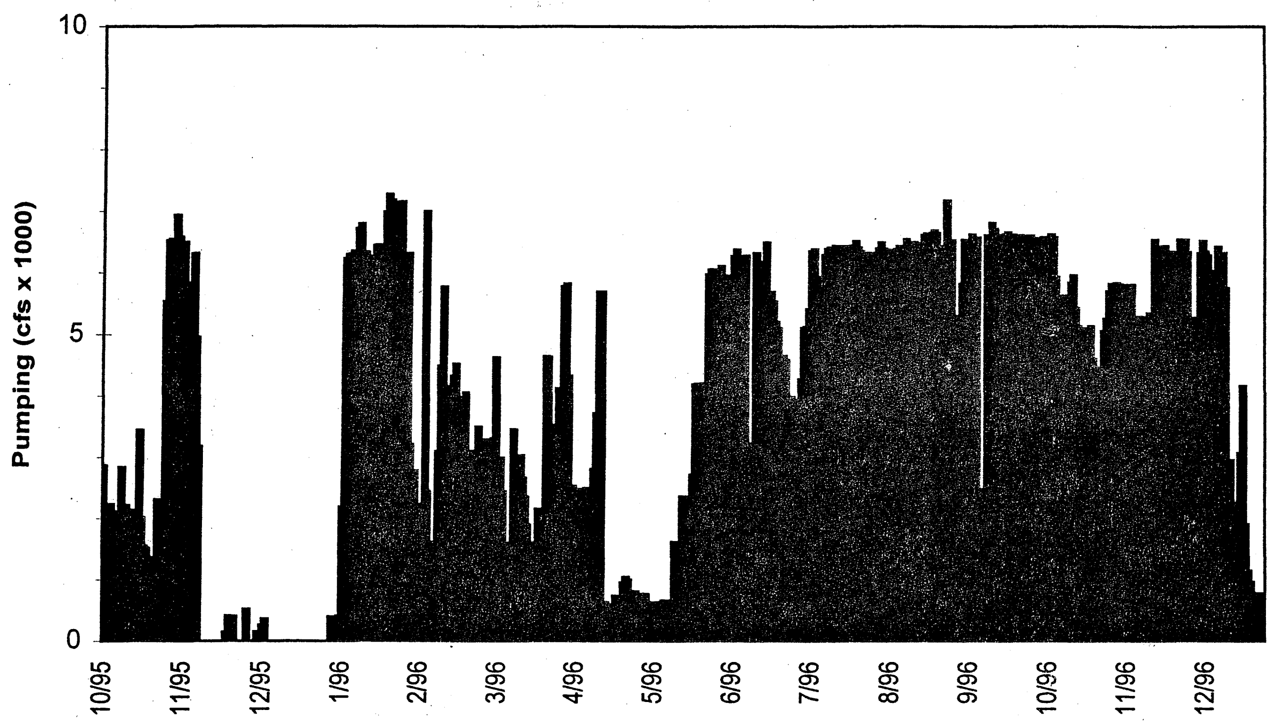
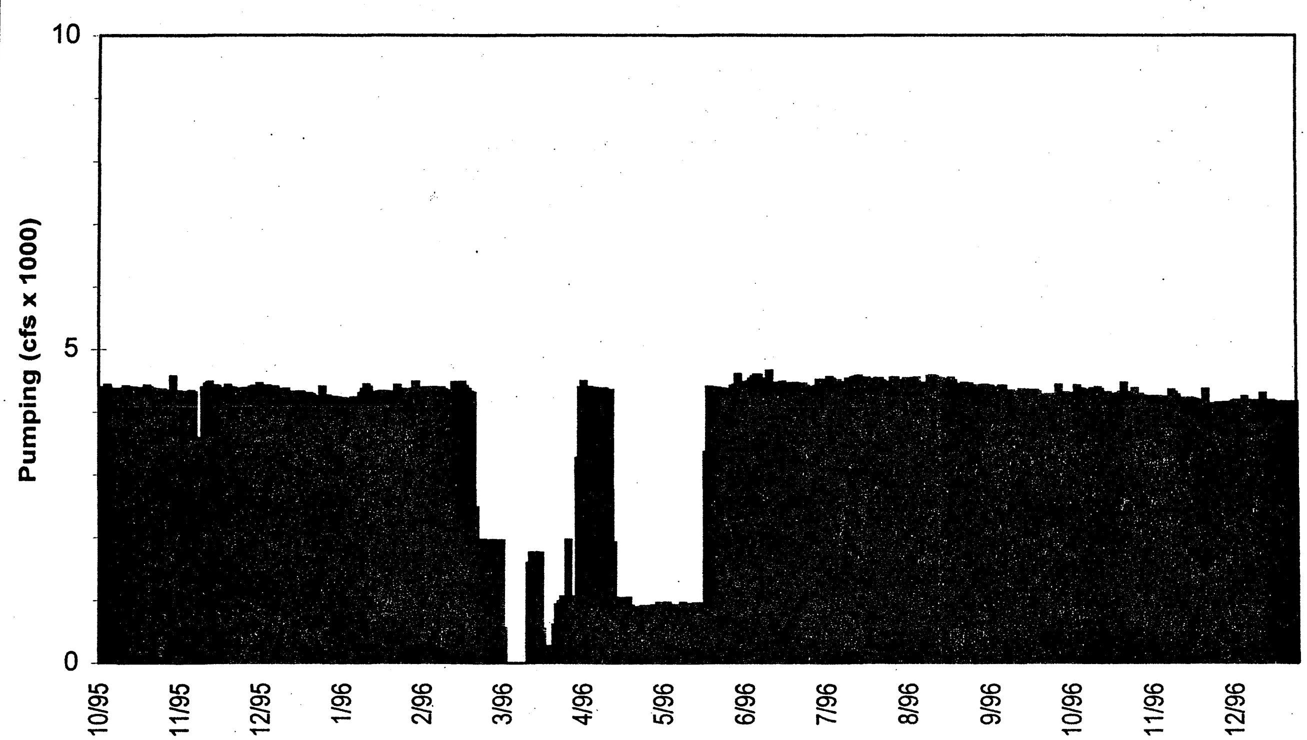


Figure 12-4 Central Valley Project Export Pumping



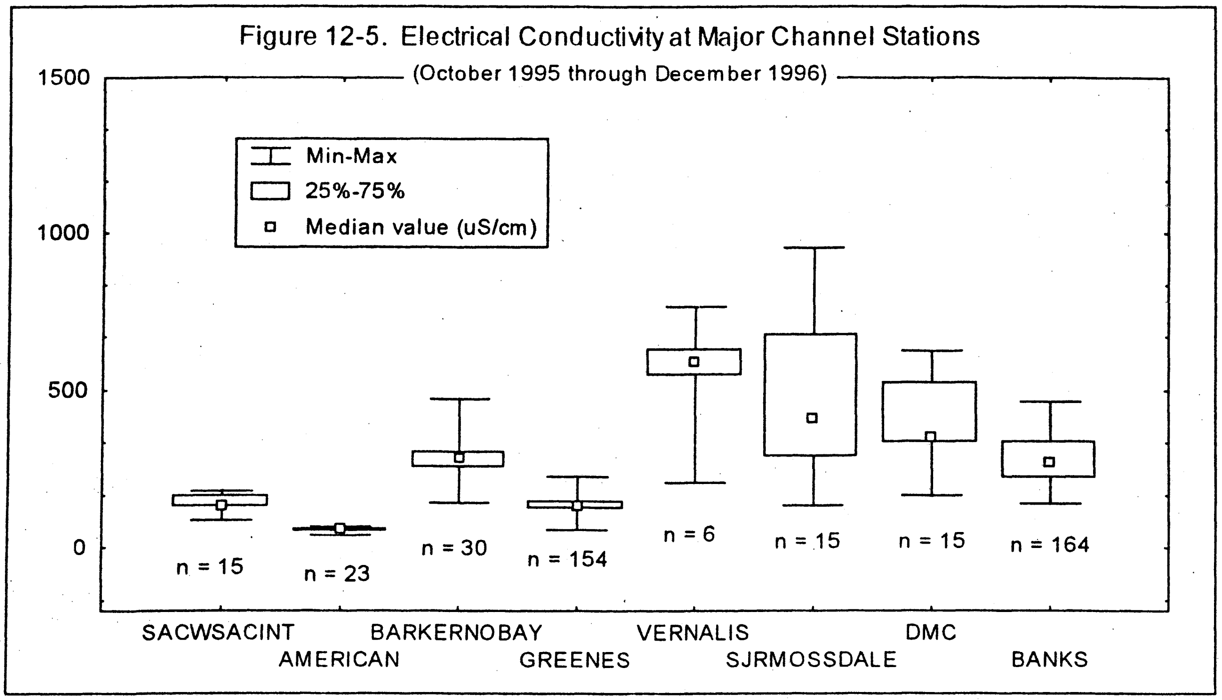


Figure 12-5. Electrical Conductivity at Major Channel Stations
(October 1995 through December 1996)
1500
1000
500
0
Min-Max
25%-75%
Median value (uS/cm)
n = 15
n = 23
n = 30
n = 154
n = 6
n = 15
n = 15
n = 164
SACWSACINT
AMERICAN
BARKERNOBAY
GREENES
VERNALIS
SJRMOSSDALE
DMC
BANKS

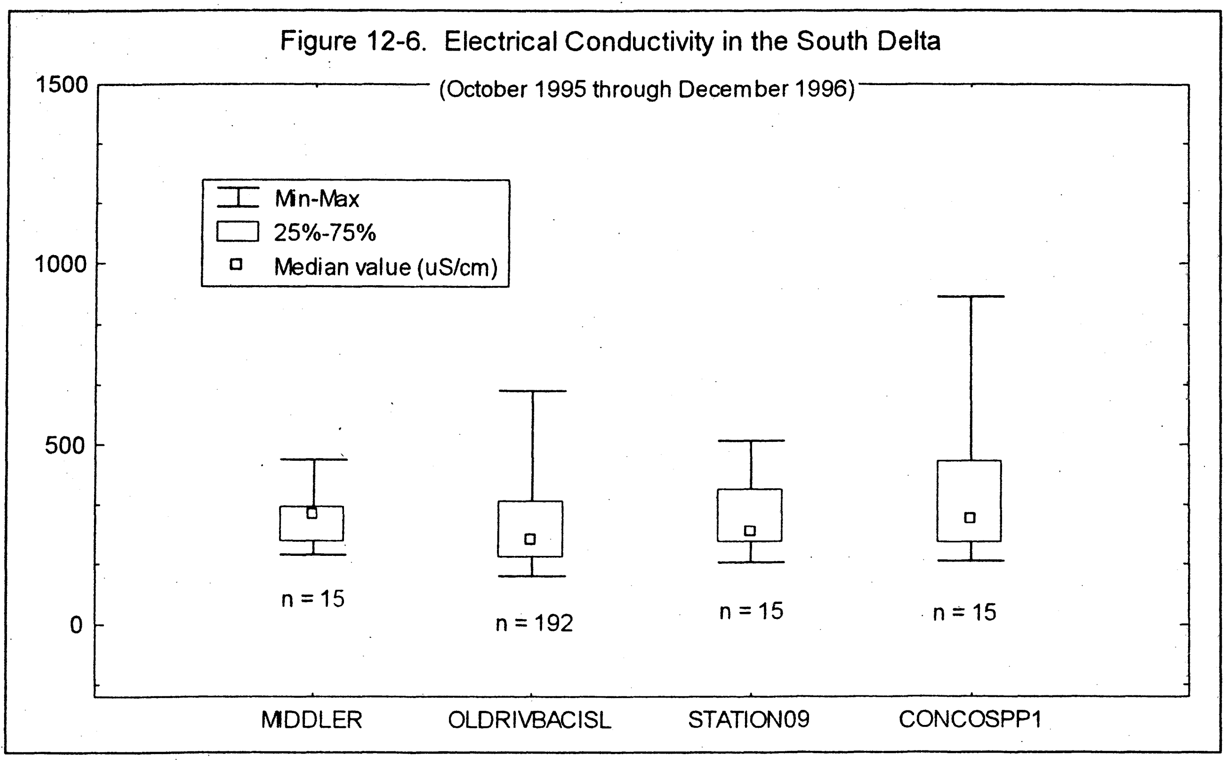


Figure 12-6. Electrical Conductivity in the South Delta
(October 1995 through December 1996)
1500
1000
500
0
Min-Max
25%-75%
Median value (uS/cm)
n = 15
n = 192
n = 15
n = 15
MIDDLER
OLDRIVBACISL
STATION09
CONCOSPP1

Mallard Island (Note that Mallard Island data were not plotted on Figure 12-5 because these data are greater than the scale of the plot. Median EC value for Mallard Island = 1,150 mS/cm, maximum value = 8,170 mS/cm, minimum value = 166 mS/cm). Mallard Island, located at the far western end of the Delta, has EC values that are highly variable due to tides and Delta outflow. The San Joaquin River stations at Vernalis and Mossdale had the highest EC values of the Delta intake stations (586 and 410 mS/cm, respectively). Intermediate EC values were seen at the Barker Slough Pumping Plant (281 mS/cm), the Delta-Mendota Canal intake (347 mS/cm) and Banks Pumping Plant (271 mS/cm).

Seasonal fluctuations in EC are indicated in Table 12-3. During fall 1995 and summer 1996 when outflow was low, the Sacramento River station at the West Sacramento intake and Greenes Landing stations had higher EC values (150 mS/cm) than at other times of the year. The San Joaquin River stations Mossdale and Vernalis had higher EC values in the summer (500-600 mS/cm) than at other times of the year. In contrast, the South Delta stations, Middle River, Old River at Byron Tract, Old River near Bacon Island, Contra Costa Pumping Plant and Banks Pumping Plant had decreased EC concentrations during the low Delta inflow summer 1996 (approximately 200 mS/cm). Lower ECs at South Delta stations in part reflect removal of salts when water is applied to agricultural lands in summer. Lower EC at Banks Pumping Plant and other South Delta stations during the summer is consistent with past MWQI and other monitoring data.

Agricultural Drains

The agricultural drain EC values (Table 12-4) were several times the concentration of channel EC values. For example, Pescadero Tract (near the San Joaquin River) had EC values 1,391 to 2,345 mS/cm, more than three times the EC values in the San Joaquin River at Mossdale (450-527 mS/cm).

EC values in the agricultural drains were without exception lowest in the summer of 1996. This pattern is opposite the EC values seen in channel stations. Low summer EC values in agricultural drains have been seen historically in MWQI data. These low EC values are probably a result of the precipitation of salts onto the soil from applied water during the hot summer. Evaporation and transpiration by plants are highest in the Delta during the summer. Therefore, salt concentrations in agricultural drainage are lower in the summer and higher during the winter when the salts are redissolved and leached from the fields.

Regional Patterns

Figure 12-7 shows median EC values for 1996 water year and first quarter of the 1997 water year for agricultural drains in the Delta. The highest overall EC values were seen in Jersey Island and Pescadero Tract drainage, in the western and southern

Table 12-3. EC Values at Channel Stations

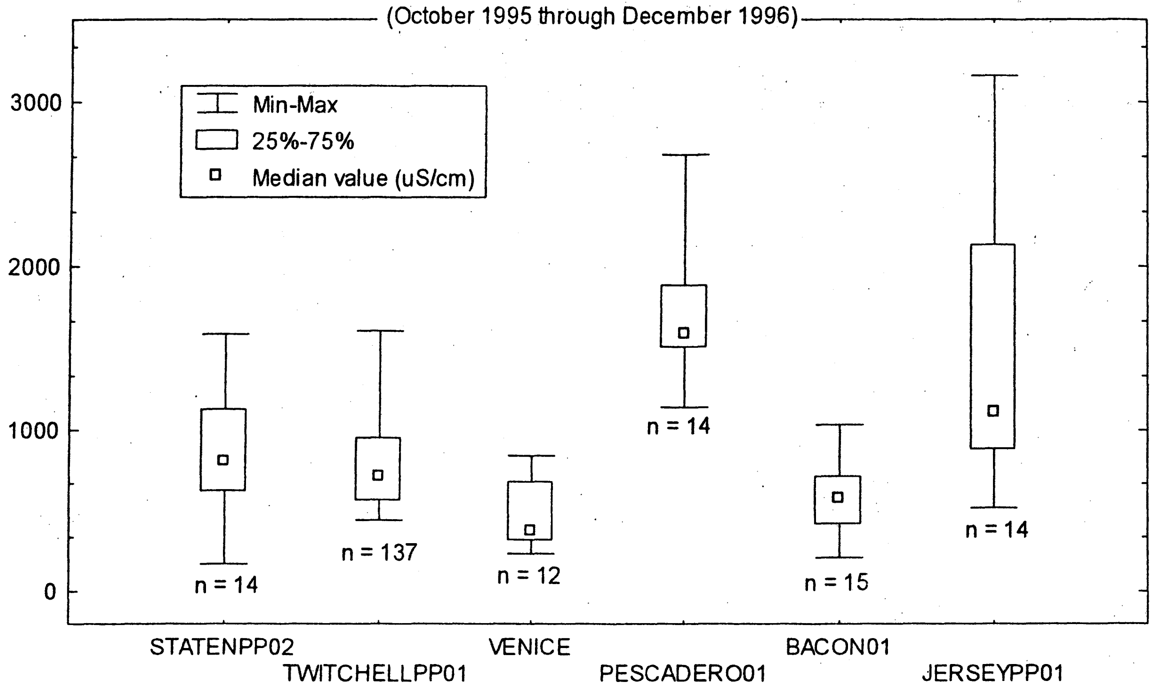
Station	Season of High Value	Corresponding Value (mS/cm)	Season of Low Value	Corresponding Value (mS/cm)
SACWSACINT	Fall 1995	159	Spring 1996	124
AMERICAN	Winter 1996	60	Fall 1995	44
BARKERNOBAY	Spring 1996	371	Summer 1996	260
GREENES	Summer 1996	149	Spring 1996	119
VERNALIS	Summer 1996	644	Fall 1996	459
SJRMOSSDALE	Summer 1996	527	Spring 1996	450
MIDDLER	Winter 1996	360	Summer 1996	223
OLDRIVBACISL	Fall 1996	456	Fall 1995	184
STATION09	Fall 1996	389	Summer 1996	207
CONCOSPP1	Winter 1996	533	Fall 1995	198
MALLARDIS	Fall 1996	5,704	Spring 1996	200
DMC	Summer 1996	552	Fall 1996	303
BANKS	Winter 1996	334	Summer 1996	227

Table 12-4. EC Values in Agricultural Drains

Station	Season of High Value	Corresponding Value (mS/cm)	Season of Low Value	Corresponding Value (mS/cm)
STATENPP02	Fall 1995	1,168	Summer 1996	343
TWITCHELLPP01	Winter 1996	1,256	Summer 1996	509
VENICE	Spring 1996	760	Summer 1996	233
PESCADERO01	Winter 1996	2,345	Summer 1996	1,391
BACON01	Winter 1996	1,014	Summer 1996	285
JERSEYPP01	Winter 1996	2,873	Fall 1995	770

All EC values are quarterly averages.

Figure 12-7. Electrical Conductivity at Agricultural Drains



Delta, respectively. Intermediate EC values were seen at Twitchell Island in the western Delta, Bacon Island in the central Delta and Staten Island in the northern Delta. The lowest EC values in the Delta were seen at Venice Island in the northern Delta. Historical MWQI data has shown the highest EC in agricultural drainage in the western Delta with the lowest EC values in the northern Delta.

EC Related to Flow

Figures 12-8 and 12-9 show EC related to flow in the Sacramento River at Greenes Landing and the San Joaquin River near Vernalis, respectively. There were slight fluctuations of EC with respect to flow in the Sacramento River at Greenes Landing. In the San Joaquin River (data limited to July-December 96), EC decreased as flow increased in the months of November and December. At Banks Pumping Plant, there were peaks in EC in the months of February to April 1996 and in November to December 1996 (see Figure 12-10). Although there is not a direct relationship between discharge and EC at Banks Pumping Plant, during June through October 1996, when discharge at Banks increased, EC values were lower.

TDS

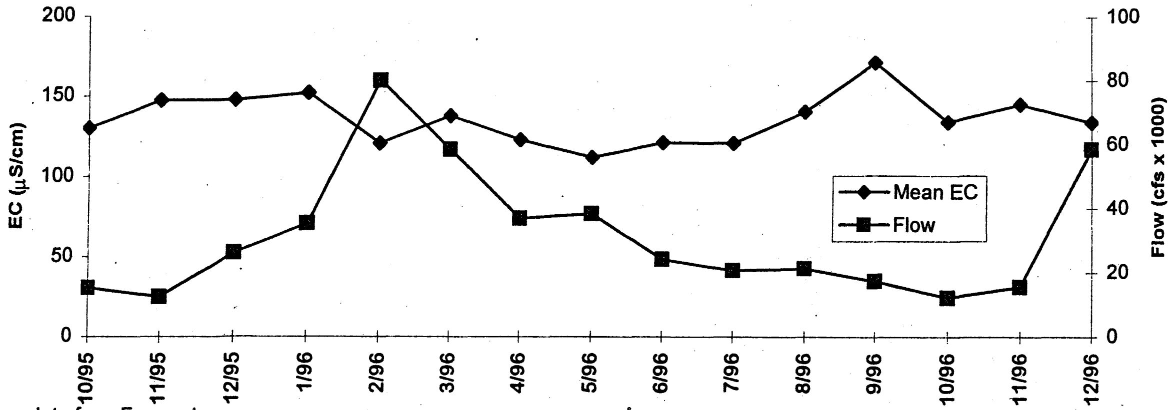
TDS is determined by filtering a given volume of water through a 0.45 micrometer filter, evaporating it at a defined temperature and weighing the residue. Whereas an EC concentration only indicates dissolved particles that are electrically active, the TDS measurement also includes substances that may affect the color and taste of water but are not electrically active. High TDS levels are associated with an objectionable taste in water and USEPA has a secondary MCL for TDS of 500 mg/L for finished water. Raw source water from the Delta was sampled and analyzed for TDS. Data were collected monthly from twelve channels stations and two agricultural drains.

Channel Stations

As with EC, the Delta inflow stations, Sacramento and American River stations, had the lowest average TDS values (88 and 92 mg/L), San Joaquin River stations had high TDS values (319 and 321 mg/L) and Banks Pumping Plant had intermediate TDS values (180 mg/L) of the channel stations (see Figure 12-11). The Sacramento River at Mallard Island TDS values were much greater than other channel station data (probably because of seawater influx) and were not plotted on Figure 12-11. The average TDS value for Mallard Island was 1984 mg/L.

Seasonal fluctuations in TDS were similar to the season fluctuations of EC. Peaks in TDS were seen during fall 1995 and summer 1996 when outflow was low. These coincide with the greatest intrusion of seawater.

Figure 12-8. EC and Flow at Sacramento River at Greenes Landing*
(October 1995 through December 1996)



*Flow data from Freeport

Figure 12-9. EC and Flow at San Joaquin River at Vernalis
(July 1996 through December 1996)

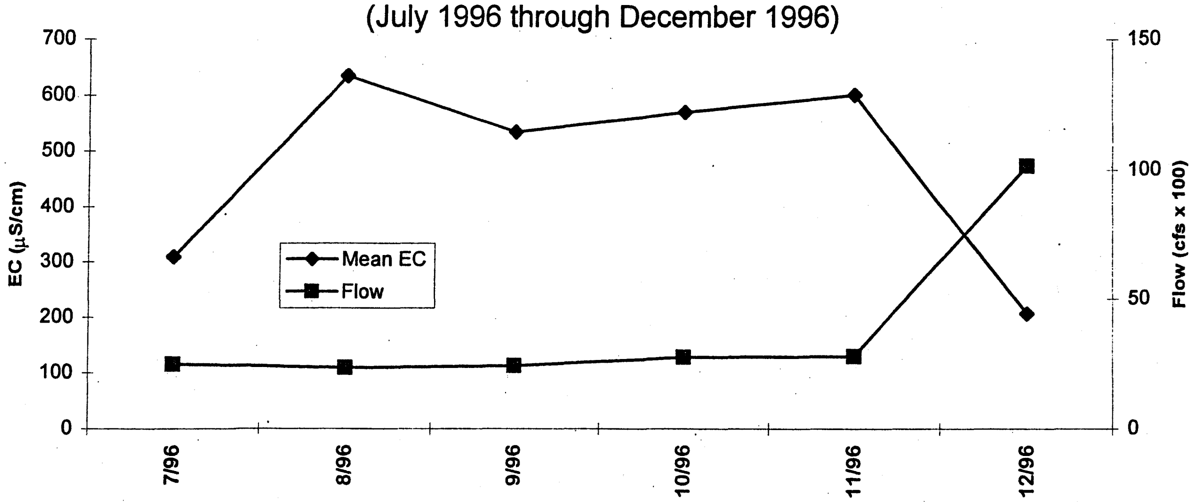


Figure 12-10. EC and Flow at Banks Pumping Plant
(October 1995 through December 1996)

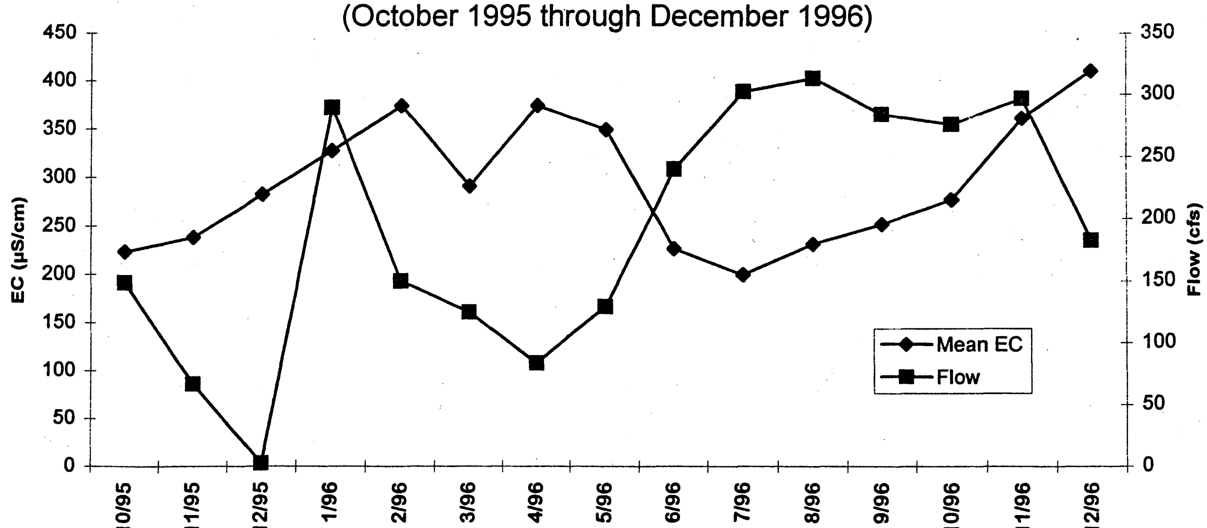
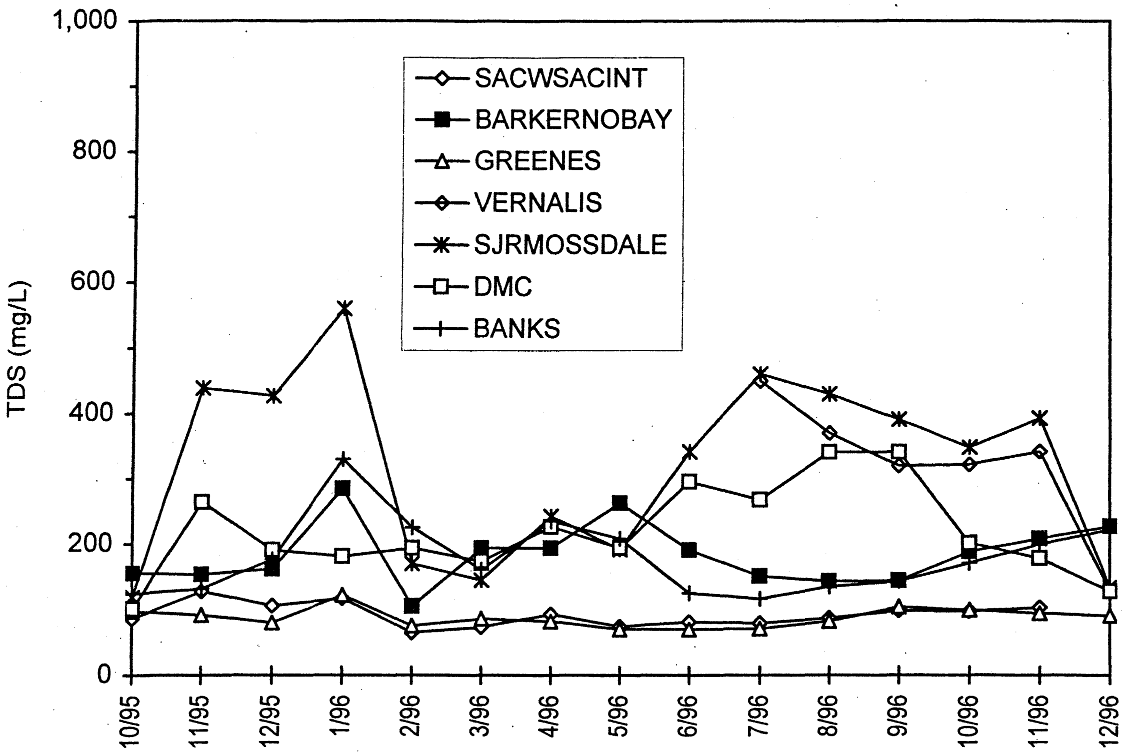


Figure 12-11. Monthly TDS at Major Channel Stations



South Delta Area

The South Delta stations, Middle River, Old River at Byron Tract, Old River near Bacon Island, Contra Costa Pumping Plant and Banks Pumping Plant had peaks in TDS concentrations during February to March 1996 (see Figure 12-12). Average TDS concentrations for these South Delta stations ranged from 150 mg/L for Old River near Bacon Island to 216 mg/L at the Contra Costa Pumping Plant. This trend, similar to that seen with EC, probably represents flushing salts from agricultural lands in the winter.

Agricultural Drains

The TDS concentrations for the two agricultural drains, Twitchell Island and Jersey Island, peaked during January through March 1996, representing flushing of salts from the agricultural lands (see Figure 12-13). Jersey Island TDS concentrations (average 913 mg/L) were greater than Twitchell Island TDS concentrations (average 492 mg/L), probably because the greater mineral character of Jersey Island soil compared to Twitchell Island soil.

DOC

Organic carbon contributes to the formation of trihalomethanes during drinking water treatment. Therefore, DOC is a rough indicator of the potential for THM formation. DOC is the fraction of carbon measured after filtration with a 0.45 micron filter. Under the proposed D/DBP Rule, USEPA proposed a Stage 1 treatment level of 2.0 mg/L for TOC (Krasner and others, 1996). Note that the MWQI Program monitors for DOC instead of TOC because DOC is more representative of the organic carbon that is delivered to the water treatment system.

Channel Stations

Figure 12-14 shows median DOC values over the year and a quarter period at major channel stations in the Delta. The highest DOC values were observed at the Barker Slough Pumping Plant (median 4.0 mg/L) and at the San Joaquin River near Vernalis and Mossdale (medians 3.2 and 3.1 mg/L, respectively). The lowest DOC values were observed in the Sacramento River and the American River (medians 1.6-1.8 mg/L). The median DOC concentration at Banks Pumping Plant was 3.0 mg/L, but concentrations varied from a minimum of 1.7 mg/L to a maximum of 6.8 mg/L. Most of these concentrations are greater than the USEPA proposed Stage 1 treatment level of 2.0 mg/L TOC for finished drinking water.

Figure 12-15 shows the variation of DOC concentrations with time. Peaks of DOC are seen in January through March 1996 and November through December 1996. These correspond to periods of high Delta inflow. The elevated DOC concentrations correspond to greater nonpoint source runoff during winter.

Figure 12-12. Monthly TDS at South Delta Stations

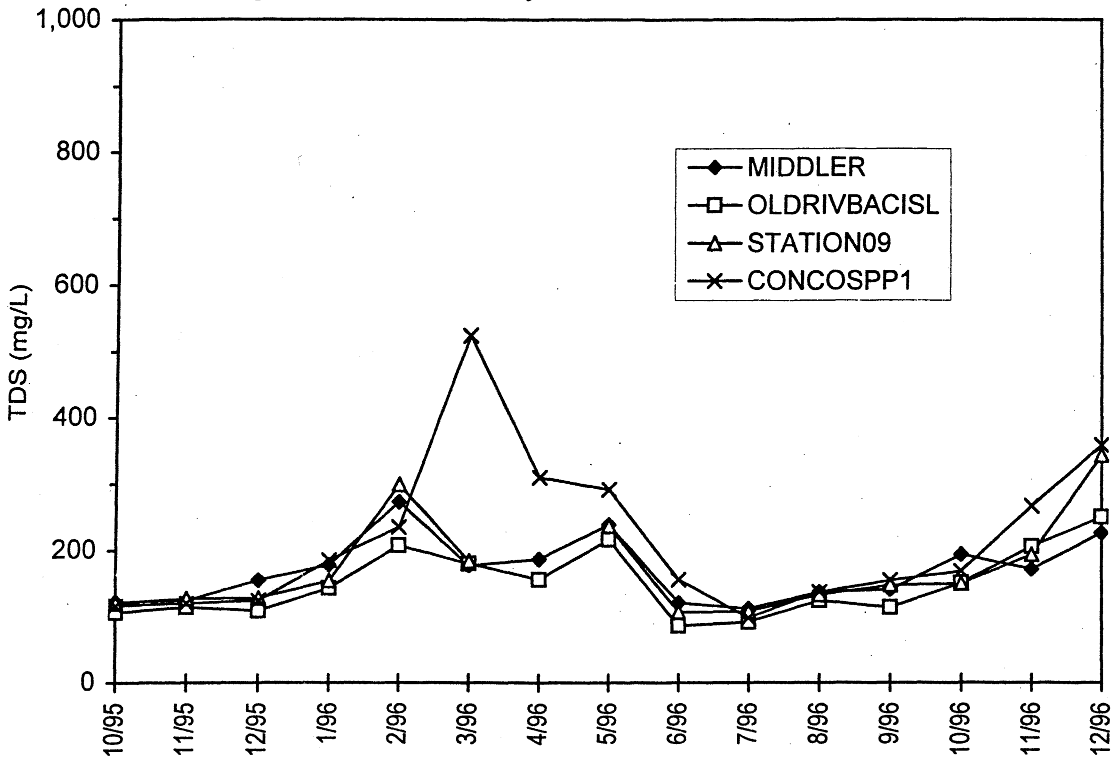


Figure 12-13. Monthly TDS at Agricultural Drains

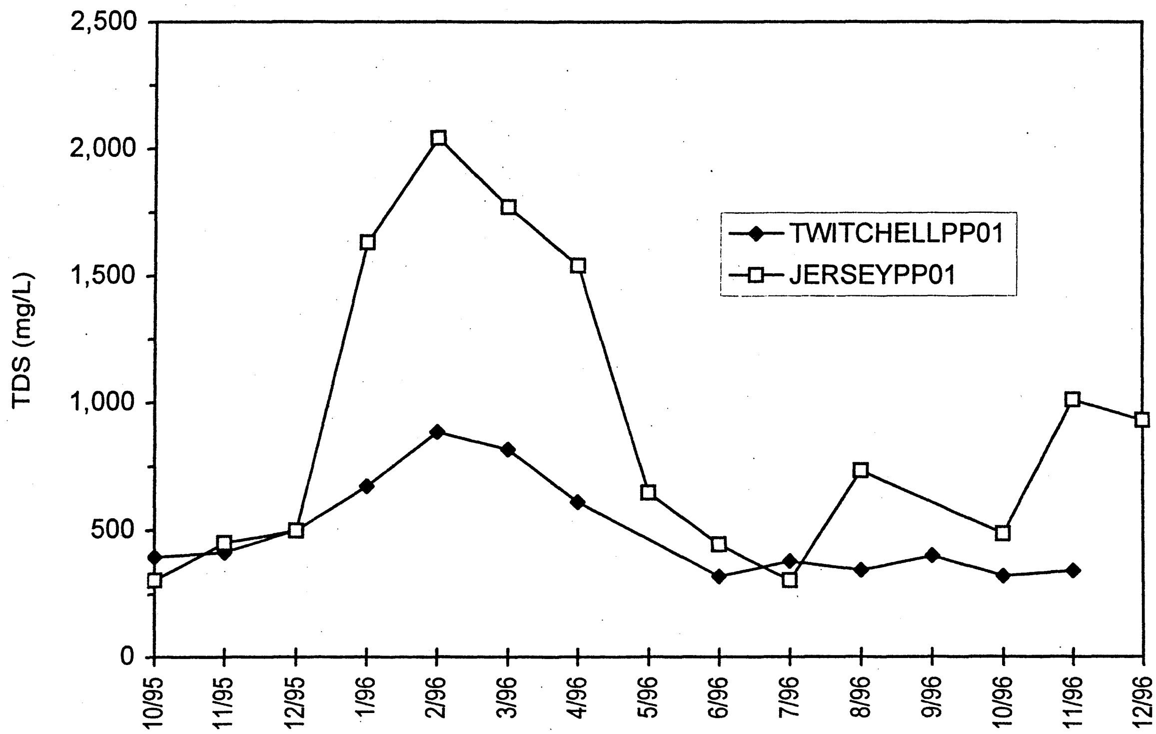


Figure 12-14. DOC at Major Channel Stations

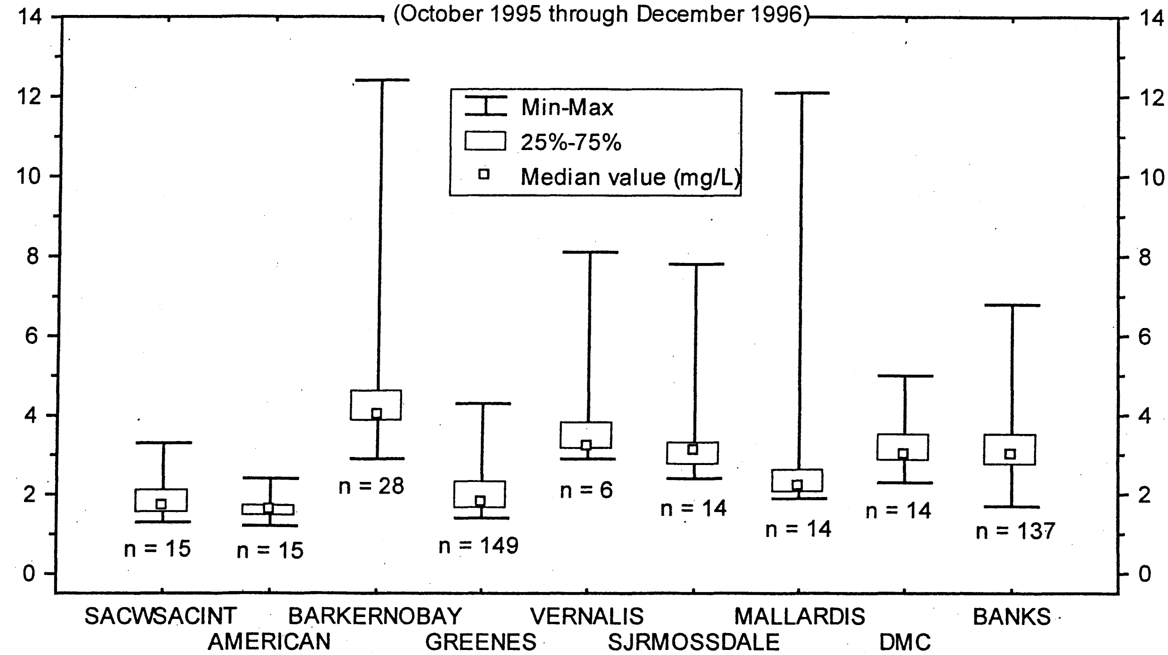
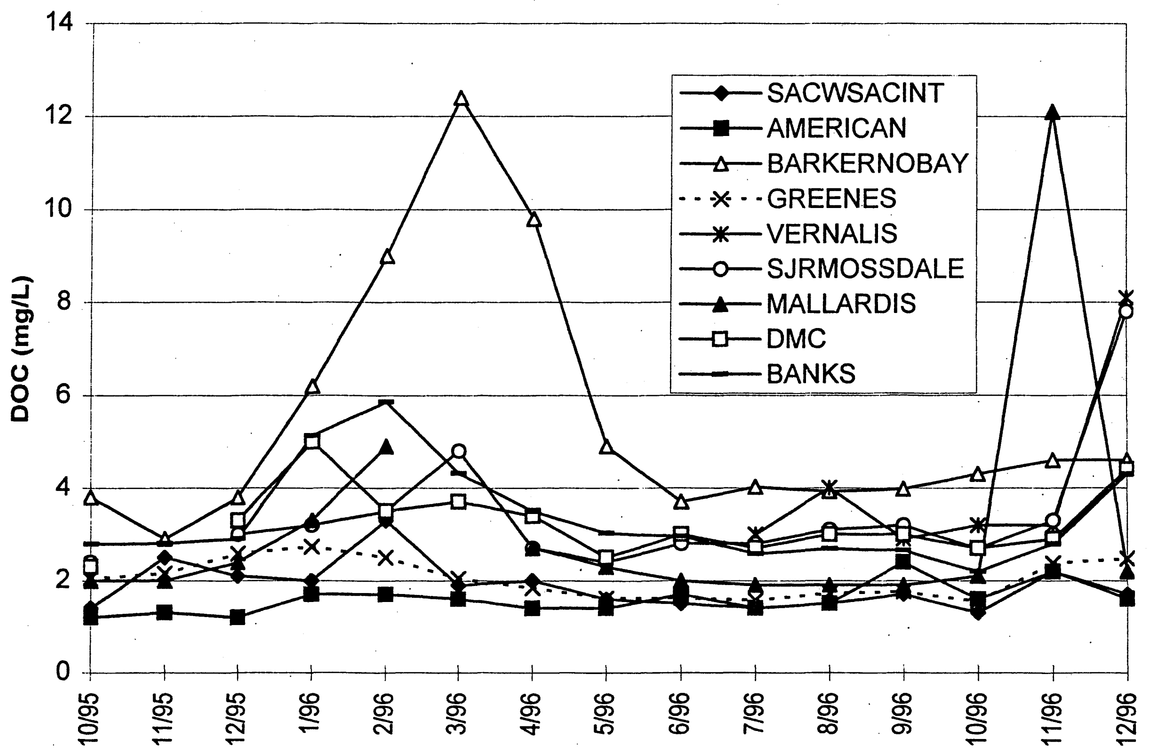


Figure 12-15. Monthly DOC at Channel Stations



South Delta Area

Median DOC values at the South Delta stations, Middle River, Old River at Bacon Island, Old River near Byron Tract (Station 09), and the Contra Costa Pumping Plant were approximately 3 mg/L (see Figure 12-16). These values are greater than the Sacramento and American Rivers median DOC values of approximately 2 mg/L and similar to the San Joaquin River median DOC values.

A peak of DOC concentrations occurred in January through March 1996 for Delta channel stations (see Figure 12-17). This peak is similar to other channel stations.

Agricultural Drains

Figure 12-18 shows median DOC values at agricultural drains in the Delta. Venice and Staten Islands had median DOC values in agricultural drainage greater than 20 mg/L. All other islands sampled had median DOC values in agricultural drainage less than 20 mg/L.. The highest DOC values observed were approximately 55 mg/L and were found in Twitchell Island and Venice Island agricultural drains.

DOC concentrations in the agricultural drains, as with the channel stations, peaked during the winter months (see Figure 12-19). (The reader is referred to previous MWQI reports, (Delta Island Drainage Investigation, June 1990 and the MWQI Five-Year Report, November 1994) for more details on seasonal and regional trends based on a greater number of agricultural drains sampled.) Pescadero Tract, the most mineral islands, showed the least seasonal variation of DOC.

Ultraviolet Absorbance

Ultraviolet Absorbance

Humic substances in natural organic matter absorb light and fluoresce in the ultraviolet region of light. Ultraviolet absorbance at 254 nanometers has been used widely to quantify the concentration of natural organic matter in water samples. Many researchers believe that $UVA_{254\ nm}$ is a good surrogate measurement for DOC and THMFP (Korshin and others, Use of UV Spectroscopy to Study Chlorination of Natural Organic Matter, 1996).

Channel Stations

As with DOC, $UVA_{254\ nm}$ concentrations were greatest at the Barker Slough Pumping Plant (0.14 abs/cm) (see Figure 12-20). The next highest median $UVA_{254\ nm}$ concentrations were at the Delta-Mendota Canal intake, Banks Pumping Plant and the

Figure 12-16. DOC in the South Delta

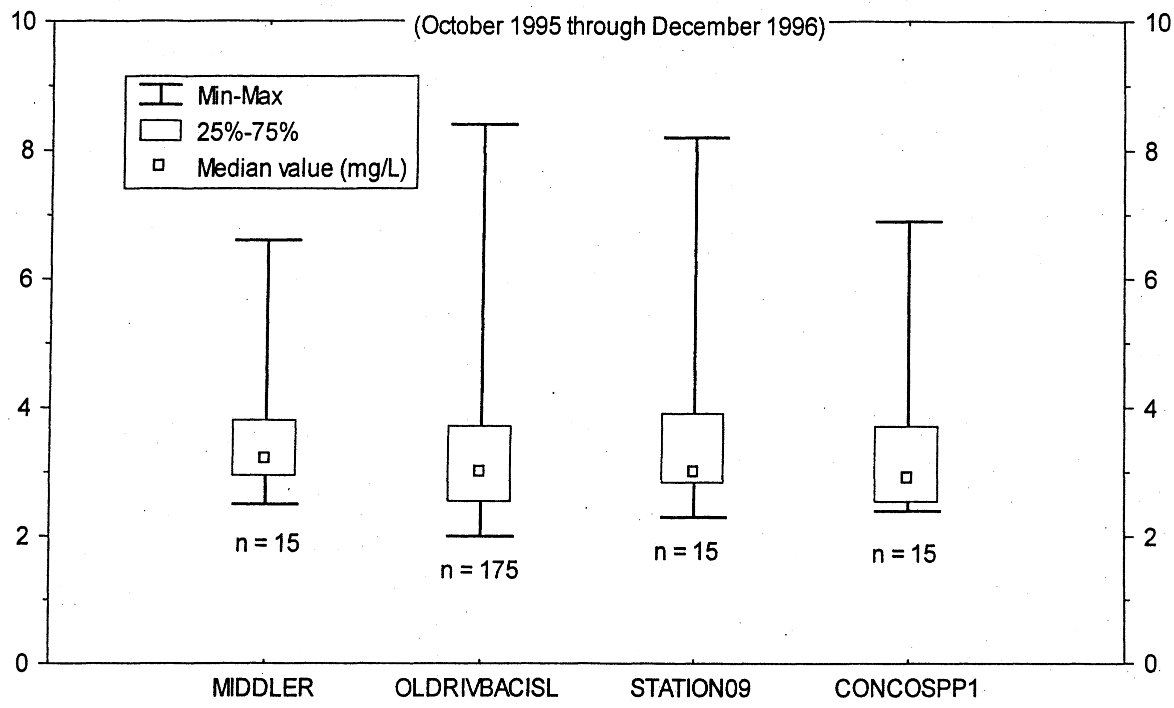
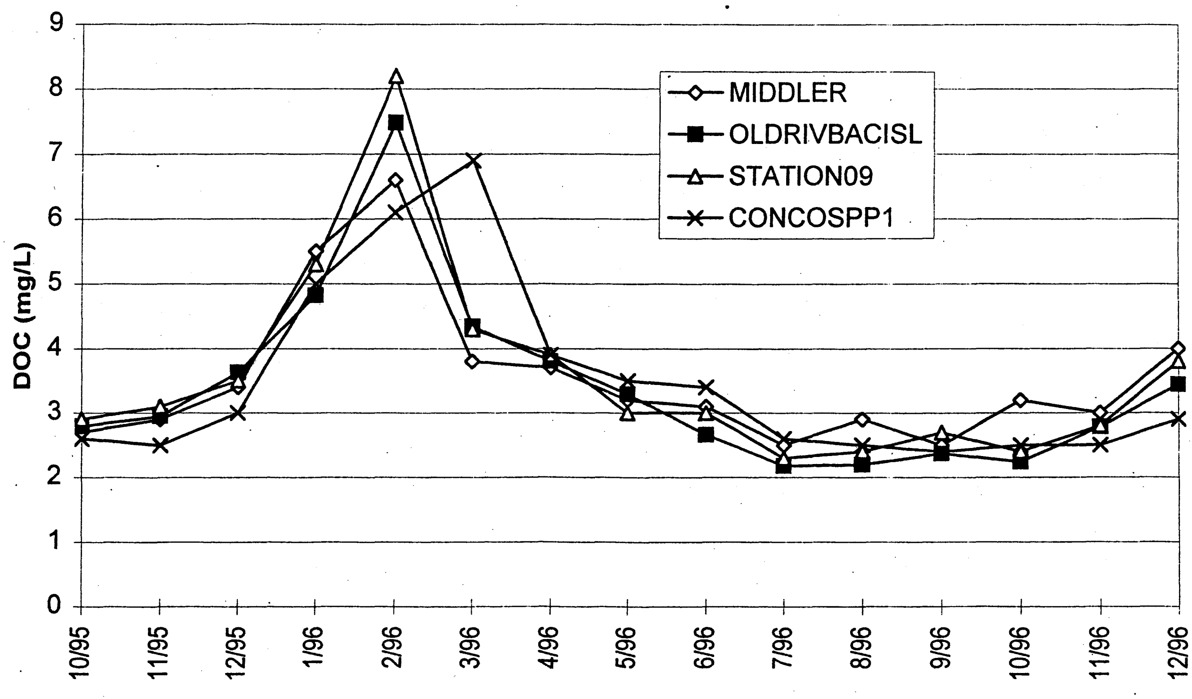


Figure 12-17. Monthly DOC at South Delta Stations



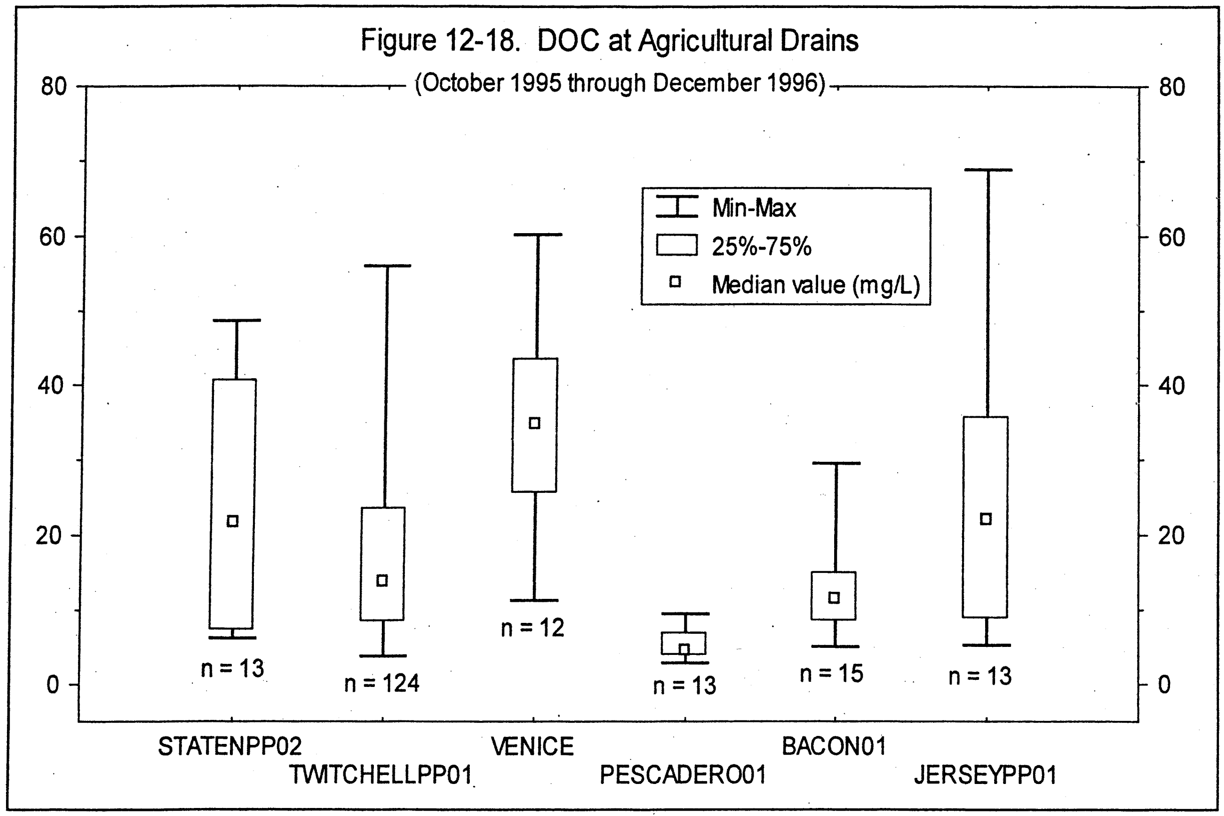


Figure 12-18. DOC at Agricultural Drains
(October 1995 through December 1996)
80
60
40
20
0
Min-Max
25%-75%
Median value (mg/L)
n = 13
n = 124
n = 12
n = 13
n = 15
n = 13
STATENPP02
TWITCHELLPP01
VENICE
PESCADERO01
BACON01
JERSEYPP01

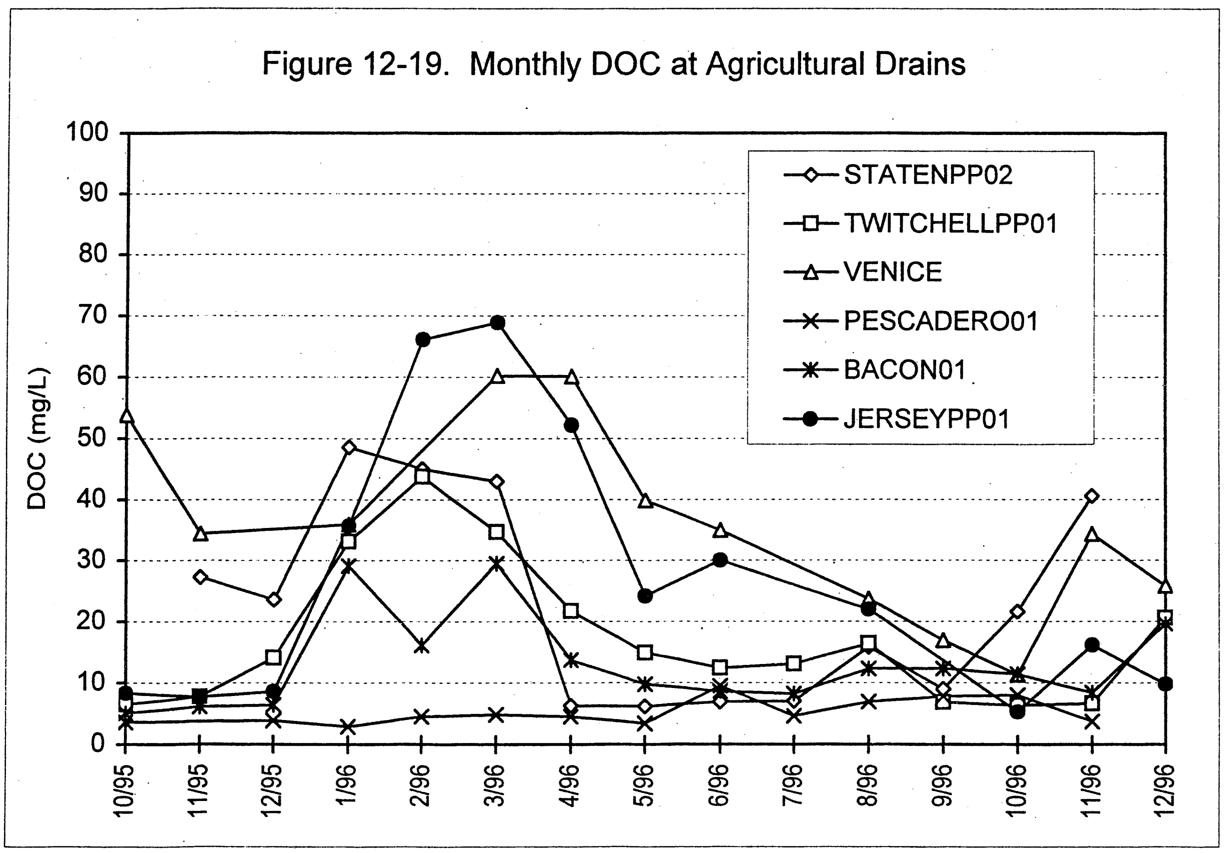
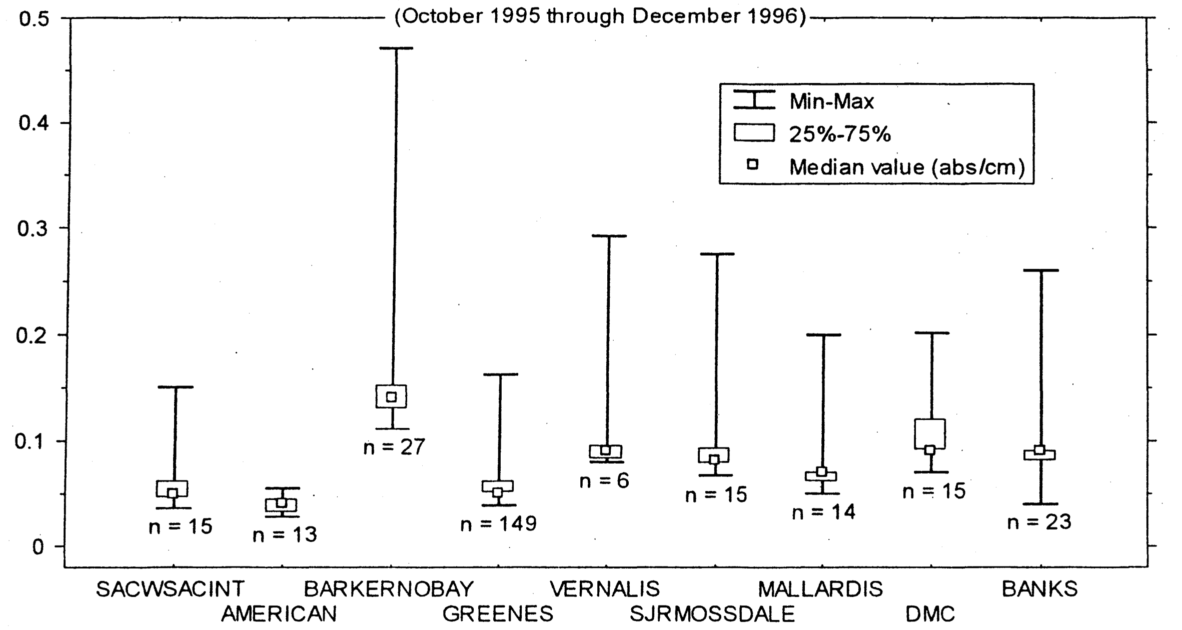


Figure 12-19. Monthly DOC at Agricultural Drains
100
90
80
70
60
50
40
30
20
10
0
DOC (mg/L)
STATENPP02
TWITCHELLPP01
VENICE
PESCADERO01
BACON01
JERSEYPP01
10/95
11/95
12/95
1/96
2/96
3/96
4/96
5/96
6/96
7/96
8/96
9/96
10/96
11/96
12/96

Figure 12-20. UVA at Major Channel Stations



San Joaquin River stations at Mossdale and Vernalis (all approximately 0.09 abs/cm). The lowest $UVA_{254\ nm}$ concentrations were observed at the Sacramento and American River stations upstream of the Delta (0.04-0.05 abs/cm).

South Delta Area

The $UVA_{254\ nm}$ concentrations in the South Delta stations were greater than the Delta intake stations (see Figure 12-21). South Delta stations had $UVA_{254\ nm}$ concentrations of 0.1 abs/cm, greater than the San Joaquin River stations (0.07-0.09 abs/cm) and greater than the Sacramento and American River values of 0.04-0.05 abs/cm. Delta-Mendota Canal and Banks Pumping Plant stations had $UVA_{254\ nm}$ concentrations of approximately 0.09 abs/cm.

Agricultural Drains

The greatest $UVA_{254\ nm}$ concentrations were measured at Venice Island agricultural drainage (see Figure 12-22). Pescadero Tract agricultural drainage had the lowest $UVA_{254\ nm}$ concentrations measured. Staten, Jersey and Twitchell Islands had intermediate $UVA_{254\ nm}$ concentrations.

Specific Absorbance

The $UVA_{254\ nm}$ concentrations for a particular station can be divided by the DOC concentration to give a value known as specific absorbance. Specific absorbance is a value indicating the degree of humification, or the quantity of natural organic matter that has been converted to humic substances, in the soils. In the MWQI Five-Year Report (DWR, 1991), three ranges of specific absorbance values were studied. Drain samples with mid-range specific absorbance values had the highest THMFP. The ranges are given below.

Range 1: Low-range 0.0 to less than 0.03
Range 2: Mid-range 0.03 to less than 0.06
Range 3: High-range 0.06 and above but generally less than 0.20

Channel Stations

Most of the data collected during this time were in the low and mid-range. The specific absorbance median values for channel stations were near the interface between the low and mid-ranges (see Figure 12-23). The American River station, the Sacramento River at Greenes Landing and the San Joaquin River stations at Mossdale and Vernalis were in the low range indicating low humic content. The remaining channel stations pictured in Figure 12-23, the Sacramento River at the

Figure 12-21. UVA in the South Delta

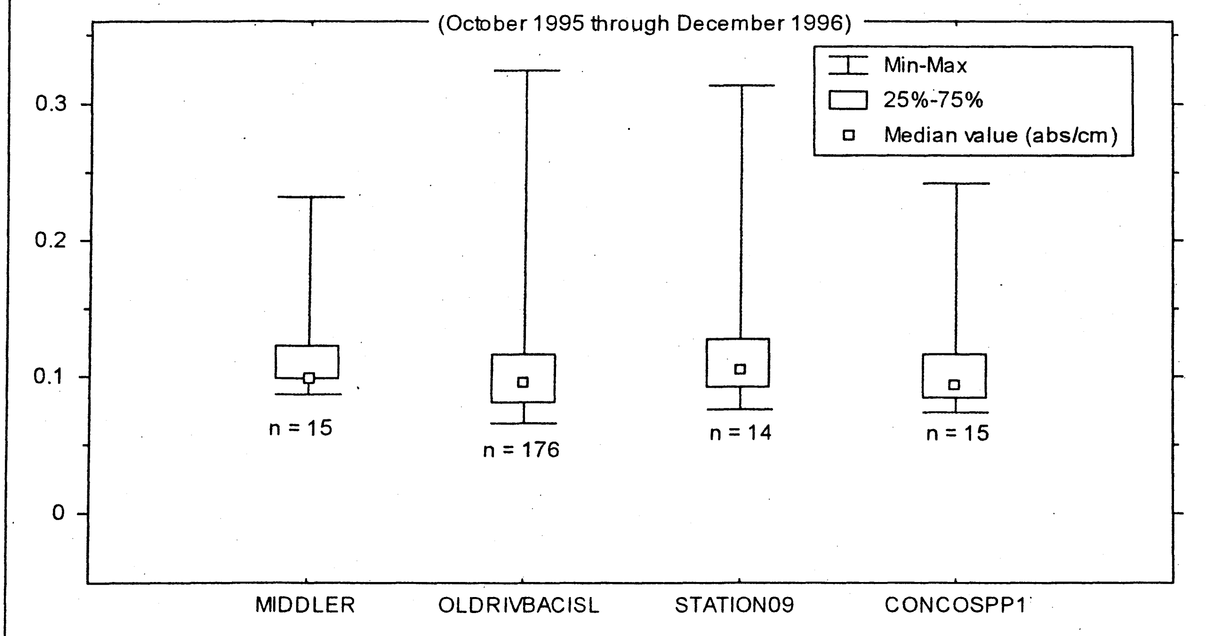


Figure 12-22. UVA at Agricultural Drains

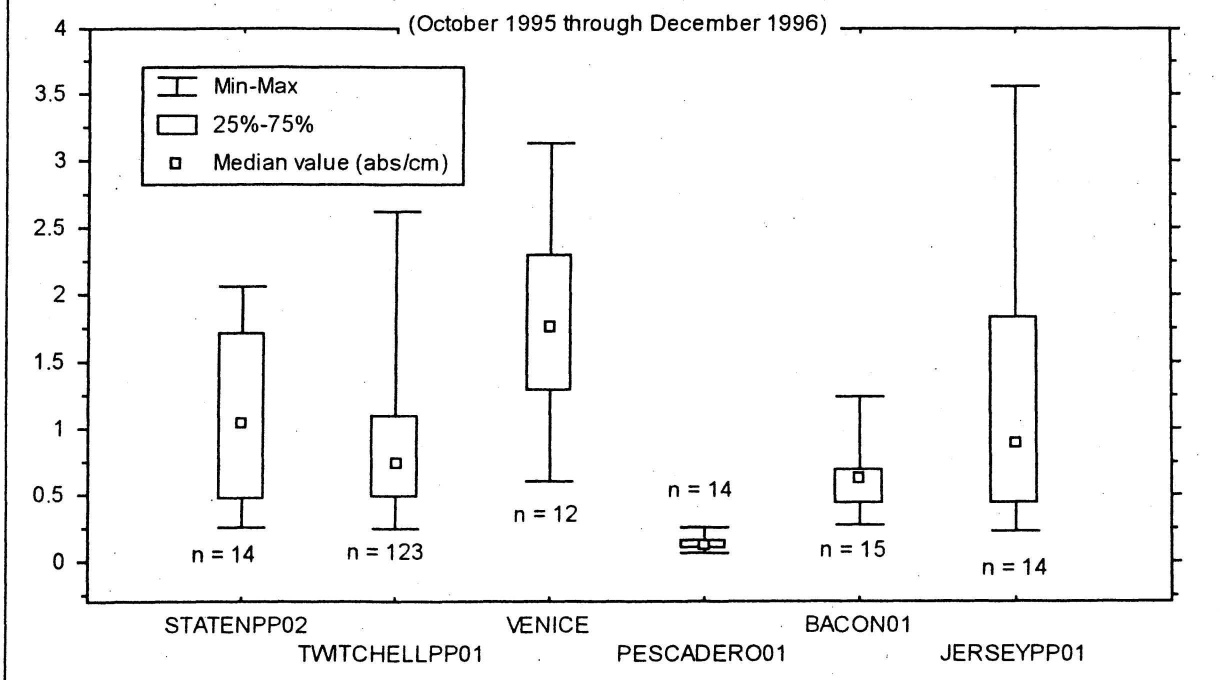
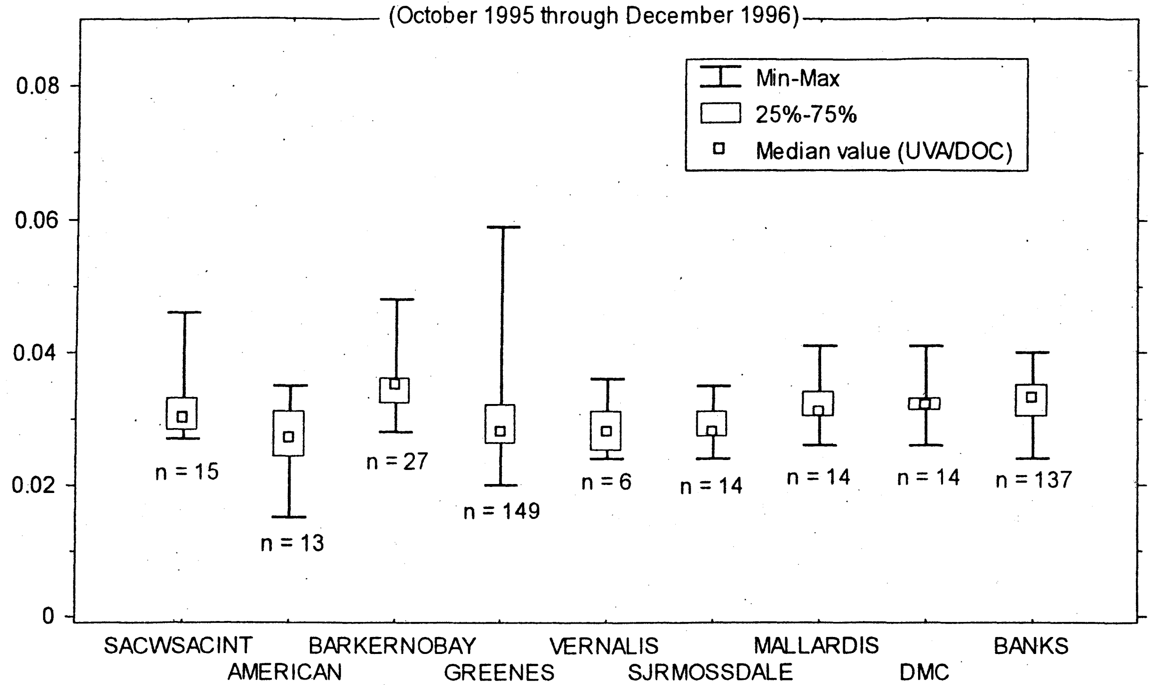


Figure 12-23. Specific Absorbance at Major Channel Stations



West Sacramento intake, the Barker Slough Pumping Plant, Sacramento River at Mallard Island, the Delta-Mendota Canal intake and Banks Pumping Plant were in the lower part of the mid-range indicating slightly more humic content.

South Delta Area

The median specific absorbance values in the South Delta area were in the lower part of the mid-range indicating more humic content than the low range stations, the American River, Sacramento River at Greenes Landing and the San Joaquin River at Vernalis and Mossdale (see Figure 12-24).

Agricultural Drains

The median specific absorbance values for the agricultural drains were higher than the specific absorbance values for the channel stations but still in the mid-range (see Figure 12-25). One exception was the median specific absorbance value for Pescadero Tract which was in the low range. The lower specific absorbance values of Pescadero Tract are probably because Pescadero Tract has mineral, not peat, soils.

TTHMFP and THMFP as Carbon

Trihalomethanes are formed upon chlorination (water treatment) of certain organic materials. In previous studies (MWQI Five-Year Report, November 1994, the MWQI Program has shown that water is enriched in THM precursors in the Sacramento-San Joaquin Delta. THMs have been shown to be carcinogenic and are proposed to be regulated under the USEPA D/DBP Rule. A proposed Stage 1 MCL for THMs under the D/DBP Rule is 80 mg/L (Krasner and others, 1996). In order to quantify the THM precursor material in the Delta, water samples are chlorinated and then analyzed for THMs using the DWR THMFP assay. The TTHMFP and the THMFP as carbon are explained below.

TTHMFP is the total concentration of chloroform ($CHCl_3$), bromodichloromethane ($CHBrCl_2$), dibromochloromethane ($CHBr_2Cl$), and bromoform ($CHBr_3$) concentrations. Three of the THMFP species contain bromine. Because the atomic weight of bromine is more than twice the atomic weight of chlorine, waters containing equal amounts of organic carbon (THM precursor material) but varying amounts of bromine (as bromide ion) will exhibit different TTHMFP concentrations. Therefore, to equally assess the various sources such as drainages and rivers for organic THMFP precursors, only the concentrations of organic carbon in the water were compared. To make these comparisons, the carbon percentage for each of the THM species was calculated. Then the concentrations of the four THM compounds were multiplied by their

Figure 12-24. Specific Absorbance in the South Delta

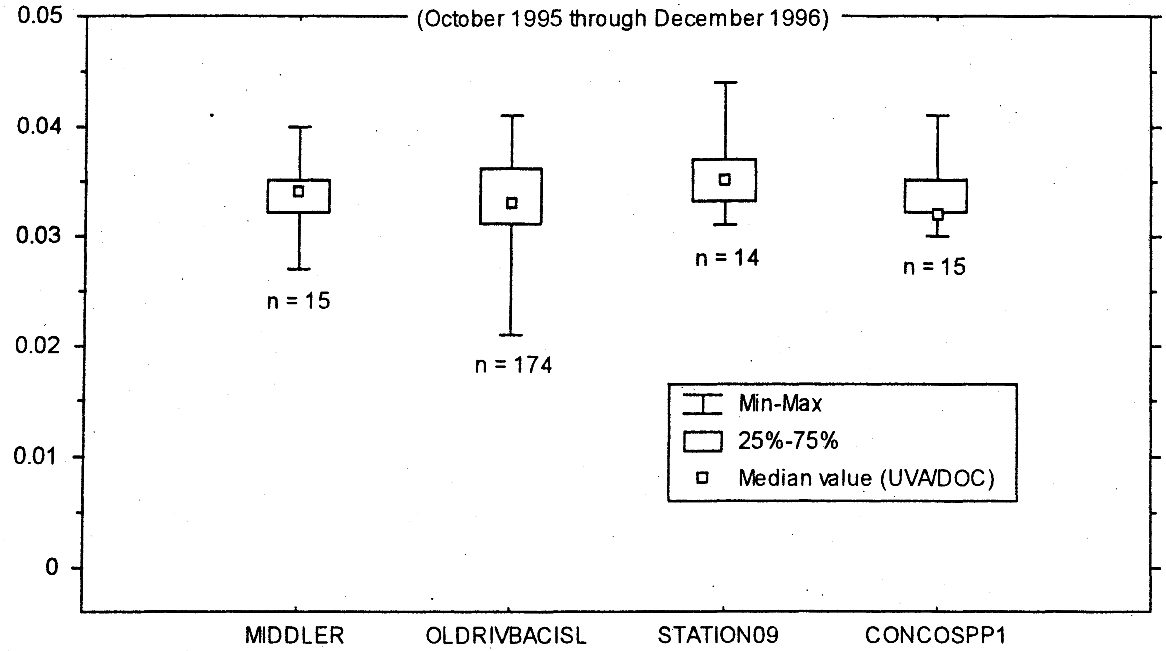
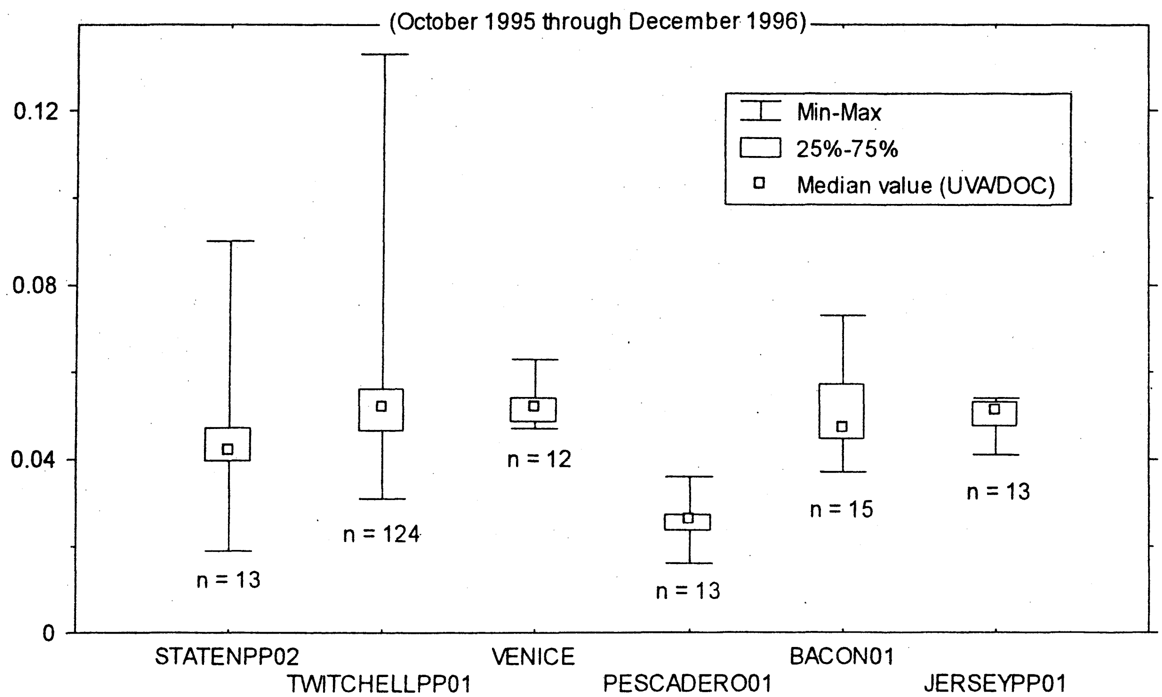


Figure 12-25. Specific Absorbance at Agricultural Drains



respective percentage of carbon content to get the concentrations of carbon. These carbon concentrations were then summed and divided by the atomic weight of carbon to yield the amount of THM precursor organic carbon in micromoles per liter (Total Formation Potential as Carbon or TFPC).

Channel Stations

The highest median THMFP values were seen at Barker Slough Pumping Plant (452 mg/L), followed by the San Joaquin River near Vernalis (422 mg/L) and the Sacramento River at Mallard Island (418 mg/L) (see Figure 12-26). The lowest median THMFP values (approximately 200 mg/L) were seen at the Sacramento and American River intakes to the Delta. The median THMFP value at Banks Pumping Plant was 347 mg/L, but concentrations varied from a minimum of 160 mg/L to a maximum of 785 mg/L. Although the DWR-modified method of analyzing THMFP cannot be compared to the standard method of analyzing THMs, all of these THMFP concentrations are greater than USEPA's proposed MCL for THMs in finished drinking water (80 mg/L).

The elevated THMFP values for the Sacramento River at Mallard Island and to a lesser degree for the San Joaquin River at Vernalis station were due in part to the effect of bromide ion. To compare THM formation potential of the different stations without the bias of the heavier bromide ion, TFPC values were calculated (see Figure 12-27). The Barker Slough Pumping Plant had the highest TFPC value of all the channel stations (44 mg/L as C). The San Joaquin River stations at Mossdale and Vernalis, the Delta-Mendota Canal intake and Banks Pumping Plant had TFPC values in the range of 30-40 mg/L. The lowest TFPC values (approximately 20 mg/L) were measured in the Sacramento and American Rivers intake to the Delta.

South Delta Area

Middle River at Borden Highway and Old River near Byron Tract (Station 09) had greater THMFP and TFPC values than Contra Costa Pumping Plant and Old River at Bacon Island (see Figures 12-28 and 12-29). Middle River and Old River near Byron Tract had median THMFP values of approximately 360 mg/L. Old River at Bacon Island had a median THMFP value of approximately 340 mg/L and Contra Costa Pumping Plant had a median THMFP value of approximately 320 mg/L. The median TFPC values for Middle River and Old River near Byron Tract were 35 mg/L as C, and the median TFPC values for Old River at Bacon Island and Contra Costa Pumping Plant were 31 mg/L as C. These values are less than the values in the agricultural drains and greater than the values in the channel stations.

Figure 12-26. THMFP at Major Channel Stations

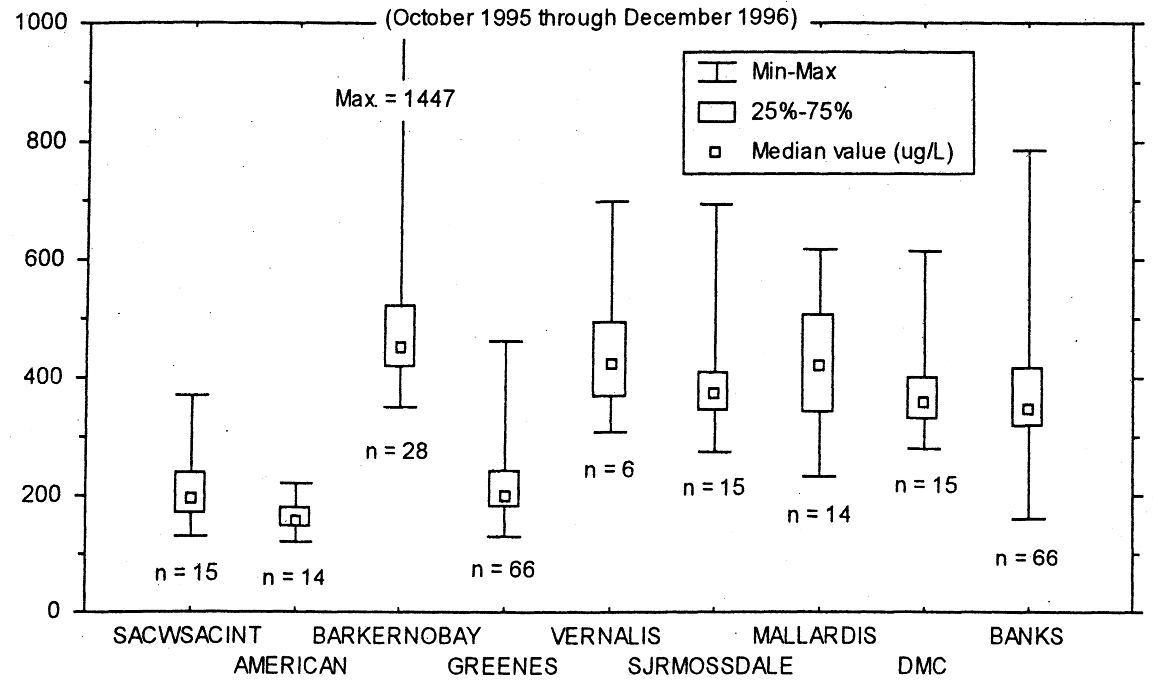
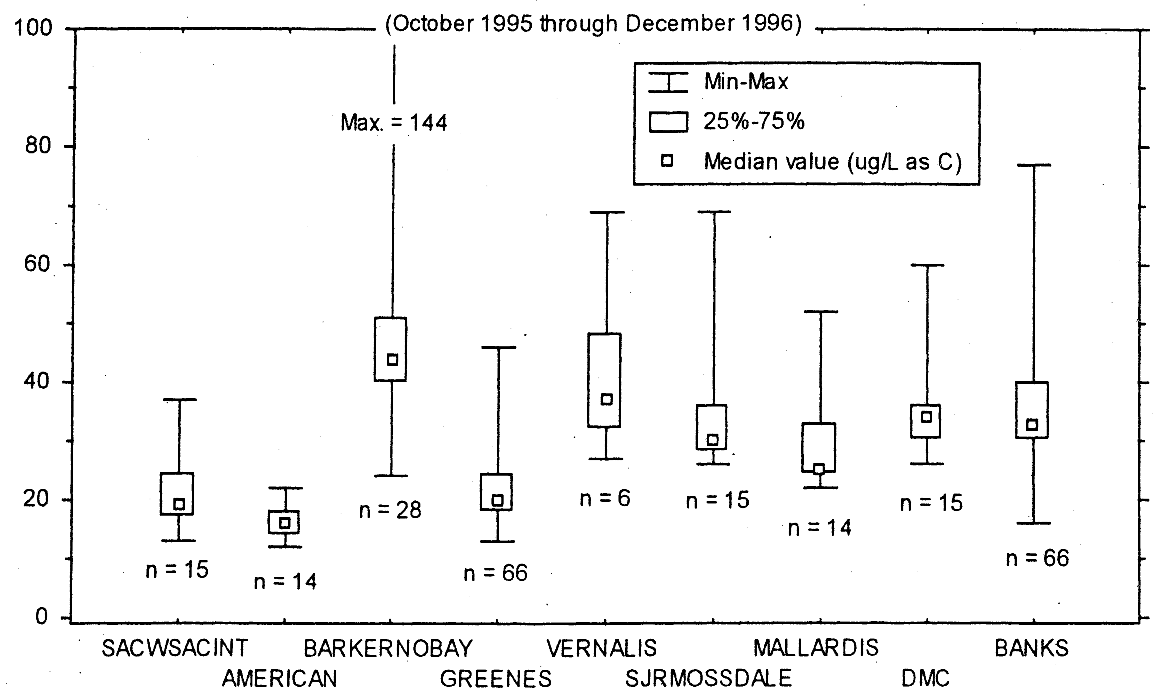


Figure 12-27. TFPC at Major Channel Stations



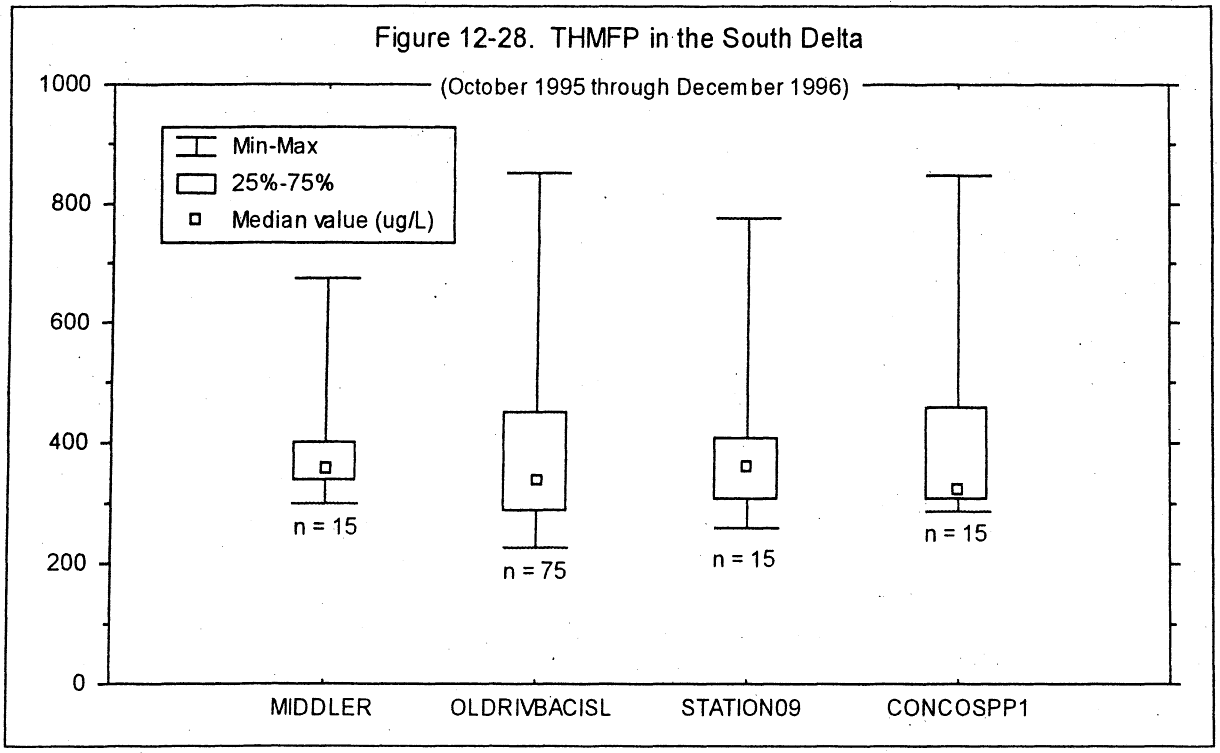


Figure 12-28. THMFP in the South Delta
(October 1995 through December 1996)
Min-Max
25%-75%
Median value (ug/L)
1000
800
600
400
200
0
n = 15
n = 75
n = 15
n = 15
MIDDLER
OLDRIVBACISL
STATION09
CONCOSPP1

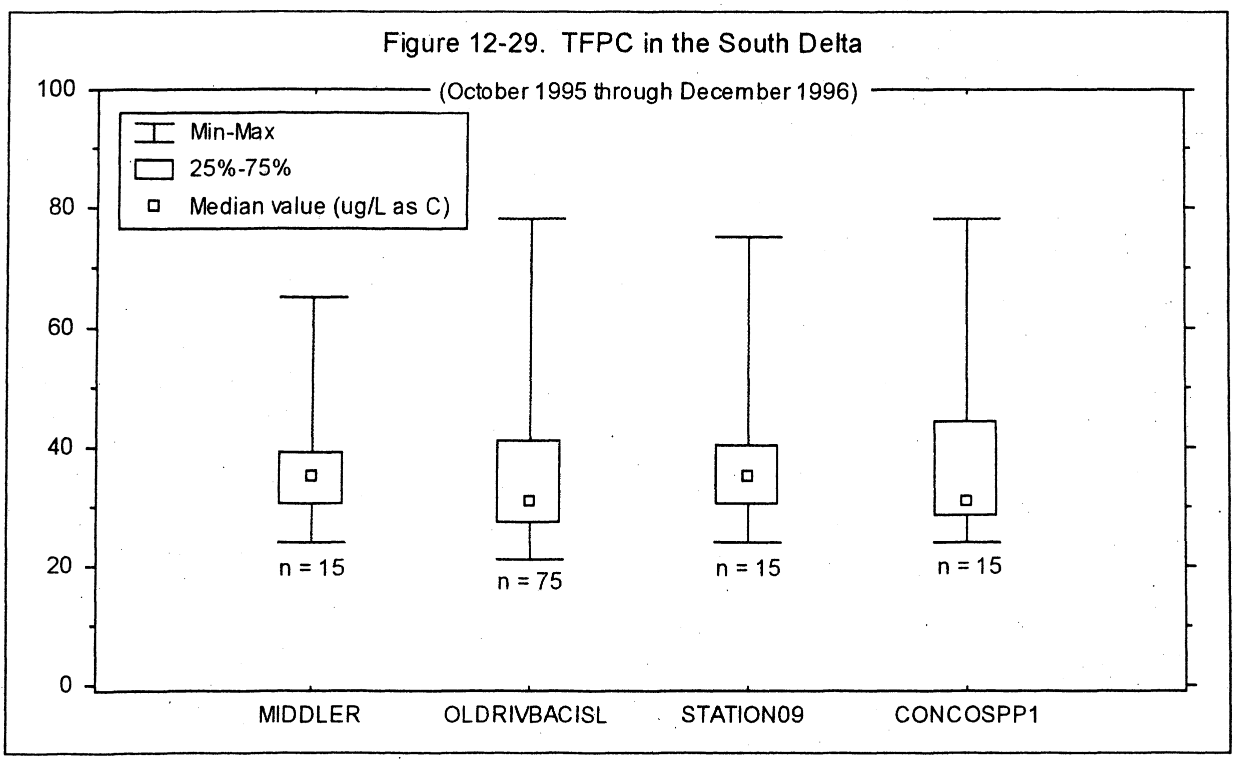


Figure 12-29. TFPC in the South Delta
(October 1995 through December 1996)
Min-Max
25%-75%
Median value (ug/L as C)
100
80
60
40
20
0
n = 15
n = 75
n = 15
n = 15
MIDDLER
OLDRIVBACISL
STATION09
CONCOSPP1

Agricultural Drains

Venice Island had the greatest THMFP and TFPC values (approximately 4,000 mg/L and 400 mg/L as C, respectively) of the agricultural drains that were monitored (see Figures 12-30 and 12-31). Jersey and Staten Islands had slightly lower THMFP and TFPC values. Pescadero Tract had the lowest THMFP and TFPC values (560 mg/L and 45 mg/L as C, respectively) of the agricultural drains monitored. Although the ratio of agricultural drainage THMFP to corresponding channel THMFP varied widely (see Table 12-5), on average, the agricultural drain THMFP concentrations were about seven times greater than the corresponding channel THMFP concentration. Amy and others (January 1990, AWWA Journal) found four times more THMFP in drainage samples than in Delta channel samples. This agrees with previous MWQI data.

Minor Elements

As described in Table 12-1, arsenic, copper and selenium were monitored monthly at seven channel stations and two agricultural drains. The data are summarized in Table 12-6.

Arsenic

Most arsenic data were in the range of 0.001-0.003 mg/L. A few higher values were observed from June and July 1996 at Contra Costa Pumping Plant and in Jersey Island agricultural drainage. None of the arsenic concentrations detected were above the MCL of 0.05 mg/L.

Copper

Most copper data were below the reporting limit of 0.005 mg/L. Four samples were above the reporting limit at concentrations ranging from 0.007 mg/L to 0.013 mg/L. These detectable concentrations were observed at Contra Costa Pumping Plant, in Jersey Island agricultural drainage and at Banks Pumping Plant. They were observed in December 1995, April 1996 and June 1996. All of these concentrations are far below the USEPA secondary MCL of 1.3 mg/L.

Selenium

Most selenium data were below the reporting limit of 0.001 mg/L. Values up to 0.003 mg/L were seen in the San Joaquin River stations at Mossdale and Vernalis. They were observed during December to February and during June through September. Some concentrations of 0.002 mg/L were seen in the Delta-Mendota Canal intake. These concentrations are below the MCL of 0.05 mg/L.

Figure 12-30. THMFP at Agricultural Drains

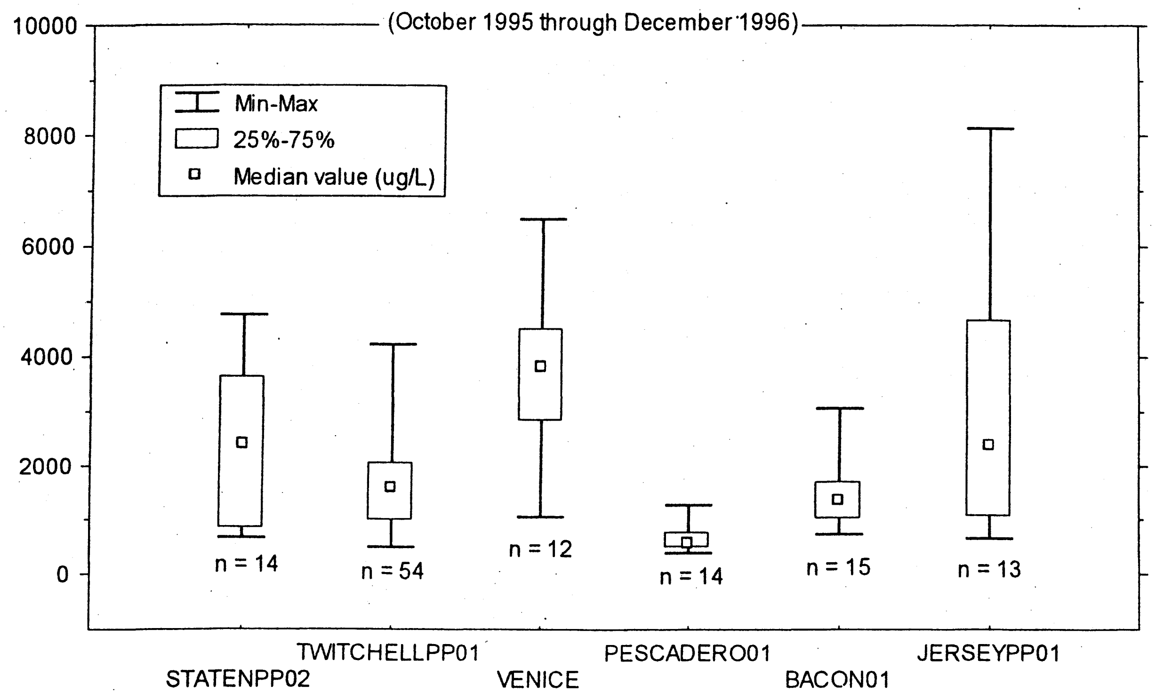


Figure 12-31. TFPC at Agricultural Drain Stations

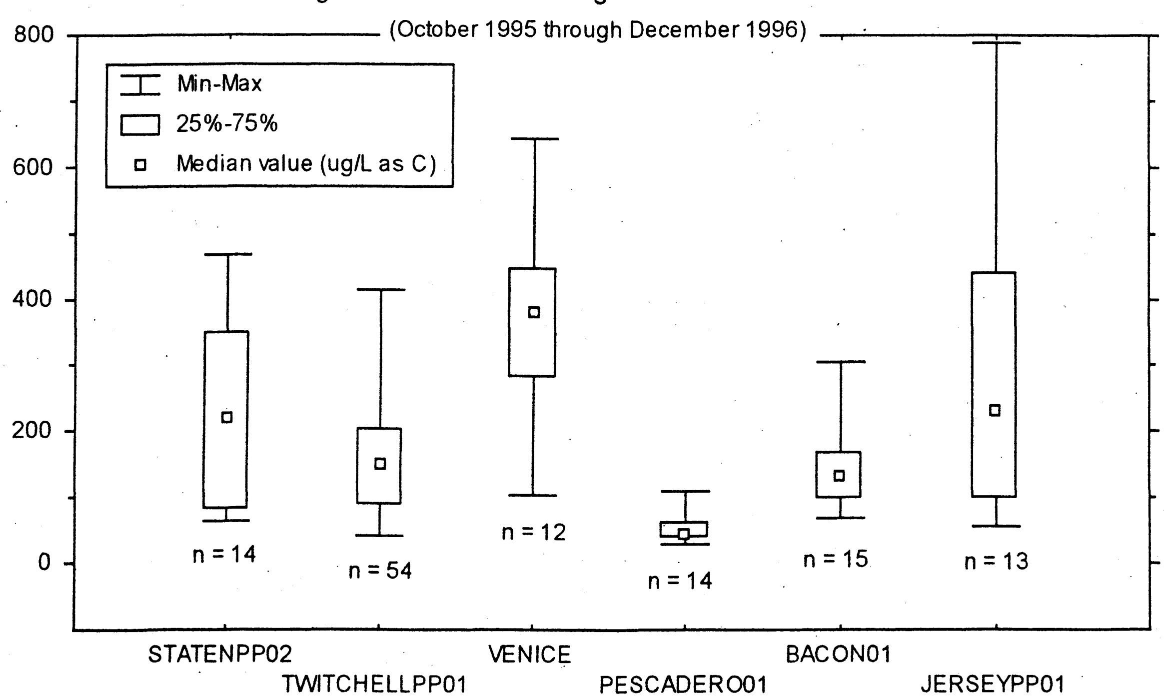


Table 12-5. Agricultural Drainage to Channel THMFP Ratios

Agricultural Drainage Station	Median THMFP	Corresponding Channel Station	Median THMFP	Ratio of Ag. Drainage to Channel Stations
STATENPP02	2,392	GREENES	199	12
TWITCHELLPP01	1,585	GREENES	199	8
VENICE	3,810	SJRMOSSDALE	373	10
PESCADERO01	559	SJRMOSSDALE	373	1.5
BACON01	1,350	OLDRIVBAC	340	4
JERSEYPP01	2,382	SJRMOSSDALE	373	6

Table 12-6. Summary of Minor Element Monitoring Data Results

Station	Arsenic	Copper	Selenium
GREENES	0.001-0.002 mg/L	All data <0.005 mg/L	All data <0.001 mg/L
SACWSACINT	0.001-0.002 mg/L	All data <0.005 mg/L	Most data <0.001
BARKERNOBAY	0.002-0.003 mg/L	Most data <0.005 mg/L	All data <0.001 mg/L
CONCOSPP1	Most data 0.002 mg/L, 0.003 mg/L in June 1996	Most data <0.005 mg/L, 0.007 mg/L in June 1996	All data <0.001 mg/L
JERSEYPP01	0.003-0.010 mg/L, highest values June-July 1996	Most data <0.005 mg/L, 0.008 mg/L in April 1996	All data <0.001 mg/L
SJRMOSSDALE	0.001-0.002 mg/L	All data <0.005 mg/L	<0.001-0.003 mg/L, High values Dec. 1995- Feb. 1996 and June 1996- Sept. 1996
DMC	<0.001-0.002 mg/L	All data <0.005 mg/L	<0.001-0.002 mg/L
BANKS	0.001-0.002 mg/L	Most data <0.005 mg/L, 0.008 mg/L in Dec. 1995 and 0.013 mg/L in June 1996	Most data <0.001
VERNALIS	0.001-0.002 mg/L	All data <0.005 mg/L	<0.001-0.003 mg/L, Highest values July-Aug. 1996

Seasonal Trends

The Delta inflow stations (Sacramento River, American River and the San Joaquin River) had higher ECs during the summer dry season than in the wet winter and spring seasons. Conversely, Delta export stations (Banks Pumping Plant, Contra Costa Pumping Plant and Barker Slough Pumping Plant) had lower EC values during the summer than in the winter and spring. The lower EC values during the summer at Delta export stations is in part because of increased pumping during the dry season to meet SWP demands.

The agricultural drains had low ECs during the low Delta inflow periods, fall 1995 and summer 1996. The low ECs in the agricultural drains were due in part to increased evaporation and desalting of irrigation water on agricultural land during the summer. In the winter, EC values in agricultural drainage increased because of the flushing of Delta lands from rainwater and deliberate leaching of Delta lands through flooding. TDS had the same seasonal patterns as EC.

DOC, THMFP and $UVA_{254\ nm}$ concentrations were elevated during January through April 1996 and October through December 1996 for both channel stations and agricultural drains. These peaks in DOC during the winter correspond to greater precipitation and nonpoint source runoff both in the Delta and upstream of the Delta in the Sacramento, American and San Joaquin Rivers' watersheds.

Regional Trends

The Delta inflow stations at the Sacramento and American Rivers (Sacramento River at the West Sacramento Water Treatment Plant intake, the American River in Sacramento at the Water Treatment Plant intake, and the Sacramento River after the confluence of the American River at Greenes Landing) had the lowest EC, TDS and organic carbon concentrations of all the channel stations measured. The San Joaquin River inflow to the Delta (measured at stations Mossdale and Vernalis) had higher EC, TDS and organic carbon concentrations.

The greatest $UVA_{254\ nm}$ (an indicator of humic substances), DOC and THMFP concentrations of the channel stations were measured at Barker Slough Pumping Plant. Barker Slough Pumping Plant, in the northeastern portion of the Delta, receives water from the Sacramento River from Lindsey and Cache Sloughs and exports water to the NBA. Barker Slough Pumping Plant had lower EC values and TDS concentrations compared to other channel stations that were monitored.

The Delta-Mendota Canal Intake and Banks Pumping Plant had EC, TDS and organic carbon concentrations that were between the Sacramento and American River Delta inflow stations and the San Joaquin River Delta inflow stations. The South Delta stations monitored, Middle River at Borden Highway, Old River at Byron Tract, Old River near Bacon Island and the Contra Costa Pumping Plant (Delta outflow station) had EC, TDS and organic carbon concentrations similar to each other and to the Delta-Mendota Canal Intake and Banks Pumping Plant.

Agricultural drainage in the Delta had many times greater EC, TDS and organic carbon concentrations than adjacent channel water. The greatest EC and TDS concentrations were measured in agricultural drainage from islands in the western and southern Delta and lower EC and TDS concentrations were measured in agricultural drainage from islands in the northern Delta. DOC concentrations were greatest in drainage from the peaty Delta islands, Venice and Staten Island (>20 mg/L), and lowest in drainage from more mineral islands, Pescadero Tract (<5 mg/L).

<u>Specific UVA</u>

The results of the specific UVA calculation show the degree of organic matter that has been converted to THM-yielding DOC for a particular area. Most of the channel and agricultural drain data were in the mid-range specific UVA. This range correlated with the greatest tendency to form TFPC.

The lowest specific absorbance values were seen in the American, Sacramento and San Joaquin River Delta inflow stations. Higher specific absorbance values of the channel stations were measured at Middle River, the Sacramento River at Mallard Island, the Delta-Mendota Canal intake and Banks Pumping Plant. The highest specific absorbance values were seen in the agricultural drains. Twitchell, Venice and Jersey Islands had higher specific absorbance ratios than Staten, Bacon and Pescadero Islands indicating greater humification of the soils.

<u>THMFP and TFPC Trends</u>

THMFP concentrations, as with DOC, were highest at Barker Slough Pumping Plant and lowest in the Sacramento and American Rivers' intakes to the Delta of all the channel stations monitored. The heavier weight of the bromide ion (as compared to the chloride ion) was responsible for relatively higher THMFP values at the Sacramento River at Mallard Island and to some extent the San Joaquin River at Vernalis station. When converted to TFPC, the formation potentials of the Sacramento River at Mallard Island and the San Joaquin River near Vernalis decreased relative to the other channel stations.

The agricultural drain THMFP and TFPC values were on average seven times greater than those of adjacent channel stations. Venice, Jersey, and Staten Islands had the greatest THMFP and TFPC values due to the islands' high peat content. Lower THMFP and TFPC values were measured in Twitchell, Bacon and Pescadero Island drainage.

Minor Elements

Arsenic, copper and selenium were monitored monthly at seven channel stations and two agricultural drains. There were a few detections of each element, but all were below MCLs for finished drinking water.

Summary and Conclusions

Summary of Data

All of the data collected during the monitoring runs are included in Tables 12-7, 12-8, 12-9, and 12-10.

Conclusions

Organic carbon concentrations are enriched in water passing through the Sacramento-San Joaquin Delta. DOC and THMFP concentrations at outflow stations in the Delta are in general greater than USEPA's proposed regulatory levels for finished drinking water under the D/DBP Rule. DOC and THMFP concentrations in agricultural drainage of peaty islands in the Delta are many times higher than the DOC and THMFP concentrations in adjacent Delta channel waters. Arsenic, copper and selenium were detected sporadically in Delta channel waters at concentrations below regulatory levels.

Table 12-7. Field Data

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C952548	AMERICAN	10/12/95	10:30 AM	7.6	8.8	39	17.3	2.3
C952766	AMERICAN	11/9/95	1:40 PM	7.3	9.2	44	16.0	2.5
C953070	AMERICAN	12/7/95	12:30 PM	7.9	9.8	50	15.1	2.4
C960140	AMERICAN	1/11/96	12:55 PM	7.4	11.9	56	11.6	5.4
C960262	AMERICAN	2/7/96	9:50 AM	8.4	13.0	66	11.2	NA
C960412	AMERICAN	3/6/96	1:30 PM	7.6	12.3	67	10.8	12.3
C960826	AMERICAN	4/3/96	1:10 PM	7.4	12.8	57	13.7	5.5
C961044	AMERICAN	5/1/96	12:42 PM	7.0	12.0	53	18.2	2.0
C961242	AMERICAN	6/5/96	12:40 PM	7.3	10.0	43	19.4	5.7
C961634	AMERICAN	7/10/96	11:30 AM	8.5	9.0	45	20.8	2.5
C961711	AMERICAN	8/7/96	12:15 PM	6.8	9.0	45	21.0	1.0
C961840	AMERICAN	9/4/96	11:30 AM	7.5	8.6	49	20.5	1.7
C961984	AMERICAN	10/2/96	12:25 PM	6.7	8.5	45	19.8	1.6
C962152	AMERICAN	11/6/96	12:40 PM	7.2	9.8	47	15.6	1.9
C962313	AMERICAN	12/4/96	12:38 PM	6.7	10.0	53	13.1	6.2
C952591	BACON01	10/18/95	9:18 AM	6.9	7.0	564	16.8	34.0
C952809	BACON01	11/15/95	10:47 AM	6.8	4.2	572	16.2	6.7
C953053	BACON01	12/6/95	11:30 AM	7.2	2.7	576	14.6	60.1
C960147	BACON01	1/17/96	10:20 AM	6.8	7.7	1008	11.1	32.5
C960276	BACON01	2/14/96	11:20 AM	6.7	5.9	999	14.0	13.3
C960419	BACON01	3/13/96	11:25 AM	6.4	8.0	1036	13.3	81.2
C960840	BACON01	4/10/96	10:09 AM	6.9	6.6	711	16.3	85.9
C961075	BACON01	5/8/96	11:15 AM	6.8	4.4	505	18.0	60.8
C961276	BACON01	6/12/96	9:25 AM	6.8	4.0	274	23.6	NA
C961648	BACON01	7/17/96	10:05 AM	6.5	5.4	209	23.1	42.0
C961718	BACON01	8/14/96	9:36 AM	6.9	5.8	238	25.6	10.3
C961850	BACON01	9/11/96	9:45 AM	6.8	3.0	407	18.7	15.6
C962026	BACON01	10/9/96	10:20 AM	6.8	4.8	616	20.5	29.5
C962198	BACON01	11/13/96	12:20 PM	6.8	3.3	393	15.8	70.4
C962338	BACON01	12/11/96	12:40 PM	6.5	6.8	708	14.6	19.4
C952486	BANKS	10/1/95	8:00 AM	NA	NA	240	22.4	NA
C952528	BANKS	10/3/95	12:00 PM	NA	NA	244	19.3	NA
C952529	BANKS	10/5/95	10:00 PM	NA	NA	248	19.2	NA
C952530	BANKS	10/8/95	8:00 AM	NA	NA	238	19.2	NA
C952580	BANKS	10/12/95	10:00 PM	NA	NA	220	17.5	NA
C952581	BANKS	10/15/95	8:00 AM	NA	NA	216	17.5	NA
C952597	BANKS	10/19/95	10:30 AM	7.5	7.0	207	19.8	68.1
C952675	BANKS	10/24/95	12:00 PM	NA	NA	209	16.3	NA
C952676	BANKS	10/26/95	10:00 PM	NA	NA	206	15.9	NA
C952677	BANKS	10/29/95	8:00 AM	NA	NA	216	15.9	NA
C952746	BANKS	10/31/95	12:00 PM	NA	NA	214	16.1	NA
C952747	BANKS	11/2/95	10:00 PM	NA	NA	204	15.1	NA
C952748	BANKS	11/5/95	8:00 AM	NA	NA	202	16.0	NA
C952797	BANKS	11/7/95	12:00 PM	NA	NA	207	17.6	NA
C952798	BANKS	11/9/95	10:00 PM	NA	NA	222	17.5	NA
C952799	BANKS	11/12/95	8:00 AM	NA	NA	210	18.2	NA
C952845	BANKS	11/14/95	12:00 PM	NA	NA	211	15.3	NA
C952815	BANKS	11/16/95	11:00 AM	7.8	7.6	211	16.8	3.3
C952846	BANKS	11/16/95	10:00 PM	NA	NA	214	15.0	NA
C952847	BANKS	11/19/95	8:00 AM	NA	NA	283	15.0	NA
C952881	BANKS	11/21/95	12:00 PM	NA	NA	262	14.2	NA
C952882	BANKS	11/23/95	10:00 PM	NA	NA	254	14.3	NA
C952883	BANKS	11/26/95	8:00 AM	NA	NA	248	15.3	NA
C953244	BANKS	11/28/95	12:00 PM	NA	NA	284	15.7	NA
C953245	BANKS	11/30/95	10:00 PM	NA	NA	323	15.4	NA
C953246	BANKS	12/3/95	8:00 AM	NA	NA	325	16.6	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C953254	BANKS	12/5/95	1:30 PM	NA	NA	226	13.4	NA
C953062	BANKS	12/7/95	11:47 AM	7.6	8.6	280	15.3	NA
C953255	BANKS	12/7/95	11:30 PM	NA	NA	216	12.6	NA
C953256	BANKS	12/10/95	9:30 AM	NA	NA	213	12.7	NA
C953264	BANKS	12/12/95	12:00 PM	NA	NA	281	8.9	NA
C953265	BANKS	12/14/95	10:00 PM	NA	NA	280	8.9	NA
C953266	BANKS	12/17/95	8:00 AM	NA	NA	277	9.2	NA
C960080	BANKS	12/26/95	12:00 PM	NA	NA	271	12.2	NA
C960081	BANKS	12/28/95	10:00 PM	NA	NA	272	12.7	NA
C960082	BANKS	12/31/95	8:00 AM	NA	NA	463	12.9	NA
C960090	BANKS	1/2/96	12:00 PM	NA	NA	334	8.4	NA
C960091	BANKS	1/4/96	10:00 PM	NA	NA	336	8.3	NA
C960092	BANKS	1/7/96	8:00 AM	NA	NA	351	8.6	NA
C960100	BANKS	1/16/96	12:00 PM	NA	NA	330	10.3	NA
C960101	BANKS	1/16/96	10:00 PM	NA	NA	344	9.9	NA
C960102	BANKS	1/16/96	8:00 AM	NA	NA	312	9.8	NA
C960110	BANKS	1/16/96	12:30 PM	NA	NA	294	7.8	NA
C960153	BANKS	1/18/96	11:42 AM	7.2	10.1	309	10.6	17.2
C960111	BANKS	1/18/96	10:30 PM	NA	NA	329	7.4	NA
C960112	BANKS	1/21/96	8:30 AM	NA	NA	298	7.2	NA
C960120	BANKS	1/23/96	12:23 PM	NA	NA	321	9.0	NA
C960121	BANKS	1/25/96	10:23 PM	NA	NA	331	8.6	NA
C960122	BANKS	1/28/96	8:23 AM	NA	NA	333	8.4	NA
C960219	BANKS	1/30/96	12:00 PM	NA	NA	331	15.3	NA
C960220	BANKS	2/1/96	10:00 PM	NA	NA	343	14.8	NA
C960221	BANKS	2/4/96	8:00 AM	NA	NA	345	15.2	NA
C960229	BANKS	2/6/96	12:00 PM	NA	NA	391	13.5	NA
C960230	BANKS	2/8/96	10:00 PM	NA	NA	405	13.6	NA
C960231	BANKS	2/11/96	8:00 AM	NA	NA	400	13.6	NA
C960239	BANKS	2/13/96	12:00 PM	NA	NA	413	12.8	NA
C960282	BANKS	2/15/96	11:24 AM	7.4	8.4	383	14.2	10.2
C960240	BANKS	2/15/96	10:00 PM	NA	NA	392	12.4	NA
C960241	BANKS	2/18/96	8:00 AM	NA	NA	400	12.1	NA
C960249	BANKS	2/20/96	12:00 PM	NA	NA	398	7.1	NA
C960250	BANKS	2/22/96	10:00 PM	NA	NA	387	7.0	NA
C960251	BANKS	2/25/96	8:00 AM	NA	NA	355	6.9	NA
C960433	BANKS	2/27/96	12:00 PM	NA	NA	329	11.6	NA
C960434	BANKS	2/29/96	10:00 PM	NA	NA	300	11.5	NA
C960435	BANKS	3/3/96	8:00 AM	NA	NA	304	12.0	NA
C960574	BANKS	3/5/96	12:00 PM	NA	NA	300	12.7	NA
C960575	BANKS	3/7/96	10:00 PM	NA	NA	294	12.8	NA
C960428	BANKS	3/14/96	12:35 PM	7.5	10.2	278	15.5	NA
C960594	BANKS	3/19/96	12:00 PM	NA	NA	290	13.2	NA
C960595	BANKS	3/21/96	10:00 PM	NA	NA	286	14.4	NA
C960596	BANKS	3/24/96	8:00 AM	NA	NA	271	15.3	NA
C960721	BANKS	3/26/96	12:00 PM	NA	NA	268	14.2	NA
C960722	BANKS	3/29/96	10:00 PM	NA	NA	310	13.7	NA
C960723	BANKS	3/31/96	8:00 AM	NA	NA	310	14.2	NA
C960731	BANKS	4/2/96	12:00 PM	NA	NA	309	16.2	NA
C960732	BANKS	4/4/96	10:00 PM	NA	NA	331	16.2	NA
C960733	BANKS	4/7/96	8:00 AM	NA	NA	349	16.1	NA
C960741	BANKS	4/9/96	1:00 PM	NA	NA	381	15.4	NA
C960742	BANKS	4/11/96	11:00 PM	NA	NA	394	15.2	NA
C960846	BANKS	4/11/96	10:26 AM	7.9	9.0	381	17.3	8.0
C960743	BANKS	4/14/96	9:00 AM	NA	NA	386	15.6	NA
C960751	BANKS	4/16/96	12:00 PM	NA	NA	376	18.1	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C960752	BANKS	4/18/96	10:00 PM	NA	NA	369	17.8	NA
C960753	BANKS	4/21/96	8:00 AM	NA	NA	402	17.9	NA
C960761	BANKS	4/23/96	NA	NA	NA	409	22.7	NA
C960762	BANKS	4/25/96	NA	NA	NA	395	22.6	NA
C960763	BANKS	4/28/96	NA	NA	NA	386	23.2	NA
C961060	BANKS	4/30/96	12:00 PM	NA	NA	389	17.4	NA
C961061	BANKS	5/2/96	10:00 PM	NA	NA	393	15.9	NA
C961062	BANKS	5/5/96	8:00 AM	NA	NA	381	16.7	NA
C961093	BANKS	5/7/96	12:05 PM	NA	NA	397	22.6	NA
C961094	BANKS	5/8/96	10:05 PM	NA	NA	392	22.2	NA
C961081	BANKS	5/9/96	10:40 AM	7.3	9.0	379	17.8	7.3
C961095	BANKS	5/12/96	8:05 AM	NA	NA	390	22.4	NA
C961106	BANKS	5/14/96	11:10 AM	NA	NA	353	17.1	NA
C961107	BANKS	5/16/96	11:10 AM	NA	NA	382	16.7	NA
C961108	BANKS	5/19/96	11:10 AM	NA	NA	407	16.7	NA
C961119	BANKS	5/21/96	1:00 PM	NA	NA	326	18.5	NA
C961120	BANKS	5/23/96	11:00 PM	NA	NA	232	17.6	NA
C961121	BANKS	5/26/96	9:00 AM	NA	NA	257	17.6	NA
C961232	BANKS	5/28/96	12:00 PM	NA	NA	303	27.2	NA
C961233	BANKS	5/30/96	10:00 PM	NA	NA	296	27.1	NA
C961234	BANKS	6/2/96	8:00 AM	NA	NA	275	27.8	NA
C961267	BANKS	6/4/96	12:00 PM	NA	NA	270	20.1	NA
C961268	BANKS	6/6/96	10:00 PM	NA	NA	221	20.1	NA
C961269	BANKS	6/9/96	8:00 AM	NA	NA	218	20.3	NA
C961397	BANKS	6/11/96	12:00 PM	NA	NA	206	20.8	NA
C961406	BANKS	6/13/96	12:25 PM	7.5	8.4	217	21.4	19.0
C961398	BANKS	6/13/96	10:00 PM	NA	NA	204	20.5	NA
C961399	BANKS	6/16/96	8:00 AM	NA	NA	222	21.0	NA
C961513	BANKS	6/18/96	12:00 PM	NA	NA	220	17.0	NA
C961514	BANKS	6/20/96	10:00 PM	NA	NA	219	16.5	NA
C961515	BANKS	6/23/96	8:00 AM	NA	NA	212	16.7	NA
C961556	BANKS	6/25/96	12:00 PM	NA	NA	203	28.6	NA
C961557	BANKS	6/27/96	10:00 PM	NA	NA	219	29.0	NA
C961558	BANKS	6/30/96	8:00 AM	NA	NA	239	29.7	NA
C961603	BANKS	7/2/96	12:00 PM	NA	NA	222	23.5	NA
C961604	BANKS	7/4/96	10:00 PM	NA	NA	207	23.6	NA
C961605	BANKS	7/7/96	8:00 AM	NA	NA	205	23.9	NA
C961610	BANKS	7/9/96	12:00 PM	NA	NA	205	18.8	NA
C961611	BANKS	7/11/96	10:00 PM	NA	NA	192	19.1	NA
C961612	BANKS	7/14/96	8:00 AM	NA	NA	182	19.9	NA
C961617	BANKS	7/16/96	12:00 PM	NA	NA	186	24.8	NA
C961618	BANKS	7/18/96	10:00 PM	NA	NA	187	24.8	NA
C961664	BANKS	7/18/96	12:20 PM	7.7	8.2	184	22.8	27.0
C961619	BANKS	7/21/96	8:00 AM	NA	NA	190	25.1	NA
C961624	BANKS	7/23/96	12:00 PM	NA	NA	200	29.2	NA
C961625	BANKS	7/25/96	8:00 AM	NA	NA	205	29.2	NA
C961626	BANKS	7/28/96	8:00 AM	NA	NA	209	29.7	NA
C961691	BANKS	7/30/96	12:00 PM	NA	NA	205	19.3	NA
C961692	BANKS	8/1/96	10:00 PM	NA	NA	205	19.6	NA
C961693	BANKS	8/4/96	8:00 AM	NA	NA	205	20.9	NA
C961729	BANKS	8/6/96	12:00 PM	NA	NA	221	29.4	NA
C961731	BANKS	8/11/96	8:00 AM	NA	NA	232	30.5	NA
C961753	BANKS	8/13/96	12:00 PM	NA	NA	235	18.1	NA
C961724	BANKS	8/15/96	9:51 AM	7.2	7.3	211	25.8	7.9
C961754	BANKS	8/15/96	10:00 PM	NA	NA	231	18.2	NA
C961755	BANKS	8/18/96	8:00 AM	NA	NA	234	19.0	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C961763	BANKS	8/20/96	12:00 PM	NA	NA	253	19.4	NA
C961764	BANKS	8/22/96	10:00 PM	NA	NA	246	19.4	NA
C961765	BANKS	8/25/96	8:00 AM	NA	NA	257	19.6	NA
C961817	BANKS	8/27/96	12:00 PM	NA	NA	233	19.4	NA
C961818	BANKS	8/29/96	10:00 PM	NA	NA	245	19.3	NA
C961819	BANKS	9/1/96	8:00 AM	NA	NA	250	19.5	NA
C961892	BANKS	9/3/96	12:00 PM	NA	NA	254	23.8	NA
C961893	BANKS	9/5/96	10:00 PM	NA	NA	248	24.1	NA
C961894	BANKS	9/8/96	8:00 AM	NA	NA	248	25.0	NA
C961902	BANKS	9/10/96	12:00 PM	NA	NA	253	19.8	NA
C961859	BANKS	9/12/96	12:30 PM	NA	NA	247	23.1	4.0
C961903	BANKS	9/12/96	10:00 PM	NA	NA	262	19.9	NA
C961904	BANKS	9/15/96	8:00 AM	NA	NA	252	20.2	NA
C961912	BANKS	9/17/96	11:00 AM	NA	NA	249	17.5	NA
C961913	BANKS	9/19/96	9:00 PM	NA	NA	254	17.5	NA
C961914	BANKS	9/22/96	7:00 AM	NA	NA	249	18.0	NA
C961998	BANKS	9/24/96	12:00 PM	NA	NA	249	17.5	NA
C961999	BANKS	9/26/96	10:00 PM	NA	NA	248	17.3	NA
C962000	BANKS	9/29/96	8:00 AM	NA	NA	257	18.0	NA
C962079	BANKS	10/8/96	12:00 PM	NA	NA	296	19.2	NA
C962080	BANKS	10/10/96	10:00 PM	NA	NA	304	19.3	NA
C962034	BANKS	10/10/96	9:53 AM	8.1	8.5	293	20.2	8.8
C962081	BANKS	10/13/96	8:00 AM	NA	NA	308	19.6	NA
C962098	BANKS	10/22/96	10:45 AM	NA	NA	349	11.3	NA
C962110	BANKS	10/29/96	12:50 PM	NA	NA	139	13.2	NA
C962189	BANKS	11/14/96	12:35 PM	7.2	9.6	361	14.4	3.5
C962346	BANKS	12/12/96	12:45 PM	7.6	8.6	410	14.5	10.0
C952538	BARKERNOBAY	10/11/95	7:49 AM	6.8	7.4	259	18.6	35.0
C952756	BARKERNOBAY	11/8/95	12:28 PM	7.4	9.7	285	18.2	46.1
C953043	BARKERNOBAY	12/6/95	9:45 AM	7.1	6.3	285	13.7	32.5
C960130	BARKERNOBAY	1/10/96	1:50 PM	7.3	8.5	467	12.3	42.5
C960267	BARKERNOBAY	2/8/96	9:35 AM	7.3	7.3	142	14.1	NA
C960401	BARKERNOBAY	3/7/96	10:00 AM	7.3	9.0	310	13.3	106.0
C960831	BARKERNOBAY	4/4/96	9:00 AM	7.2	9.6	288	16.7	50.6
C961049	BARKERNOBAY	5/2/96	8:50 AM	7.7	9.3	472	22.5	12.3
C961247	BARKERNOBAY	6/6/96	9:05 AM	7.7	7.8	354	25.4	47.3
BL5503	BARKERNOBAY	7/1/96	1:11 PM	7.5	7.3	327	27.1	41.0
C961639	BARKERNOBAY	7/11/96	8:15 AM	8.3	7.5	282	22.7	56.0
BL5510	BARKERNOBAY	7/15/96	10:15 AM	7.6	7.3	279	21.9	59.2
BL5517	BARKERNOBAY	7/22/96	11:30 AM	7.7	8.0	272	25.1	49.0
BL5532	BARKERNOBAY	7/29/96	11:00 AM	7.5	3.7	272	28.2	46.0
C961795	BARKERNOBAY	8/5/96	11:14 AM	7.2	7.7	244	22.4	66.6
C961773	BARKERNOBAY	8/7/96	8:03 AM	7.2	7.5	224	20.1	62.0
BL5539	BARKERNOBAY	8/12/96	11:00 AM	7.4	7.5	245	25.8	39.7
BL5546	BARKERNOBAY	8/19/96	10:13 AM	7.8	8.2	227	21.2	54.9
BL5553	BARKERNOBAY	8/26/96	11:45 AM	7.6	7.6	267	20.9	41.8
C961829	BARKERNOBAY	9/5/96	8:30 AM	7.4	8.0	248	19.7	40.5
C961953	BARKERNOBAY	9/9/96	12:20 PM	7.8	7.4	232	23.3	41.6
C961960	BARKERNOBAY	9/16/96	10:26 AM	7.7	7.7	254	19.6	50.7
C961967	BARKERNOBAY	9/23/96	9:15 AM	7.1	9.7	243	19.2	43.0
C961974	BARKERNOBAY	9/30/96	9:20 AM	7.8	8.0	280	18.3	45.6
C962076	BARKERNOBAY	10/2/96	10:00 PM	NA	NA	306	19.9	NA
C961991	BARKERNOBAY	10/3/96	8:15 AM	7.6	7.7	306	19.1	46.9
C962077	BARKERNOBAY	10/5/96	10:00 PM	NA	NA	300	20.3	NA
C962041	BARKERNOBAY	10/7/96	9:45 AM	7.5	7.0	281	21.0	44.9
C962216	BARKERNOBAY	11/7/96	9:30 AM	7.5	9.2	341	12.0	28.4

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C962321	BARKERNOBAY	12/5/96	9:00 AM	7.1	7.5	286	10.6	23.7
C952540	CONCOSPP1	10/11/95	10:19 AM	7.3	8.1	189	19.8	10.0
C952758	CONCOSPP1	11/8/95	10:22 AM	7.1	10.4	195	16.0	5.6
C953045	CONCOSPP1	12/6/95	1:15 PM	7.5	7.1	210	14.8	4.4
C960132	CONCOSPP1	1/10/96	11:50 AM	7.6	11.1	291	11.7	8.1
C960269	CONCOSPP1	2/8/96	12:40 PM	7.7	9.7	400	14.0	NA
C960403	CONCOSPP1	3/7/96	1:55 PM	8.3	11.2	909	16.2	14.0
C960833	CONCOSPP1	4/4/96	2:00 PM	7.7	10.4	552	19.0	5.1
C961051	CONCOSPP1	5/2/96	11:20 AM	7.4	9.2	512	23.1	5.6
C961404	CONCOSPP1	6/6/96	1:10 PM	7.6	8.2	291	27.0	6.6
C961641	CONCOSPP1	7/11/96	10:45 AM	7.6	7.8	175	24.8	10.6
C961775	CONCOSPP1	8/7/96	11:06 AM	7.8	7.8	231	24.0	14.0
C961832	CONCOSPP1	9/5/96	12:30 PM	7.9	8.3	281	23.3	10.5
C961993	CONCOSPP1	10/3/96	11:30 AM	7.6	8.4	294	21.2	16.3
C962218	CONCOSPP1	11/7/96	12:20 PM	8.2	10.4	506	13.5	3.5
C962323	CONCOSPP1	12/5/96	12:30 PM	7.3	7.7	308	14.7	3.2
C952596	DMC	10/19/95	10:50 AM	7.3	7.1	165	17.9	38.0
C952814	DMC	11/16/95	11:15 AM	7.6	7.7	458	16.9	17.0
C953061	DMC	12/7/95	NA	7.5	9.0	325	15.3	9.3
C960152	DMC	1/18/96	12:10 PM	7.0	9.9	622	10.8	15.6
C960281	DMC	2/15/96	11:40 AM	7.3	8.6	333	13.9	23.4
C960427	DMC	3/14/96	11:25 AM	7.4	10.1	305	14.9	305.0
C960845	DMC	4/11/96	11:12 AM	7.5	8.7	393	17.8	26.0
C961080	DMC	5/9/96	11:20 AM	7.2	9.3	337	17.7	25.3
C961281	DMC	6/13/96	11:50 AM	7.5	8.6	552	22.0	52.0
C961663	DMC	7/18/96	11:50 AM	7.7	7.5	489	24.1	35.0
C961723	DMC	8/15/96	10:25 AM	7.5	6.6	581	26.1	26.7
C961858	DMC	9/12/96	1:45 PM	7.7	7.1	586	23.8	27.2
C962033	DMC	10/10/96	10:27 AM	7.5	7.9	347	21.1	20.7
C962188	DMC	11/14/96	12:10 PM	7.0	9.7	338	15.2	8.5
C962345	DMC	12/12/96	1:35 PM	7.6	8.0	223	14.1	28.0
C952492	GREENES	10/1/95	8:00 AM	NA	NA	135	20.5	NA
C952534	GREENES	10/3/95	12:00 PM	NA	NA	122	17.9	NA
C952527	GREENES	10/3/95	12:00 PM	NA	NA	112	18.0	NA
C952535	GREENES	10/6/95	10:00 PM	NA	NA	110	18.3	NA
C952536	GREENES	10/8/95	8:00 AM	NA	NA	115	18.2	NA
C952585	GREENES	10/10/95	12:00 PM	NA	NA	127	17.2	NA
C952547	GREENES	10/12/95	9:20 AM	7.1	8.1	162	17.0	9.0
C952586	GREENES	10/12/95	10:00 PM	NA	NA	148	17.5	NA
C952587	GREENES	10/15/95	8:00 AM	NA	NA	140	17.3	NA
C952633	GREENES	10/17/95	12:00 PM	NA	NA	135	15.3	NA
C952634	GREENES	10/19/95	10:00 PM	NA	NA	125	15.3	NA
C952635	GREENES	10/22/95	8:00 AM	NA	NA	129	14.7	NA
C952681	GREENES	10/24/95	12:00 PM	NA	NA	131	16.0	NA
C952682	GREENES	10/26/95	10:00 PM	NA	NA	132	15.9	NA
C952683	GREENES	10/29/95	8:00 AM	NA	NA	139	15.9	NA
C952752	GREENES	10/31/95	12:00 PM	NA	NA	140	14.0	NA
C952753	GREENES	11/2/95	10:00 PM	NA	NA	140	14.1	NA
C952754	GREENES	11/5/95	8:00 AM	NA	NA	166	13.9	NA
C952803	GREENES	11/7/95	12:00 PM	NA	NA	125	16.0	NA
C952765	GREENES	11/9/95	12:40 PM	7.5	9.1	131	16.0	7.5
C952804	GREENES	11/9/95	10:00 PM	NA	NA	132	16.2	NA
C952805	GREENES	11/12/95	8:00 AM	NA	NA	151	16.1	NA
C952851	GREENES	11/14/95	12:00 PM	NA	NA	146	15.8	NA
C952852	GREENES	11/16/95	10:00 PM	NA	NA	154	15.8	NA
C952853	GREENES	11/19/95	8:00 AM	NA	NA	134	15.6	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C952887	GREENES	11/21/95	12:00 PM	NA	NA	145	14.2	NA
C952888	GREENES	11/23/95	10:00 PM	NA	NA	153	13.6	NA
C952889	GREENES	11/26/95	8:00 AM	NA	NA	168	13.6	NA
C953250	GREENES	11/28/95	12:00 PM	NA	NA	157	14.7	NA
C953251	GREENES	11/30/95	10:00 PM	NA	NA	147	14.7	NA
C953252	GREENES	12/3/95	8:00 AM	NA	NA	152	14.1	NA
C953260	GREENES	12/5/95	12:00 PM	NA	NA	117	13.8	NA
C953261	GREENES	12/7/95	10:00 PM	NA	NA	113	13.1	NA
C953069	GREENES	12/7/95	11:40 AM	7.8	10.0	143	14.2	6.1
C953262	GREENES	12/10/95	8:00 AM	NA	NA	116	13.0	NA
C953270	GREENES	12/12/95	12:00 PM	NA	NA	154	9.3	NA
C953271	GREENES	12/14/95	12:00 PM	NA	NA	164	8.9	NA
C953272	GREENES	12/17/95	12:00 PM	NA	NA	130	8.9	NA
C960086	GREENES	12/26/95	8:00 AM	NA	NA	173	10.8	NA
C960087	GREENES	12/28/95	12:00 PM	NA	NA	156	10.8	NA
C960088	GREENES	12/31/95	10:00 PM	NA	NA	172	10.7	NA
C960096	GREENES	1/2/96	12:00 PM	NA	NA	136	10.4	NA
C960097	GREENES	1/4/96	10:00 PM	NA	NA	153	10.3	NA
C960098	GREENES	1/7/96	8:00 AM	NA	NA	168	10.3	NA
C960139	GREENES	1/11/96	12:05 PM	7.5	11.5	184	11.5	17.1
C960106	GREENES	1/16/96	12:00 PM	NA	NA	191	9.9	NA
C960107	GREENES	1/16/96	10:00 PM	NA	NA	170	9.7	NA
C960116	GREENES	1/16/96	12:00 PM	NA	NA	168	8.5	NA
C960108	GREENES	1/16/96	8:00 AM	NA	NA	189	9.6	NA
C960117	GREENES	1/18/96	10:00 PM	NA	NA	169	8.0	NA
C960118	GREENES	1/21/96	8:00 AM	NA	NA	131	7.5	NA
C960126	GREENES	1/23/96	12:00 PM	NA	NA	138	9.5	NA
C960127	GREENES	1/25/96	10:00 PM	NA	NA	139	8.9	NA
C960128	GREENES	1/28/96	8:00 AM	NA	NA	132	8.8	NA
C960225	GREENES	1/30/96	12:00 PM	NA	NA	133	14.2	NA
C960226	GREENES	2/1/96	10:00 PM	NA	NA	133	13.6	NA
C960261	GREENES	2/7/96	9:00 AM	8.1	11.2	91	12.5	NA
C960245	GREENES	2/13/96	12:00 PM	NA	NA	127	13.7	NA
C960246	GREENES	2/15/96	10:00 PM	NA	NA	126	13.5	NA
C960247	GREENES	2/18/96	8:00 AM	NA	NA	126	13.4	NA
C960411	GREENES	3/6/96	12:40 PM	7.6	11.2	140	12.2	43.9
C960581	GREENES	3/7/96	10:00 PM	NA	NA	122	13.3	NA
C960582	GREENES	3/10/96	8:00 AM	NA	NA	134	13.4	NA
C960590	GREENES	3/12/96	12:00 PM	NA	NA	139	18.2	NA
C960591	GREENES	3/14/96	10:00 PM	NA	NA	135	17.8	NA
C960592	GREENES	3/17/96	8:00 AM	NA	NA	136	17.5	NA
C960600	GREENES	3/19/96	12:00 PM	NA	NA	140	11.6	NA
C960601	GREENES	3/21/96	10:00 PM	NA	NA	144	11.4	NA
C960602	GREENES	3/24/96	8:00 AM	NA	NA	144	11.1	NA
C960727	GREENES	3/26/96	12:00 PM	NA	NA	141	12.6	NA
C960728	GREENES	3/29/96	10:00 PM	NA	NA	141	12.7	NA
C960737	GREENES	4/2/96	12:00 PM	NA	NA	130	16.6	NA
C960729	GREENES	4/2/96	8:00 AM	NA	NA	145	12.6	NA
C960825	GREENES	4/3/96	12:15 PM	7.3	11.3	111	14.6	32.5
C960738	GREENES	4/4/96	10:00 PM	NA	NA	141	16.5	NA
C960739	GREENES	4/7/96	8:00 AM	NA	NA	127	16.4	NA
C960747	GREENES	4/9/96	1:00 PM	NA	NA	123	15.8	NA
C960748	GREENES	4/11/96	11:00 PM	NA	NA	129	15.7	NA
C960749	GREENES	4/11/96	9:00 AM	NA	NA	124	15.6	NA
C960757	GREENES	4/16/96	12:00 PM	NA	NA	117	15.2	NA
C960758	GREENES	4/18/96	10:00 PM	NA	NA	107	15.4	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C960759	GREENES	4/21/96	10:00 PM	NA	NA	108	13.5	NA
C960767	GREENES	4/23/96	NA	NA	NA	117	20.3	NA
C960768	GREENES	4/25/96	NA	NA	NA	121	20.7	NA
C960769	GREENES	4/28/96	NA	NA	NA	132	20.6	NA
C961066	GREENES	4/30/96	12:00 PM	NA	NA	122	16.6	NA
C961043	GREENES	5/1/96	11:23 AM	7.2	10.9	120	19.4	11.4
C961067	GREENES	5/2/96	10:00 PM	NA	NA	119	16.3	NA
C961068	GREENES	5/5/96	8:00 AM	NA	NA	124	16.3	NA
C961099	GREENES	5/7/96	12:00 PM	NA	NA	130	22.5	NA
C961100	GREENES	5/9/96	10:00 PM	NA	NA	121	22.6	NA
C961101	GREENES	5/12/96	8:00 AM	NA	NA	137	22.7	NA
C961112	GREENES	5/14/96	9:30 AM	NA	NA	127	17.0	NA
C961113	GREENES	5/16/96	9:30 AM	NA	NA	112	16.4	NA
C961114	GREENES	5/19/96	9:30 AM	NA	NA	56	16.2	NA
C961126	GREENES	5/23/96	10:00 PM	NA	NA	91	18.5	NA
C961127	GREENES	5/26/96	8:00 AM	NA	NA	93	18.4	NA
C961225	GREENES	5/28/96	12:00 PM	NA	NA	109	25.8	NA
C961226	GREENES	5/31/96	7:43 AM	NA	NA	113	26.5	NA
C961227	GREENES	6/2/96	8:00 AM	NA	NA	117	25.6	NA
C961260	GREENES	6/3/96	12:00 PM	NA	NA	110	22.6	NA
C961261	GREENES	6/5/96	10:00 PM	NA	NA	112	22.7	NA
C961241	GREENES	6/5/96	11:35 AM	7.5	8.7	118	22.4	13.5
C961262	GREENES	6/8/96	8:00 AM	NA	NA	120	22.7	NA
C961376	GREENES	6/11/96	12:00 PM	NA	NA	148	17.8	NA
C961377	GREENES	6/12/96	10:00 PM	NA	NA	112	17.3	NA
C961378	GREENES	6/15/96	8:00 AM	NA	NA	125	17.4	NA
C961506	GREENES	6/17/96	12:00 PM	NA	NA	136	22.0	NA
C961507	GREENES	6/19/96	10:00 PM	NA	NA	126	21.8	NA
C961125	GREENES	6/21/96	12:00 PM	NA	NA	80	18.7	NA
C961508	GREENES	6/22/96	8:00 AM	NA	NA	132	21.8	NA
C961549	GREENES	6/24/96	10:10 PM	NA	NA	133	27.3	NA
C961550	GREENES	6/26/96	10:10 PM	NA	NA	124	27.2	NA
C961551	GREENES	6/29/96	8:10 AM	NA	NA	116	27.3	NA
C961562	GREENES	7/1/96	11:00 AM	NA	NA	598	19.2	NA
C961566	GREENES	7/1/96	12:00 PM	NA	NA	128	23.5	NA
C961567	GREENES	7/3/96	10:00 PM	NA	NA	120	23.1	NA
C961568	GREENES	7/6/96	8:00 AM	NA	NA	125	23.2	NA
C961576	GREENES	7/9/96	12:00 PM	NA	NA	121	19.8	NA
C961633	GREENES	7/10/96	12:15 PM	7.9	8.2	120	23.7	10.7
C961577	GREENES	7/11/96	10:00 PM	NA	NA	114	19.9	NA
C961578	GREENES	7/14/96	8:00 AM	NA	NA	115	19.6	NA
C961586	GREENES	7/16/96	12:06 PM	NA	NA	121	24.1	NA
C961587	GREENES	7/18/96	11:00 PM	NA	NA	111	24.6	NA
C961588	GREENES	7/21/96	8:00 AM	NA	NA	118	24.5	NA
C961596	GREENES	7/23/96	12:00 PM	NA	NA	122	27.0	NA
C961597	GREENES	7/25/96	10:00 PM	NA	NA	117	27.8	NA
C961598	GREENES	7/28/96	8:00 AM	NA	NA	126	27.9	NA
C961697	GREENES	7/30/96	12:00 PM	NA	NA	134	19.4	NA
C961698	GREENES	8/1/96	10:00 PM	NA	NA	121	19.4	NA
C961699	GREENES	8/4/96	8:00 AM	NA	NA	128	19.1	NA
C961735	GREENES	8/6/96	12:00 PM	NA	NA	121	28.8	NA
C961728	GREENES	8/6/96	8:00 AM	NA	NA	226	27.1	NA
C961710	GREENES	8/7/96	11:20 AM	7.1	8.5	127	22.0	9.0
C961736	GREENES	8/8/96	10:00 PM	NA	NA	125	28.9	NA
C961737	GREENES	8/11/96	8:00 AM	NA	NA	137	28.6	NA
C961759	GREENES	8/13/96	1:00 PM	NA	NA	127	18.7	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C961760	GREENES	8/15/96	11:00 PM	NA	NA	121	18.9	NA
C961761	GREENES	8/18/96	9:00 AM	NA	NA	137	18.8	NA
C961769	GREENES	8/20/96	12:00 PM	NA	NA	140	18.5	NA
C961770	GREENES	8/22/96	10:00 PM	NA	NA	140	18.9	NA
C961771	GREENES	8/25/96	8:00 AM	NA	NA	156	18.8	NA
C961898	GREENES	9/3/96	1:00 PM	NA	NA	166	24.5	NA
C961839	GREENES	9/4/96	10:40 AM	7.6	8.3	162	22.2	9.6
C961899	GREENES	9/5/96	11:00 PM	NA	NA	178	24.0	NA
C961900	GREENES	9/8/96	9:00 AM	NA	NA	179	24.0	NA
C961983	GREENES	10/2/96	11:20 PM	7.2	8.1	141	20.0	6.2
C962087	GREENES	10/15/96	10:30 AM	NA	NA	127	17.9	NA
C962147	GREENES	11/5/96	1:10 PM	8.5	9.7	146	15.1	5.0
C962151	GREENES	11/6/96	11:20 AM	7.3	9.7	143	14.4	4.9
C962162	GREENES	11/12/96	1:45 PM	7.1	9.4	143	15.1	4.2
C962167	GREENES	11/20/96	1:00 PM	7.1	9.3	147	15.3	34.0
C962172	GREENES	11/26/96	1:45 PM	7.0	9.6	146	15.9	20.5
C962278	GREENES	12/3/96	12:15 PM	7.4	10.0	160	12.7	5.4
C962312	GREENES	12/4/96	11:44 AM	7.2	10.4	157	12.2	6.9
C962283	GREENES	12/10/96	1:00 PM	6.8	10.2	115	12.8	60.0
C962288	GREENES	12/17/96	1:45 PM	7.2	9.3	103	12.2	40.0
C952541	JERSEYPP01	10/11/95	9:55 AM	7.2	6.5	516	18.8	NA
C952759	JERSEYPP01	11/8/95	9:49 AM	6.9	8.3	868	15.2	NA
C953046	JERSEYPP01	12/6/95	2:10 PM	7.0	4.5	926	15.4	20.5
C960133	JERSEYPP01	1/10/96	12:30 PM	6.7	6.9	2620	12.8	NA
C960270	JERSEYPP01	2/8/96	2:10 PM	6.6	5.7	3160	14.8	NA
C960404	JERSEYPP01	3/7/96	1:00 PM	6.7	8.3	2840	17.3	60.6
C960834	JERSEYPP01	4/4/96	12:37 PM	6.9	7.6	2220	20.9	278.0
C961052	JERSEYPP01	5/2/96	12:55 PM	7.1	6.5	1065	23.9	40.1
C961250	JERSEYPP01	6/6/96	11:52 AM	7.1	5.5	750	26.2	28.2
C961642	JERSEYPP01	7/11/96	11:15 AM	7.4	7.6	519	23.3	75.8
C961776	JERSEYPP01	8/7/96	10:30 AM	6.6	5.6	1147	21.4	26.0
C961994	JERSEYPP01	10/3/96	11:10 AM	7.6	7.3	884	18.8	36.9
C962219	JERSEYPP01	11/7/96	12:50 PM	7.3	7.3	1846	13.5	113.0
C962324	JERSEYPP01	12/5/96	1:15 AM	7.1	9.7	1247	12.7	15.7
C952539	MALLARDIS	10/11/95	9:06 AM	7.5	8.5	900	18.9	45.0
C952757	MALLARDIS	11/8/95	11:20 AM	7.2	9.9	3670	17.7	26.1
C953044	MALLARDIS	12/6/95	12:15 PM	7.4	6.3	5820	15.5	22.4
C960131	MALLARDIS	1/10/96	10:45 AM	7.6	11.0	963	12.6	39.5
C960268	MALLARDIS	2/8/96	11:45 AM	7.7	10.4	211	13.0	NA
C960832	MALLARDIS	4/4/96	11:33 AM	7.7	10.6	224	11.9	15.1
C961050	MALLARDIS	5/2/96	10:25 AM	7.1	10.2	211	21.5	12.3
C961248	MALLARDIS	6/6/96	10:45 AM	7.5	9.2	166	23.3	37.4
C961640	MALLARDIS	7/11/96	9:50 AM	8.2	8.3	1338	22.5	41.3
C961774	MALLARDIS	8/7/96	9:35 AM	7.8	8.3	3750	21.9	48.0
C961831	MALLARDIS	9/5/96	11:20 AM	7.7	8.3	2500	21.7	29.9
C961992	MALLARDIS	10/3/96	10:00 AM	7.4	8.7	8170	19.1	46.4
C962217	MALLARDIS	11/7/96	11:30 AM	7.5	9.5	852	14.8	21.5
C962322	MALLARDIS	12/5/96	11:30 AM	7.0	10.5	8090	13.4	30.0
C952590	MIDDLER	10/18/95	8:33 AM	7.0	7.9	214	19.1	12.0
C952808	MIDDLER	11/15/95	10:07 AM	6.8	9.2	209	16.9	10.6
C953052	MIDDLER	12/6/95	10:45 AM	7.3	7.6	279	14.9	8.6
C960146	MIDDLER	1/17/96	9:33 AM	7.3	10.3	304	10.6	15.3
C960275	MIDDLER	2/14/96	10:35 AM	7.5	7.9	458	14.8	13.3
C960418	MIDDLER	3/13/96	10:30 AM	7.7	10.1	317	13.7	14.5
C960839	MIDDLER	4/10/96	9:10 AM	7.3	8.6	332	17.8	8.9
C961074	MIDDLER	5/8/96	10:35 AM	7.2	8.7	418	19.8	8.7

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C961275	MIDDLER	6/12/96	11:00 AM	7.9	6.9	228	24.3	NA
C961647	MIDDLER	7/17/96	9:10 AM	7.2	7.1	194	23.7	7.0
C961717	MIDDLER	8/14/96	8:57 AM	7.0	7.3	219	26.0	6.4
C961849	MIDDLER	9/11/96	8:45 AM	7.0	7.6	255	21.5	8.9
C962025	MIDDLER	10/9/96	9:20 AM	7.1	6.4	316	22.0	6.1
C962197	MIDDLER	11/13/96	11:35 AM	6.9	8.9	311	15.5	5.0
C962337	MIDDLER	12/11/96	11:50 AM	7.1	11.8	402	13.1	15.6
C952489	OLDRIVBACISL	10/1/95	8:00 AM	NA	NA	189	19.7	NA
C952531	OLDRIVBACISL	10/3/95	12:00 PM	NA	NA	181	17.9	NA
C952532	OLDRIVBACISL	10/5/95	10:00 PM	NA	NA	184	17.6	NA
C952533	OLDRIVBACISL	10/8/95	8:00 AM	NA	NA	173	17.2	NA
C952582	OLDRIVBACISL	10/10/95	12:00 PM	NA	NA	171	16.3	NA
C952578	OLDRIVBACISL	10/10/95	12:00 PM	NA	NA	165	16.2	NA
C952583	OLDRIVBACISL	10/12/95	10:00 PM	NA	NA	175	16.2	NA
C952584	OLDRIVBACISL	10/15/95	8:00 AM	NA	NA	177	16.2	NA
C952630	OLDRIVBACISL	10/17/95	12:00 PM	NA	NA	170	14.7	NA
C952592	OLDRIVBACISL	10/18/95	9:08 AM	7.1	8.1	175	18.5	14.0
C952631	OLDRIVBACISL	10/19/95	10:00 PM	NA	NA	174	14.2	NA
C952632	OLDRIVBACISL	10/22/95	8:00 AM	NA	NA	166	14.1	NA
C952678	OLDRIVBACISL	10/24/95	12:00 PM	NA	NA	165	15.9	NA
C952679	OLDRIVBACISL	10/26/95	10:00 PM	NA	NA	162	15.1	NA
C952680	OLDRIVBACISL	10/29/95	8:00 AM	NA	NA	160	15.0	NA
C952749	OLDRIVBACISL	10/31/95	1:00 PM	NA	NA	157	14.7	NA
C952750	OLDRIVBACISL	11/2/95	11:00 PM	NA	NA	162	13.9	NA
C952751	OLDRIVBACISL	11/5/95	9:00 AM	NA	NA	165	13.6	NA
C952800	OLDRIVBACISL	11/7/95	12:00 PM	NA	NA	168	15.4	NA
C952801	OLDRIVBACISL	11/9/95	10:00 PM	NA	NA	177	15.4	NA
C952802	OLDRIVBACISL	11/12/95	8:00 AM	NA	NA	185	15.4	NA
C952848	OLDRIVBACISL	11/14/95	12:00 PM	NA	NA	182	15.1	NA
C952810	OLDRIVBACISL	11/15/95	11:01 AM	7.0	7.1	180	17.6	6.9
C952849	OLDRIVBACISL	11/16/95	10:00 PM	NA	NA	186	14.7	NA
C952850	OLDRIVBACISL	11/19/95	8:00 AM	NA	NA	189	14.8	NA
C952884	OLDRIVBACISL	11/21/95	12:00 PM	NA	NA	185	11.3	NA
C952885	OLDRIVBACISL	11/23/95	10:00 PM	NA	NA	187	11.5	NA
C952886	OLDRIVBACISL	11/26/95	8:00 AM	NA	NA	188	11.2	NA
C953247	OLDRIVBACISL	11/28/95	12:00 PM	NA	NA	189	15.1	NA
C953248	OLDRIVBACISL	11/30/95	10:00 PM	NA	NA	194	14.8	NA
C953249	OLDRIVBACISL	12/3/95	8:00 AM	NA	NA	196	14.9	NA
C953257	OLDRIVBACISL	12/5/95	12:00 PM	NA	NA	155	13.6	NA
C953054	OLDRIVBACISL	12/6/95	11:41 AM	7.6	7.8	201	14.9	7.3
C953258	OLDRIVBACISL	12/7/95	10:00 PM	NA	NA	154	13.3	NA
C953259	OLDRIVBACISL	12/10/95	8:00 AM	NA	NA	156	13.1	NA
C953267	OLDRIVBACISL	12/12/95	12:00 PM	NA	NA	201	10.9	NA
C953268	OLDRIVBACISL	12/14/95	10:00 PM	NA	NA	225	9.5	NA
C953269	OLDRIVBACISL	12/17/95	8:00 AM	NA	NA	239	9.3	NA
C960083	OLDRIVBACISL	12/26/95	8:00 AM	NA	NA	226	10.5	NA
C960084	OLDRIVBACISL	12/28/95	12:00 PM	NA	NA	236	10.4	NA
C960085	OLDRIVBACISL	12/31/95	10:00 PM	NA	NA	239	10.2	NA
C960093	OLDRIVBACISL	1/2/96	12:00 PM	NA	NA	231	10.6	NA
C960094	OLDRIVBACISL	1/4/96	10:00 PM	NA	NA	230	9.6	NA
C960095	OLDRIVBACISL	1/7/96	8:00 AM	NA	NA	232	9.8	NA
C960104	OLDRIVBACISL	1/16/96	10:00 PM	NA	NA	228	9.6	NA
C960105	OLDRIVBACISL	1/16/96	8:00 AM	NA	NA	224	9.5	NA
C960113	OLDRIVBACISL	1/16/96	2:00 PM	NA	NA	218	7.8	NA
C960103	OLDRIVBACISL	1/16/96	12:00 PM	NA	NA	232	10.2	NA
C960148	OLDRIVBACISL	1/17/96	10:40 AM	7.5	10.9	225	10.3	16.4

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C960114	OLDRIVBACISL	1/19/96	12:00 AM	NA	NA	221	7.3	NA
C960115	OLDRIVBACISL	1/21/96	10:00 AM	NA	NA	231	6.9	NA
C960222	OLDRIVBACISL	1/30/96	12:00 PM	NA	NA	231	15.4	NA
C960223	OLDRIVBACISL	2/2/96	10:00 PM	NA	NA	249	13.9	NA
C960224	OLDRIVBACISL	2/4/96	8:00 AM	NA	NA	220	13.8	NA
C960232	OLDRIVBACISL	2/6/96	12:00 PM	NA	NA	297	13.7	NA
C960233	OLDRIVBACISL	2/8/96	10:00 PM	NA	NA	332	13.7	NA
C960234	OLDRIVBACISL	2/11/96	8:00 AM	NA	NA	342	13.5	NA
C960242	OLDRIVBACISL	2/13/96	12:00 PM	NA	NA	328	14.3	NA
C960277	OLDRIVBACISL	2/14/96	11:50 AM	7.1	7.5	334	14.3	11.3
C960243	OLDRIVBACISL	2/15/96	10:00 PM	NA	NA	360	14.0	NA
C960244	OLDRIVBACISL	2/18/96	8:00 AM	NA	NA	338	13.8	NA
C960252	OLDRIVBACISL	2/20/96	12:46 PM	NA	NA	331	7.2	NA
C960253	OLDRIVBACISL	2/22/96	10:46 PM	NA	NA	374	7.6	NA
C960254	OLDRIVBACISL	2/25/96	8:46 AM	NA	NA	478	7.3	NA
C960436	OLDRIVBACISL	2/27/96	12:00 PM	NA	NA	393	11.8	NA
C960437	OLDRIVBACISL	2/29/96	10:00 PM	NA	NA	375	11.7	NA
C960438	OLDRIVBACISL	3/3/96	8:00 AM	NA	NA	370	11.7	NA
C960577	OLDRIVBACISL	3/5/96	12:00 PM	NA	NA	366	13.0	NA
C960578	OLDRIVBACISL	3/7/96	10:00 PM	NA	NA	356	13.2	NA
C960579	OLDRIVBACISL	3/10/96	8:00 AM	NA	NA	291	13.0	NA
C960587	OLDRIVBACISL	3/12/96	12:00 PM	NA	NA	285	17.5	NA
C960420	OLDRIVBACISL	3/13/96	11:40 AM	7.5	10.9	307	14.0	8.5
C960588	OLDRIVBACISL	3/14/96	10:00 PM	NA	NA	333	17.0	NA
C960589	OLDRIVBACISL	3/17/96	8:00 AM	NA	NA	354	16.8	NA
C960597	OLDRIVBACISL	3/19/96	12:00 PM	NA	NA	332	12.7	NA
C960598	OLDRIVBACISL	3/21/96	10:00 PM	NA	NA	315	12.9	NA
C960599	OLDRIVBACISL	3/24/96	8:00 AM	NA	NA	313	13.6	NA
C960724	OLDRIVBACISL	4/2/96	1:00 PM	NA	NA	317	13.1	NA
C960725	OLDRIVBACISL	4/2/96	11:00 PM	NA	NA	320	13.0	NA
C960726	OLDRIVBACISL	4/2/96	9:00 AM	NA	NA	330	13.0	NA
C960734	OLDRIVBACISL	4/2/96	12:00 PM	NA	NA	336	16.6	NA
C960735	OLDRIVBACISL	4/4/96	10:00 PM	NA	NA	332	16.2	NA
C960736	OLDRIVBACISL	4/4/96	8:00 AM	NA	NA	294	16.1	NA
C960744	OLDRIVBACISL	4/9/96	1:00 PM	NA	NA	287	16.0	NA
C960841	OLDRIVBACISL	4/10/96	10:30 AM	7.4	9.2	274	18.1	6.3
C960745	OLDRIVBACISL	4/11/96	11:00 PM	NA	NA	294	15.8	NA
C960746	OLDRIVBACISL	4/14/96	9:00 AM	NA	NA	260	15.6	NA
C960754	OLDRIVBACISL	4/16/96	12:00 PM	NA	NA	272	15.6	NA
C960755	OLDRIVBACISL	4/18/96	10:00 PM	NA	NA	310	15.7	NA
C960756	OLDRIVBACISL	4/21/96	8:00 AM	NA	NA	294	15.7	NA
C960764	OLDRIVBACISL	4/23/96	NA	NA	NA	391	22.2	NA
C960765	OLDRIVBACISL	4/25/96	NA	NA	NA	446	21.6	NA
C960766	OLDRIVBACISL	4/28/96	NA	NA	NA	426	21.7	NA
C961063	OLDRIVBACISL	4/30/96	12:00 PM	NA	NA	421	18.1	NA
C961064	OLDRIVBACISL	5/2/96	10:00 PM	NA	NA	406	17.6	NA
C961065	OLDRIVBACISL	5/5/96	8:00 AM	NA	NA	363	17.2	NA
C961096	OLDRIVBACISL	5/7/96	12:00 PM	NA	NA	390	22.5	NA
C961076	OLDRIVBACISL	5/8/96	11:30 AM	7.2	8.7	369	20.5	6.9
C961097	OLDRIVBACISL	5/9/96	10:00 PM	NA	NA	376	22.4	NA
C961098	OLDRIVBACISL	5/12/96	8:00 AM	NA	NA	414	22.5	NA
C961109	OLDRIVBACISL	5/14/96	12:30 PM	NA	NA	373	17.4	NA
C961110	OLDRIVBACISL	5/16/96	12:30 PM	NA	NA	313	16.9	NA
C961111	OLDRIVBACISL	5/19/96	12:30 PM	NA	NA	320	16.8	NA
C961122	OLDRIVBACISL	5/21/96	12:45 PM	NA	NA	378	18.8	NA
C961123	OLDRIVBACISL	5/23/96	10:45 PM	NA	NA	341	18.7	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C961124	OLDRIVBACISL	5/26/96	8:45 AM	NA	NA	288	18.4	NA
C961235	OLDRIVBACISL	5/28/96	12:00 PM	NA	NA	272	26.0	NA
C961236	OLDRIVBACISL	5/30/96	10:00 PM	NA	NA	235	25.7	NA
C961237	OLDRIVBACISL	6/2/96	8:00 AM	NA	NA	190	25.8	NA
C961270	OLDRIVBACISL	6/4/96	12:00 PM	NA	NA	167	20.5	NA
C961271	OLDRIVBACISL	6/6/96	10:00 PM	NA	NA	156	20.7	NA
C961272	OLDRIVBACISL	6/9/96	8:00 AM	NA	NA	146	20.6	NA
C961400	OLDRIVBACISL	6/11/96	12:00 PM	NA	NA	150	21.6	NA
C961277	OLDRIVBACISL	6/12/96	10:00 AM	6.9	7.5	152	24.3	8.3
C961401	OLDRIVBACISL	6/13/96	10:00 PM	NA	NA	145	21.2	NA
C961402	OLDRIVBACISL	6/16/96	8:00 AM	NA	NA	141	21.4	NA
C961516	OLDRIVBACISL	6/18/96	12:00 PM	NA	NA	137	17.3	NA
C961517	OLDRIVBACISL	6/20/96	10:00 PM	NA	NA	134	17.4	NA
C961518	OLDRIVBACISL	6/23/96	8:00 AM	NA	NA	135	17.4	NA
C961559	OLDRIVBACISL	6/25/96	12:00 PM	NA	NA	140	25.5	NA
C961560	OLDRIVBACISL	6/27/96	10:00 PM	NA	NA	141	26.1	NA
C961561	OLDRIVBACISL	6/30/96	8:00 AM	NA	NA	142	26.1	NA
C961606	OLDRIVBACISL	7/2/96	12:00 PM	NA	NA	143	22.6	NA
C961607	OLDRIVBACISL	7/4/96	10:00 PM	NA	NA	143	22.1	NA
C961608	OLDRIVBACISL	7/7/96	8:00 AM	NA	NA	145	22.2	NA
C961609	OLDRIVBACISL	7/9/96	12:00 PM	NA	NA	145	20.5	NA
C961613	OLDRIVBACISL	7/9/96	12:00 PM	NA	NA	145	20.5	NA
C961614	OLDRIVBACISL	7/11/96	10:00 PM	NA	NA	152	20.8	NA
C961615	OLDRIVBACISL	7/14/96	8:00 AM	NA	NA	156	20.8	NA
C961620	OLDRIVBACISL	7/16/96	12:00 PM	NA	NA	158	24.8	NA
C961649	OLDRIVBACISL	7/17/96	10:35 AM	7.4	7.6	165	23.8	6.0
C961621	OLDRIVBACISL	7/18/96	10:00 PM	NA	NA	164	24.6	NA
C961622	OLDRIVBACISL	7/21/96	8:00 AM	NA	NA	166	24.7	NA
C961627	OLDRIVBACISL	7/23/96	12:00 PM	NA	NA	166	27.6	NA
C961628	OLDRIVBACISL	7/25/96	10:00 PM	NA	NA	176	27.5	NA
C961629	OLDRIVBACISL	7/28/96	9:24 AM	NA	NA	181	27.1	NA
C961694	OLDRIVBACISL	7/30/96	12:00 PM	NA	NA	180	20.5	NA
C961690	OLDRIVBACISL	7/30/96	12:00 PM	NA	NA	180	20.5	NA
C961695	OLDRIVBACISL	8/1/96	10:00 PM	NA	NA	189	20.3	NA
C961696	OLDRIVBACISL	8/4/96	8:00 AM	NA	NA	198	20.2	NA
C961732	OLDRIVBACISL	8/6/96	12:00 PM	NA	NA	212	27.6	NA
C961733	OLDRIVBACISL	8/8/96	10:00 PM	NA	NA	222	27.3	NA
C961734	OLDRIVBACISL	8/11/96	8:00 AM	NA	NA	226	27.1	NA
C961756	OLDRIVBACISL	8/13/96	12:00 PM	NA	NA	222	18.6	NA
C961719	OLDRIVBACISL	8/14/96	10:04 AM	7.5	6.8	218	26.8	4.7
C961757	OLDRIVBACISL	8/15/96	10:00 PM	NA	NA	229	18.8	NA
C961758	OLDRIVBACISL	8/18/96	8:00 AM	NA	NA	233	18.8	NA
C961766	OLDRIVBACISL	8/20/96	12:00 PM	NA	NA	240	18.9	NA
C961767	OLDRIVBACISL	8/22/96	10:00 PM	NA	NA	224	18.9	NA
C961768	OLDRIVBACISL	8/25/96	8:00 AM	NA	NA	226	18.8	NA
C961820	OLDRIVBACISL	8/27/96	12:00 PM	NA	NA	236	19.7	NA
C961821	OLDRIVBACISL	8/29/96	10:00 PM	NA	NA	246	19.1	NA
C961822	OLDRIVBACISL	9/1/96	8:00 AM	NA	NA	230	19.1	NA
C961895	OLDRIVBACISL	9/3/96	12:00 PM	NA	NA	231	22.4	NA
C961896	OLDRIVBACISL	9/5/96	10:00 PM	NA	NA	237	22.2	NA
C961897	OLDRIVBACISL	9/8/96	8:00 AM	NA	NA	227	22.0	NA
C961905	OLDRIVBACISL	9/10/96	12:00 PM	NA	NA	223	19.2	NA
C961851	OLDRIVBACISL	9/11/96	10:00 AM	7.4	8.3	218	22.8	5.4
C961907	OLDRIVBACISL	9/15/96	8:00 AM	NA	NA	227	18.9	NA
C961906	OLDRIVBACISL	9/17/96	10:00 PM	NA	NA	222	18.9	NA
C961915	OLDRIVBACISL	9/17/96	12:00 PM	NA	NA	223	18.6	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C961916	OLDRIVBACISL	9/19/96	10:00 PM	NA	NA	216	18.2	NA
C961917	OLDRIVBACISL	9/22/96	8:00 AM	NA	NA	216	18.0	NA
C962001	OLDRIVBACISL	9/24/96	12:00 PM	NA	NA	230	16.8	NA
C962002	OLDRIVBACISL	9/26/96	10:00 PM	NA	NA	245	16.8	NA
C962003	OLDRIVBACISL	9/29/96	8:00 AM	NA	NA	263	16.8	NA
C962082	OLDRIVBACISL	10/8/96	12:00 PM	NA	NA	287	18.6	NA
C962078	OLDRIVBACISL	10/8/96	12:00 PM	NA	NA	280	18.3	NA
C962027	OLDRIVBACISL	10/9/96	10:00 AM	7.2	7.5	276	22.5	12.6
C962083	OLDRIVBACISL	10/10/96	10:00 PM	NA	NA	285	18.3	NA
C962084	OLDRIVBACISL	10/13/96	8:00 AM	NA	NA	321	18.2	NA
C962099	OLDRIVBACISL	10/15/96	12:00 PM	NA	NA	349	11.3	NA
C962100	OLDRIVBACISL	10/17/96	10:00 PM	NA	NA	361	11.3	NA
C962101	OLDRIVBACISL	10/20/96	8:00 AM	NA	NA	353	11.1	NA
C962109	OLDRIVBACISL	10/29/96	12:00 PM	NA	NA	399	13.1	NA
C962113	OLDRIVBACISL	10/29/96	12:00 PM	NA	NA	399	13.1	NA
C962143	OLDRIVBACISL	10/29/96	12:00 PM	NA	NA	400	11.0	NA
C962114	OLDRIVBACISL	10/29/96	10:00 PM	NA	NA	378	13.1	NA
C962115	OLDRIVBACISL	10/29/96	8:00 AM	NA	NA	459	13.0	NA
C962144	OLDRIVBACISL	10/29/96	12:00 PM	NA	NA	413	11.3	NA
C962145	OLDRIVBACISL	10/31/96	10:00 PM	NA	NA	375	10.7	NA
C962146	OLDRIVBACISL	11/4/96	8:00 AM	NA	NA	401	10.6	NA
C962160	OLDRIVBACISL	11/7/96	10:00 PM	NA	NA	421	13.5	NA
C962161	OLDRIVBACISL	11/10/96	8:00 AM	NA	NA	400	13.5	NA
C962164	OLDRIVBACISL	11/12/96	12:00 PM	NA	NA	407	14.0	NA
C962199	OLDRIVBACISL	11/13/96	12:45 PM	7.1	10.0	408	17.8	5.0
C962165	OLDRIVBACISL	11/14/96	10:00 PM	NA	NA	431	13.9	NA
C962159	OLDRIVBACISL	11/15/96	12:00 PM	NA	NA	412	14.3	NA
C962166	OLDRIVBACISL	11/17/96	11:03 AM	NA	NA	511	13.9	NA
C962169	OLDRIVBACISL	11/20/96	12:00 PM	NA	NA	525	12.0	NA
C962170	OLDRIVBACISL	11/22/96	10:00 PM	NA	NA	530	12.2	NA
C962171	OLDRIVBACISL	11/25/96	8:00 AM	NA	NA	600	12.1	NA
C962275	OLDRIVBACISL	11/26/96	12:00 PM	NA	NA	628	6.8	NA
C962276	OLDRIVBACISL	11/28/96	10:00 PM	NA	NA	597	6.5	NA
C962277	OLDRIVBACISL	12/1/96	8:00 AM	NA	NA	650	6.1	NA
C962280	OLDRIVBACISL	12/3/96	12:00 PM	NA	NA	600	13.7	NA
C962281	OLDRIVBACISL	12/5/96	10:00 PM	NA	NA	564	12.9	NA
C962282	OLDRIVBACISL	12/8/96	8:00 AM	NA	NA	567	12.9	NA
C962285	OLDRIVBACISL	12/10/96	12:00 PM	NA	NA	553	9.9	NA
C962339	OLDRIVBACISL	12/11/96	1:25 PM	7.4	12.1	510	15.0	10.7
C962286	OLDRIVBACISL	12/12/96	10:00 PM	NA	NA	490	9.4	NA
C962287	OLDRIVBACISL	12/15/96	8:00 AM	NA	NA	473	9.4	NA
C952595	PESCADERO01	10/19/95	9:45 AM	6.6	7.1	1750	18.5	197.0
C952813	PESCADERO01	11/16/95	10:25 AM	7.7	7.6	1374	16.2	32.0
C953060	PESCADERO01	12/7/95	10:15 AM	7.8	10.0	1548	14.8	20.4
C960151	PESCADERO01	1/18/96	10:46 AM	6.9	7.6	2680	11.3	97.1
C960280	PESCADERO01	2/15/96	10:35 AM	7.2	6.1	1945	14.2	172.0
C960426	PESCADERO01	3/14/96	10:35 AM	7.2	8.0	2410	15.7	60.8
C960844	PESCADERO01	4/11/96	9:31 AM	7.0	8.1	1617	15.9	101.0
C961079	PESCADERO01	5/9/96	9:55 AM	7.2	8.9	1310	16.9	59.3
C961280	PESCADERO01	6/13/96	10:10 AM	7.2	3.2	1550	22.8	23.0
C961662	PESCADERO01	7/18/96	10:35 AM	8.0	8.4	1140	21.8	72.0
C961722	PESCADERO01	8/15/96	9:12 AM	7.7	6.9	1474	25.6	85.5
C961857	PESCADERO01	9/12/96	11:30 AM	7.2	3.6	1560	19.5	38.9
C962032	PESCADERO01	10/10/96	9:12 AM	7.4	5.4	1926	17.8	48.3
C962187	PESCADERO01	11/14/96	11:30 AM	7.0	10.7	1720	14.4	66.0
C952549	SACWSACINT	10/12/95	11:03 AM	7.1	9.0	130	18.4	16.7

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C952767	SACWSACINT	11/9/95	2:05 PM	7.3	9.3	176	15.3	13.5
C953071	SACWSACINT	12/7/95	1:20 PM	8.0	9.8	172	13.8	11.0
C960141	SACWSACINT	1/11/96	1:30 PM	7.7	11.4	181	11.4	14.6
C960263	SACWSACINT	2/7/96	10:20 AM	7.9	12.5	88	12.4	NA
C960413	SACWSACINT	3/6/96	2:00 PM	7.5	11.5	122	11.8	52.8
C960827	SACWSACINT	4/3/96	1:50 PM	7.3	11.0	116	14.9	43.9
C961045	SACWSACINT	5/1/96	1:20 PM	7.4	18.8	129	20.1	13.2
C961243	SACWSACINT	6/5/96	1:20 PM	7.6	8.7	128	22.3	18.1
C961635	SACWSACINT	7/10/96	1:25 PM	8.1	8.4	123	24.3	17.0
C961712	SACWSACINT	8/7/96	12:40 PM	7.4	8.7	141	22.3	13.0
C961841	SACWSACINT	9/4/96	1:45 PM	7.8	8.5	173	21.9	15.2
C961985	SACWSACINT	10/2/96	1:00 PM	7.3	8.4	132	20.4	7.6
C962153	SACWSACINT	11/6/96	1:15 PM	7.6	10.1	162	14.2	6.9
C962314	SACWSACINT	12/4/96	1:37 PM	7.4	10.9	160	11.5	7.9
C952594	SJRMOSSDALE	10/19/95	9:00 AM	7.1	7.3	200	17.0	19.5
C952812	SJRMOSSDALE	11/16/95	9:35 AM	7.6	8.6	410	17.0	15.7
C953059	SJRMOSSDALE	12/7/95	9:40 AM	7.7	8.8	779	15.5	11.2
C960150	SJRMOSSDALE	1/18/96	10:05 AM	7.3	9.2	954	11.3	16.6
C960279	SJRMOSSDALE	2/15/96	10:00 AM	7.4	9.4	314	13.8	27.6
C960425	SJRMOSSDALE	3/14/96	9:45 AM	7.4	11.0	248	15.3	248.0
C960843	SJRMOSSDALE	4/11/96	8:42 AM	8.1	9.3	409	15.4	17.5
C961078	SJRMOSSDALE	5/9/96	9:20 AM	7.1	9.7	332	16.3	21.6
C961279	SJRMOSSDALE	6/13/96	9:20 AM	7.6	9.1	610	20.9	34.0
C961660	SJRMOSSDALE	7/18/96	8:15 AM	7.6	8.3	771	22.5	19.0
C961721	SJRMOSSDALE	8/15/96	8:46 AM	7.6	7.0	134	26.1	35.5
C961856	SJRMOSSDALE	9/12/96	9:20 AM	7.6	7.4	668	21.0	27.3
C962031	SJRMOSSDALE	10/10/96	8:34 AM	7.3	8.4	610	19.9	23.2
C962186	SJRMOSSDALE	11/14/96	10:10 AM	7.2	9.0	683	14.2	11.9
C962343	SJRMOSSDALE	12/12/96	9:44 AM	7.1	9.1	217	14.7	116.0
C952764	STATENPPO2	11/9/95	11:40 AM	6.7	3.7	946	17.5	34.4
C953068	STATENPPO2	12/7/95	10:45 AM	7.7	4.7	1389	15.5	21.9
C960138	STATENPPO2	1/11/96	10:50 AM	7.1	2.7	623	10.8	44.3
C960260	STATENPPO2	2/7/96	8:10 AM	7.0	5.3	1180	14.7	NA
C960410	STATENPPO2	3/6/96	11:48 AM	6.5	7.1	1520	13.1	48.8
C960824	STATENPPO2	4/3/96	11:30 AM	7.0	7.5	1590	16.2	78.3
C961042	STATENPPO2	5/1/96	10:37 AM	6.7	4.2	631	23.5	62.4
C961240	STATENPPO2	6/5/96	10:45 AM	7.1	6.6	362	23.8	26.1
C961632	STATENPPO2	7/10/96	10:10 AM	7.5	6.4	169	23.7	43.2
C961709	STATENPPO2	8/7/96	10:20 AM	6.6	6.7	177	21.6	32.0
C961838	STATENPPO2	9/4/96	9:50 AM	7.0	3.1	684	21.7	24.5
C961982	STATENPPO2	10/2/96	10:30 AM	6.8	3.0	600	18.1	20.7
C962150	STATENPPO2	11/6/96	10:20 AM	7.0	4.2	927	13.7	9.6
C962311	STATENPPO2	12/4/96	10:53 AM	7.1	4.7	927	10.8	24.4
C952589	STATION09	10/18/95	8:17 AM	6.6	7.9	206	18.8	35.0
C952807	STATION09	11/15/95	9:35 AM	7.1	9.1	206	16.3	10.8
C953051	STATION09	12/6/95	10:14 AM	6.4	9.1	227	14.8	NA
C960145	STATION09	1/17/96	9:08 AM	6.6	10.7	255	10.8	18.3
C960274	STATION09	2/14/96	10:05 AM	7.0	20.9	496	14.3	20.9
C960417	STATION09	3/13/96	10:00 AM	7.8	10.3	324	13.0	22.1
C960838	STATION09	4/10/96	8:40 AM	7.3	8.7	367	17.7	10.4
C961073	STATION09	5/8/96	10:11 AM	7.2	8.5	412	19.7	16.7
C961274	STATION09	6/12/96	12:10 PM	7.4	7.0	254	25.0	NA
C961646	STATION09	7/17/96	8:40 AM	7.1	7.4	172	23.3	12.0
C961716	STATION09	8/14/96	8:33 AM	7.5	7.7	217	26.0	7.6
C961848	STATION09	9/11/96	8:25 AM	8.4	8.2	232	23.4	6.7
C962024	STATION09	10/9/96	9:00 AM	7.1	8.2	279	22.0	6.6

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C962196	STATION09	11/13/96	11:10 AM	6.9	9.1	379	15.3	6.6
C962336	STATION09	12/11/96	2:35 PM	7.9	11.9	510	14.5	14.2
C952456	TWITCHELLPP01	9/30/95	8:00 AM	NA	NA	577	20.0	NA
C952502	TWITCHELLPP01	10/2/95	8:22 AM	NA	NA	648	16.6	NA
C952457	TWITCHELLPP01	10/2/95	10:37 AM	6.7	4.4	655	16.9	NA
C952503	TWITCHELLPP01	10/4/95	8:22 AM	NA	NA	749	17.2	NA
C952504	TWITCHELLPP01	10/7/95	8:22 AM	NA	NA	675	16.9	NA
C952505	TWITCHELLPP01	10/10/95	8:22 AM	6.4	4.3	680	17.0	46.8
C952554	TWITCHELLPP01	10/11/95	10:00 PM	NA	NA	732	16.9	NA
C952555	TWITCHELLPP01	10/14/95	8:00 AM	NA	NA	694	16.7	NA
C952556	TWITCHELLPP01	10/16/95	9:24 AM	6.6	5.8	692	16.8	40.0
C952649	TWITCHELLPP01	10/23/95	12:00 PM	NA	NA	722	16.3	NA
C952604	TWITCHELLPP01	10/23/95	8:35 AM	7.1	5.4	710	13.6	53.0
C952650	TWITCHELLPP01	10/25/95	10:00 PM	NA	NA	735	16.1	NA
C952651	TWITCHELLPP01	10/28/95	8:00 AM	NA	NA	705	15.6	NA
C952652	TWITCHELLPP01	10/30/95	10:09 AM	6.9	6.0	710	15.9	NA
C952720	TWITCHELLPP01	10/30/95	12:00 PM	NA	NA	540	13.8	NA
C952721	TWITCHELLPP01	11/1/95	10:00 PM	NA	NA	560	13.2	NA
C952722	TWITCHELLPP01	11/4/95	8:00 AM	NA	NA	540	12.9	NA
C952723	TWITCHELLPP01	11/6/95	9:54 AM	6.7	5.9	550	13.7	34.6
C952771	TWITCHELLPP01	11/6/95	12:00 PM	NA	NA	724	20.0	NA
C952772	TWITCHELLPP01	11/8/95	10:00 PM	NA	NA	743	17.8	NA
C952773	TWITCHELLPP01	11/11/95	8:00 AM	NA	NA	737	16.8	NA
C952774	TWITCHELLPP01	11/14/95	1:23 PM	6.6	5.3	727	16.5	70.9
C952819	TWITCHELLPP01	11/15/95	12:00 PM	NA	NA	744	13.8	NA
C952820	TWITCHELLPP01	11/17/95	10:00 PM	NA	NA	749	13.0	NA
C952821	TWITCHELLPP01	11/20/95	8:00 AM	NA	NA	726	13.4	NA
C952822	TWITCHELLPP01	11/20/95	9:25 AM	NA	5.3	738	15.4	47.9
C952855	TWITCHELLPP01	11/20/95	12:00 PM	NA	NA	741	14.9	NA
C952856	TWITCHELLPP01	11/22/95	10:00 PM	NA	NA	744	14.2	NA
C952857	TWITCHELLPP01	11/25/95	8:00 AM	NA	NA	755	13.9	NA
C952935	TWITCHELLPP01	11/27/95	12:30 PM	NA	NA	555	14.0	NA
C952858	TWITCHELLPP01	11/27/95	12:30 PM	6.6	4.8	681	14.2	42.3
C952936	TWITCHELLPP01	11/29/95	10:30 PM	NA	NA	572	13.6	NA
C952937	TWITCHELLPP01	12/2/95	8:30 AM	NA	NA	575	13.5	NA
C952938	TWITCHELLPP01	12/4/95	12:30 PM	6.6	5.0	533	14.4	51.8
C953154	TWITCHELLPP01	12/4/95	1:19 PM	NA	NA	746	11.7	NA
C953155	TWITCHELLPP01	12/6/95	11:19 PM	NA	NA	732	11.4	NA
C953156	TWITCHELLPP01	12/9/95	9:19 AM	NA	NA	732	11.4	NA
C953157	TWITCHELLPP01	12/11/95	11:10 AM	6.8	6.8	792	13.4	42.6
C953218	TWITCHELLPP01	12/11/95	12:00 PM	NA	NA	818	8.5	NA
C953219	TWITCHELLPP01	12/13/95	10:00 PM	NA	NA	1515	8.0	NA
C953220	TWITCHELLPP01	12/16/95	8:00 AM	NA	NA	1457	7.7	NA
C953221	TWITCHELLPP01	12/18/95	10:20 AM	NA	5.9	1155	12.1	26.6
C960005	TWITCHELLPP01	1/8/96	11:14 AM	6.9	4.9	903	11.7	50.6
C960028	TWITCHELLPP01	1/15/96	8:00 AM	NA	NA	883	9.7	NA
C960029	TWITCHELLPP01	1/17/96	12:00 PM	NA	NA	823	9.3	NA
C960030	TWITCHELLPP01	1/20/96	10:00 PM	NA	NA	994	8.5	NA
C960031	TWITCHELLPP01	1/22/96	10:35 AM	6.8	4.8	1008	11.3	22.3
C960054	TWITCHELLPP01	1/22/96	12:00 PM	NA	NA	1035	9.0	NA
C960055	TWITCHELLPP01	1/24/96	10:00 PM	NA	NA	1277	8.4	NA
C960056	TWITCHELLPP01	1/27/96	8:00 AM	NA	NA	1258	8.1	NA
C960057	TWITCHELLPP01	1/29/96	10:20 AM	7.4	6.9	1325	11.4	20.2
C960167	TWITCHELLPP01	1/29/96	NA	NA	NA	1314	15.9	NA
C960168	TWITCHELLPP01	1/31/96	NA	NA	NA	1442	13.9	NA
C960169	TWITCHELLPP01	2/3/96	NA	NA	NA	1381	13.8	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH	DO	EC	Temp	Turb
				pH units	mg/L	umhos/cm	°C	NTU
C960170	TWITCHELLPP01	2/5/96	10:51 AM	6.3	5.7	1392	15.5	35.1
C960193	TWITCHELLPP01	2/19/96	12:00 PM	NA	NA	1412	9.7	NA
C960194	TWITCHELLPP01	2/21/96	10:00 PM	NA	NA	1346	8.4	NA
C960195	TWITCHELLPP01	2/24/96	8:00 AM	NA	NA	1501	7.4	NA
C960196	TWITCHELLPP01	2/26/96	11:10 AM	6.6	6.9	1366	10.7	33.6
C960604	TWITCHELLPP01	3/4/96	12:00 PM	NA	NA	1236	14.8	NA
C960605	TWITCHELLPP01	3/6/96	10:00 PM	NA	NA	1255	14.3	NA
C960606	TWITCHELLPP01	3/9/96	8:00 AM	NA	NA	1244	14.2	NA
C960465	TWITCHELLPP01	3/11/96	3:30 AM	6.3	NA	1360	17.1	NA
C960630	TWITCHELLPP01	3/11/96	12:00 PM	NA	NA	1510	17.7	NA
C960607	TWITCHELLPP01	3/11/96	10:45 AM	6.6	6.1	1356	15.0	NA
C960631	TWITCHELLPP01	3/13/96	10:00 PM	NA	NA	1240	17.4	NA
C960632	TWITCHELLPP01	3/16/96	8:00 AM	NA	NA	1610	16.7	NA
C960633	TWITCHELLPP01	3/18/96	11:20 AM	6.4	5.9	1480	17.3	31.7
C960656	TWITCHELLPP01	3/20/96	12:00 PM	NA	NA	1480	NA	NA
C960879	TWITCHELLPP01	3/22/96	10:00 AM	6.8	4.9	969	16.8	71.9
C960657	TWITCHELLPP01	3/22/96	10:00 PM	NA	NA	1310	NA	NA
C960771	TWITCHELLPP01	3/24/96	12:40 PM	NA	NA	1193	15.8	NA
C960659	TWITCHELLPP01	3/25/96	12:30 PM	6.8	6.8	1160	14.8	54.3
C960658	TWITCHELLPP01	3/25/96	8:00 AM	NA	NA	1230	NA	NA
C960772	TWITCHELLPP01	3/27/96	10:40 PM	NA	NA	1123	15.7	NA
C960773	TWITCHELLPP01	3/30/96	8:40 AM	NA	NA	1089	15.6	NA
C960797	TWITCHELLPP01	4/1/96	12:00 PM	NA	NA	960	17.6	NA
C960774	TWITCHELLPP01	4/1/96	10:15 AM	6.7	4.9	1058	16.5	77.1
C960798	TWITCHELLPP01	4/3/96	10:00 PM	NA	NA	1230	17.4	NA
C960799	TWITCHELLPP01	4/6/96	8:00 AM	NA	NA	1027	17.2	NA
C960800	TWITCHELLPP01	4/8/96	10:30 AM	6.9	6.0	993	18.6	61.0
C960853	TWITCHELLPP01	4/15/96	9:45 AM	6.5	6.8	879	17.5	NA
C960852	TWITCHELLPP01	4/15/96	7:00 AM	NA	NA	925	16.7	NA
C960850	TWITCHELLPP01	4/15/96	11:00 AM	NA	NA	1008	17.0	NA
C960876	TWITCHELLPP01	4/15/96	12:00 PM	NA	NA	977	15.6	NA
C960851	TWITCHELLPP01	4/15/96	9:00 PM	NA	NA	1005	16.9	NA
C960877	TWITCHELLPP01	4/17/96	10:00 PM	NA	NA	876	15.1	NA
C960878	TWITCHELLPP01	4/20/96	8:00 AM	NA	NA	919	14.9	NA
C960902	TWITCHELLPP01	4/24/96	10:00 PM	NA	NA	976	18.4	NA
C960903	TWITCHELLPP01	4/27/96	10:00 PM	NA	NA	879	18.3	NA
C961056	TWITCHELLPP01	4/29/96	12:00 PM	NA	NA	827	16.9	NA
C960904	TWITCHELLPP01	4/29/96	8:00 AM	NA	NA	831	18.3	NA
C961057	TWITCHELLPP01	5/1/96	10:00 PM	NA	NA	896	16.5	NA
C961058	TWITCHELLPP01	5/4/96	8:00 AM	NA	NA	799	16.3	NA
C961085	TWITCHELLPP01	5/6/96	12:00 PM	NA	NA	834	22.2	NA
C961086	TWITCHELLPP01	5/8/96	10:00 PM	NA	NA	791	22.3	NA
C961087	TWITCHELLPP01	5/11/96	8:00 AM	NA	NA	772	22.2	NA
C961089	TWITCHELLPP01	5/13/96	12:00 PM	NA	NA	765	17.6	NA
C961090	TWITCHELLPP01	5/15/96	10:00 PM	NA	NA	676	17.1	NA
C961091	TWITCHELLPP01	5/18/96	8:00 AM	NA	NA	862	16.7	NA
C961222	TWITCHELLPP01	5/27/96	6:00 PM	NA	NA	730	25.1	NA
C961223	TWITCHELLPP01	5/30/96	4:00 AM	NA	NA	654	24.9	NA
C961224	TWITCHELLPP01	5/30/96	2:24 PM	NA	NA	688	24.9	NA
C961257	TWITCHELLPP01	6/3/96	12:00 PM	NA	NA	756	19.9	NA
C961258	TWITCHELLPP01	6/5/96	10:00 PM	NA	NA	614	20.3	NA
C961259	TWITCHELLPP01	6/8/96	8:00 AM	NA	NA	642	20.5	NA
C961373	TWITCHELLPP01	6/10/96	12:00 PM	NA	NA	680	16.0	NA
C961374	TWITCHELLPP01	6/12/96	10:00 PM	NA	NA	579	15.9	NA
C961375	TWITCHELLPP01	6/15/96	8:00 AM	NA	NA	480	15.6	NA
C961503	TWITCHELLPP01	6/17/96	12:00 PM	NA	NA	626	19.4	NA

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C961504	TWITCHELLPP01	6/19/96	10:00 PM	NA	NA	437	19.4	NA
C961505	TWITCHELLPP01	6/22/96	8:00 AM	NA	NA	467	19.1	NA
C961545	TWITCHELLPP01	6/24/96	12:00 PM	NA	NA	636	25.0	NA
C961546	TWITCHELLPP01	6/24/96	12:00 PM	NA	NA	636	25.0	NA
C961547	TWITCHELLPP01	6/26/96	10:00 PM	NA	NA	514	25.4	NA
C961563	TWITCHELLPP01	7/1/96	12:00 PM	NA	NA	605	19.0	NA
C961564	TWITCHELLPP01	7/3/96	10:00 PM	NA	NA	501	19.4	NA
C961565	TWITCHELLPP01	7/6/96	8:00 AM	NA	NA	653	19.4	NA
C961573	TWITCHELLPP01	7/8/96	12:00 PM	NA	NA	637	18.6	NA
C961574	TWITCHELLPP01	7/10/96	10:00 PM	NA	NA	553	18.8	NA
C961575	TWITCHELLPP01	7/13/96	8:00 AM	NA	NA	592	18.7	NA
C961582	TWITCHELLPP01	7/15/96	12:00 PM	NA	NA	530	23.5	NA
C961583	TWITCHELLPP01	7/15/96	12:00 PM	NA	NA	524	23.3	NA
C961584	TWITCHELLPP01	7/17/96	10:00 PM	NA	NA	550	23.9	NA
C961585	TWITCHELLPP01	7/20/96	8:00 AM	NA	NA	455	23.6	NA
C961592	TWITCHELLPP01	7/22/96	10:45 AM	NA	NA	456	27.1	NA
C961593	TWITCHELLPP01	7/22/96	12:00 PM	NA	NA	506	26.2	NA
C961594	TWITCHELLPP01	7/24/96	10:00 PM	NA	NA	449	26.6	NA
C961595	TWITCHELLPP01	7/27/96	8:00 AM	NA	NA	439	26.5	NA
C961684	TWITCHELLPP01	7/29/96	12:00 PM	NA	NA	559	20.5	NA
C961683	TWITCHELLPP01	7/29/96	12:00 PM	NA	NA	559	20.5	NA
C961685	TWITCHELLPP01	7/31/96	10:00 PM	NA	NA	447	21.0	NA
C961686	TWITCHELLPP01	8/3/96	8:00 AM	NA	NA	497	20.9	NA
C961700	TWITCHELLPP01	8/5/96	12:00 PM	NA	NA	545	26.1	NA
C961701	TWITCHELLPP01	8/5/96	12:00 PM	NA	NA	554	26.5	NA
C961702	TWITCHELLPP01	8/7/96	10:00 PM	NA	NA	461	26.7	NA
C961703	TWITCHELLPP01	8/10/96	8:00 AM	NA	NA	508	26.5	NA
C961739	TWITCHELLPP01	8/12/96	12:00 PM	NA	NA	521	19.1	NA
C961740	TWITCHELLPP01	8/14/96	10:00 PM	NA	NA	486	19.6	NA
C961741	TWITCHELLPP01	8/17/96	8:00 AM	NA	NA	544	19.7	NA
C961746	TWITCHELLPP01	8/19/96	12:00 PM	NA	NA	560	18.7	NA
C961747	TWITCHELLPP01	8/21/96	10:00 PM	NA	NA	474	18.9	NA
C961748	TWITCHELLPP01	8/24/96	8:00 AM	NA	NA	507	18.8	NA
C961864	TWITCHELLPP01	9/2/96	12:00 PM	NA	NA	580	22.5	NA
C961865	TWITCHELLPP01	9/4/96	10:00 PM	NA	NA	566	22.4	NA
C961866	TWITCHELLPP01	9/7/96	8:00 AM	NA	NA	500	22.5	NA
C961871	TWITCHELLPP01	9/9/96	12:00 PM	NA	NA	456	20.2	NA
C961872	TWITCHELLPP01	9/11/96	10:00 PM	NA	NA	442	19.4	NA
C961873	TWITCHELLPP01	9/14/96	8:00 AM	NA	NA	439	18.9	NA
C961878	TWITCHELLPP01	9/16/96	12:00 PM	NA	NA	446	20.0	NA
C961879	TWITCHELLPP01	9/18/96	10:00 PM	NA	NA	464	20.5	NA
C961880	TWITCHELLPP01	9/21/96	8:00 AM	NA	NA	460	20.2	NA
C961885	TWITCHELLPP01	9/23/96	12:00 PM	NA	NA	438	18.1	NA
C961886	TWITCHELLPP01	9/25/96	10:00 PM	NA	NA	457	18.4	NA
C961887	TWITCHELLPP01	9/28/96	8:00 AM	NA	NA	463	18.0	NA
C962073	TWITCHELLPP01	10/2/96	10:00 PM	NA	NA	492	23.4	NA
C962074	TWITCHELLPP01	10/5/96	8:00 AM	NA	NA	526	23.5	NA
C962072	TWITCHELLPP01	10/7/96	12:00 PM	NA	NA	461	23.6	NA
C962127	TWITCHELLPP01	10/23/96	1:40 PM	6.0	NA	647	17.7	NA
C962215	TWITCHELLPP01	11/7/96	10:25 AM	7.0	5.5	609	12.2	26.8
C962320	TWITCHELLPP01	12/5/96	10:30 AM	6.5	7.0	946	11.7	16.1
C952545	VENICE	10/12/95	8:12 AM	6.1	3.3	354	16.1	15.4
C952763	VENICE	11/9/95	10:00 AM	6.2	2.7	299	16.1	8.0
C960137	VENICE	1/11/96	9:57 AM	6.6	4.6	381	11.5	19.0
C960409	VENICE	3/6/96	9:52 AM	6.5	6.6	841	12.0	25.0
C960823	VENICE	4/3/96	10:02 AM	6.4	5.2	845	14.5	32.4

NA- Not analyzed.

Table 12-7. Field Data (continued)

Sample Number	Station	Date	Time	pH pH units	DO mg/L	EC umhos/cm	Temp °C	Turb NTU
C961041	VENICE	5/1/96	9:28 AM	6.7	4.2	631	23.5	31.6
C961239	VENICE	6/5/96	9:15 AM	6.9	4.1	803	23.3	38.0
C961708	VENICE	8/7/96	9:00 AM	6.0	3.8	236	21.1	46.0
C961837	VENICE	9/4/96	8:35 AM	6.6	3.2	230	18.8	11.2
C961981	VENICE	10/2/96	9:15 AM	6.7	4.6	300	17.5	45.6
C962149	VENICE	11/6/96	9:00 AM	6.6	3.1	380	12.9	30.1
C962310	VENICE	12/4/96	9:30 AM	6.6	4.9	361	10.3	5.0
C961665	VERNALIS	7/18/96	9:40 AM	7.9	8.2	765	22.1	68.0
C961725	VERNALIS	8/15/96	11:17 AM	7.8	7.4	634	26.3	75.5
C961860	VERNALIS	9/12/96	10:30 AM	7.8	7.5	534	21.7	28.3
C962035	VERNALIS	10/10/96	11:45 AM	7.4	8.6	570	20.9	30.1
C962190	VERNALIS	11/14/96	10:50 AM	7.0	9.3	601	14.3	22.2
C962347	VERNALIS	12/12/96	10:48 AM	7.5	8.0	207	15.2	96.0

NA- Not analyzed.

Table 12-8. THMFP Data

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C952548	AMERICAN	10/12/95	<10	<10	150	<10	150	15.1	1.2	0.032
C952766	AMERICAN	11/9/95	<10	<10	140	<10	140	14.1	1.3	0.039
C953070	AMERICAN	12/7/95	<10	<10	120	<10	120	12.1	1.2	0.028
C960140	AMERICAN	1/11/96	<10	<10	160	<10	160	16.1	1.7	0.040
C960262	AMERICAN	2/7/96	<10	<10	170	<10	170	17.1	1.7	0.055
C960412	AMERICAN	3/6/96	<10	<10	210	<10	210	21.1	1.6	0.050
C960826	AMERICAN	4/3/96	<10	<10	210	<10	210	21.1	1.4	0.049
C961044	AMERICAN	5/1/96	<10	<10	150	<10	150	15.1	1.4	0.038
C961242	AMERICAN	6/5/96	<10	<10	220	<10	220	22.1	1.7	0.044
C961634	AMERICAN	7/10/96	<10	<10	180	<10	180	18.1	1.4	0.043
C961711	AMERICAN	8/7/96	<10	<10	190	<10	190	19.1	1.5	NA
C961840	AMERICAN	9/4/96	<10	<10	160	<10	160	16.1	2.4	0.000
C961984	AMERICAN	10/2/96	<10	<10	130	<10	130	13.1	1.6	0.031
C962152	AMERICAN	11/6/96	<10	<10	140	<10	140	14.1	2.2	0.032
C962313	AMERICAN	12/4/96	<10	<10	150	<10	150	15.1	1.6	0.041
C952591	BACON01	10/18/95	190	<10	720	52	962	89.3	5.1	0.372
C952809	BACON01	11/15/95	170	<10	580	51	801	73.7	6.1	0.275
C953053	BACON01	12/6/95	140	<10	550	42	732	68.0	6.4	0.305
C960147	BACON01	1/17/96	150	<10	2800	<10	2950	292.4	29.1	1.240
C960276	BACON01	2/14/96	140	<10	1300	13	1453	141.7	16.1	0.631
C960419	BACON01	3/13/96	170	<30	2900	<30	3070	303.9	29.5	1.080
C960840	BACON01	4/10/96	180	<10	1700	<10	1880	184.0	13.7	0.643
C961075	BACON01	5/8/96	150	<10	1200	<10	1350	131.6	9.8	0.622
C961276	BACON01	6/12/96	66	<10	950	<10	1016	100.3	8.6	0.388
C961648	BACON01	7/17/96	48	<10	1000	<10	1048	104.0	8.2	0.440
C961718	BACON01	8/14/96	99	<10	1600	<10	1699	168.1	12.3	0.734
C961850	BACON01	9/11/96	140	<10	1400	14	1554	151.8	12.3	0.638
C962023	BACON01	10/9/96	140	<10	1100	20	1260	122.0	11.4	0.519
C962198	BACON01	11/13/96	110	<10	860	<10	970	94.5	8.4	0.540
C962338	BACON01	12/11/96	180	<10	1500	<10	1680	163.9	19.6	0.780
C952486	BANKS	10/1/95	52	<10	360	<10	412	40.0	3.2	0.109
C952528	BANKS	10/3/95	NA	NA	NA	NA	NA	NA	3.2	0.102
C952529	BANKS	10/5/95	NA	NA	NA	NA	NA	NA	3.1	0.100
C952530	BANKS	10/8/95	49	<10	330	<10	379	36.8	3.0	0.111
C952580	BANKS	10/12/95	NA	NA	NA	NA	NA	NA	1.9	0.047
C952581	BANKS	10/15/95	11	<10	190	<10	201	19.9	2.0	0.048
C952597	BANKS	10/19/95	44	<10	330	<10	374	36.4	2.8	0.101
C952675	BANKS	10/24/95	NA	NA	NA	NA	NA	NA	3.0	0.099
C952676	BANKS	10/26/95	NA	NA	NA	NA	NA	NA	3.1	0.108
C952677	BANKS	10/29/95	46	<10	300	<10	346	33.5	2.8	0.105
C952746	BANKS	10/31/95	NA	NA	NA	NA	NA	NA	2.6	0.099
C952747	BANKS	11/2/95	NA	NA	NA	NA	NA	NA	2.6	0.103
C952748	BANKS	11/5/95	42	<10	340	<10	382	37.2	2.8	0.097
C952797	BANKS	11/7/95	NA	NA	NA	NA	NA	NA	2.6	0.087
C952798	BANKS	11/9/95	NA	NA	NA	NA	NA	NA	3.4	0.092
C952799	BANKS	11/12/95	42	<10	300	<10	342	33.2	3.0	0.095
C952845	BANKS	11/14/95	NA	NA	NA	NA	NA	NA	2.5	0.086
C952815	BANKS	11/16/95	38	<10	290	<10	328	31.9	2.7	0.092
C952847	BANKS	11/19/95	57	<10	230	<10	287	27.3	2.7	0.086
C952881	BANKS	11/21/95	NA	NA	NA	NA	NA	NA	2.7	0.092
C952882	BANKS	11/23/95	NA	NA	NA	NA	NA	NA	2.8	0.088
C952883	BANKS	11/26/95	48	<10	250	<10	298	28.6	3.0	0.087
C953244	BANKS	11/28/95	NA	NA	NA	NA	NA	NA	2.8	0.086
C953245	BANKS	11/30/95	NA	NA	NA	NA	NA	NA	2.9	0.088
C953246	BANKS	12/3/95	71	<10	270	12	353	32.3	3.1	0.093
C953254	BANKS	12/5/95	NA	NA	NA	NA	NA	NA	3.0	0.087
C953062	BANKS	12/7/95	56	<10	240	<10	296	28.2	2.9	0.094

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C953256	BANKS	12/10/95	59	<10	260	<10	319	30.5	3.0	0.085
C953264	BANKS	12/12/95	NA	NA	NA	NA	NA	NA	3.0	0.086
C953265	BANKS	12/14/95	NA	NA	NA	NA	NA	NA	2.6	0.083
C953266	BANKS	12/17/95	54	<10	220	<10	274	26.1	2.6	0.082
C960080	BANKS	12/26/95	NA	NA	NA	NA	NA	NA	2.8	0.081
C960081	BANKS	12/28/95	NA	NA	NA	NA	NA	NA	2.7	0.081
C960082	BANKS	12/31/95	100	<10	310	31	441	40.3	3.4	0.106
C960090	BANKS	1/2/96	NA	NA	NA	NA	NA	NA	2.8	0.097
C960091	BANKS	1/4/96	NA	NA	NA	NA	NA	NA	5.2	0.209
C960092	BANKS	1/7/96	75	<10	570	<10	645	62.8	5.5	0.218
C960102	BANKS	1/16/96	57	<10	580	<10	637	62.5	5.6	0.219
C960153	BANKS	1/18/96	130	<10	420	38	588	53.9	4.5	0.159
C960112	BANKS	1/21/96	59	<10	520	<10	579	56.6	5.2	0.198
C960120	BANKS	1/23/96	NA	NA	NA	NA	NA	NA	5.3	0.198
C960121	BANKS	1/25/96	NA	NA	NA	NA	NA	NA	5.5	0.201
C960122	BANKS	1/28/96	57	<10	430	<10	487	47.4	5.6	0.204
C960219	BANKS	1/30/96	NA	NA	NA	NA	NA	NA	6.1	0.219
C960220	BANKS	2/1/96	NA	NA	NA	NA	NA	NA	6.3	0.230
C960221	BANKS	2/4/96	66	<10	500	<10	566	55.1	6.0	0.231
C960229	BANKS	2/6/96	NA	NA	NA	NA	NA	NA	6.1	0.246
C960230	BANKS	2/8/96	NA	NA	NA	NA	NA	NA	6.7	0.258
C960231	BANKS	2/11/96	85	<10	700	<10	785	76.6	6.8	0.255
C960239	BANKS	2/13/96	NA	NA	NA	NA	NA	NA	6.7	0.226
C960282	BANKS	2/15/96	67	<10	470	<10	537	52.1	5.3	0.193
C960241	BANKS	2/18/96	66	<10	460	<10	526	51.1	5.6	0.193
C960249	BANKS	2/20/96	NA	NA	NA	NA	NA	NA	5.3	0.183
C960250	BANKS	2/22/96	NA	NA	NA	NA	NA	NA	5.0	0.174
C960251	BANKS	2/25/96	72	<10	540	<10	612	59.5	5.2	0.178
C960433	BANKS	2/27/96	NA	NA	NA	NA	NA	NA	5.9	0.184
C960434	BANKS	2/29/96	NA	NA	NA	NA	NA	NA	5.3	0.168
C960435	BANKS	3/3/96	60	<10	490	<10	550	53.6	5.2	0.147
C960574	BANKS	3/5/96	NA	NA	NA	NA	NA	NA	5.7	0.146
C960575	BANKS	3/7/96	NA	NA	NA	NA	NA	NA	4.7	0.126
C960428	BANKS	3/14/96	51	<10	400	<10	451	43.9	4.0	0.116
C960594	BANKS	3/19/96	NA	NA	NA	NA	NA	NA	3.6	0.106
C960595	BANKS	3/21/96	NA	NA	NA	NA	NA	NA	3.6	0.110
C960596	BANKS	3/24/96	49	<10	370	<10	419	40.8	3.4	0.104
C960723	BANKS	4/2/96	62	<10	330	<10	392	37.7	3.0	0.091
C960732	BANKS	4/4/96	NA	NA	NA	NA	NA	NA	3.2	0.091
C960733	BANKS	4/7/96	64	<10	340	<10	404	38.9	3.5	0.100
C960741	BANKS	4/9/96	NA	NA	NA	NA	NA	NA	3.5	0.094
C960846	BANKS	4/11/96	81	<10	370	15	466	44.0	3.3	0.101
C960743	BANKS	4/14/96	79	<10	380	11	470	44.6	4.2	0.117
C960751	BANKS	4/16/96	NA	NA	NA	NA	NA	NA	3.7	0.114
C960752	BANKS	4/18/96	NA	NA	NA	NA	NA	NA	4.1	0.115
C960753	BANKS	4/21/96	76	<10	330	12	418	39.4	3.8	0.106
C960763	BANKS	4/23/96	73	<10	310	12	395	37.2	3.4	0.092
C960762	BANKS	4/25/96	NA	NA	NA	NA	NA	NA	3.2	0.093
C961060	BANKS	4/30/96	NA	NA	NA	NA	NA	NA	3.0	0.090
C961061	BANKS	5/2/96	NA	NA	NA	NA	NA	NA	3.2	0.093
C961062	BANKS	5/5/96	65	<10	240	13	318	29.6	3.1	0.085
C961093	BANKS	5/7/96	NA	NA	NA	NA	NA	NA	2.9	0.079
C961094	BANKS	5/8/96	NA	NA	NA	NA	NA	NA	2.9	0.085
C961081	BANKS	5/9/96	68	<10	260	14	342	31.9	2.9	0.091
C961095	BANKS	5/12/96	58	<10	280	<10	338	32.4	2.9	0.086
C961106	BANKS	5/14/96	NA	NA	NA	NA	NA	NA	2.8	0.078
C961107	BANKS	5/16/96	NA	NA	NA	NA	NA	NA	3.0	0.088

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C961108	BANKS	5/19/96	77	<10	290	16	383	35.7	3.3	0.099
C961119	BANKS	5/21/96	NA	NA	NA	NA	NA	NA	3.1	0.098
C961120	BANKS	5/23/96	NA	NA	NA	NA	NA	NA	2.7	0.092
C961121	BANKS	5/26/96	41	<10	280	<10	321	31.1	3.0	0.100
C961232	BANKS	5/28/96	NA	NA	NA	NA	NA	NA	3.3	0.110
C961233	BANKS	5/30/96	NA	NA	NA	NA	NA	NA	3.3	0.108
C961234	BANKS	6/2/96	55	<10	340	<10	395	38.2	3.3	0.112
C961267	BANKS	6/4/96	NA	NA	NA	NA	NA	NA	3.1	0.098
C961268	BANKS	6/6/96	NA	NA	NA	NA	NA	NA	3.1	0.099
C961269	BANKS	6/9/96	49	<10	320	<10	369	35.8	3.2	0.115
C961397	BANKS	6/11/96	NA	NA	NA	NA	NA	NA	3.0	0.103
C961398	BANKS	6/13/96	NA	NA	NA	NA	NA	NA	3.0	0.119
C961399	BANKS	6/16/96	46	<10	320	<10	366	35.5	3.0	0.103
C961513	BANKS	6/18/96	NA	NA	NA	NA	NA	NA	2.9	0.096
C961514	BANKS	6/20/96	NA	NA	NA	NA	NA	NA	2.8	0.100
C961515	BANKS	6/23/96	42	<10	290	<10	332	32.2	2.9	0.102
C961556	BANKS	6/25/96	NA	NA	NA	NA	NA	NA	2.6	0.100
C961557	BANKS	6/27/96	NA	NA	NA	NA	NA	NA	2.8	0.099
C961558	BANKS	6/30/96	48	<10	300	<10	348	33.7	2.7	0.098
C961603	BANKS	7/2/96	NA	NA	NA	NA	NA	NA	2.8	0.091
C961604	BANKS	7/4/96	NA	NA	NA	NA	NA	NA	2.9	0.090
C961605	BANKS	7/7/96	37	<10	280	<10	317	30.9	2.8	0.092
C961610	BANKS	7/9/96	NA	NA	NA	NA	NA	NA	2.4	0.087
C961611	BANKS	7/11/96	NA	NA	NA	NA	NA	NA	2.5	0.087
C961612	BANKS	7/14/96	35	<10	280	<10	315	30.7	2.5	0.093
C961616	BANKS	7/16/96	NA	NA	NA	NA	NA	NA	2.5	0.089
C961617	BANKS	7/16/96	NA	NA	NA	NA	NA	NA	2.4	0.090
C961664	BANKS	7/18/96	34	<10	260	<10	294	28.6	2.5	0.089
C961619	BANKS	7/21/96	37	<10	270	<10	307	29.8	2.5	0.096
C961625	BANKS	7/23/96	NA	NA	NA	NA	NA	NA	2.5	0.085
C961626	BANKS	7/28/96	49	<10	310	<10	359	34.7	2.6	0.088
C961691	BANKS	7/30/96	NA	NA	NA	NA	NA	NA	2.6	0.089
C961692	BANKS	8/1/96	NA	NA	NA	NA	NA	NA	2.7	0.088
C961693	BANKS	8/4/96	46	<10	290	<10	336	32.5	2.8	0.092
C961729	BANKS	8/6/96	NA	NA	NA	NA	NA	NA	2.7	0.084
C961731	BANKS	8/11/96	53	<10	290	11	354	33.7	2.8	0.094
C961724	BANKS	8/15/96	52	<10	270	12	334	31.6	2.5	0.094
C961755	BANKS	8/20/96	52	<10	260	10	322	30.5	2.6	0.090
C961765	BANKS	8/27/96	53	<10	260	12	325	30.7	2.7	0.089
C961819	BANKS	9/3/96	54	<10	260	12	326	30.8	2.8	0.091
C961894	BANKS	9/10/96	52	<10	240	12	304	28.6	2.6	0.084
C961859	BANKS	9/12/96	49	<10	240	12	301	28.4	2.4	0.082
C961904	BANKS	9/17/96	51	<10	260	11	322	30.5	3.1	0.087
C961914	BANKS	9/24/96	46	<10	220	10	276	26.1	2.5	0.081
C961999	BANKS	9/26/96	NA	NA	NA	NA	NA	NA	2.6	0.076
C962000	BANKS	9/29/96	42	<10	200	<10	242	23.2	2.6	0.077
C962079	BANKS	10/8/96	NA	NA	NA	NA	NA	NA	2.5	0.076
C962030	BANKS	10/10/96	60	<10	220	18	298	27.5	2.5	0.081
C962081	BANKS	10/13/96	60	<10	210	17	287	26.5	2.5	0.080
C962098	BANKS	10/22/96	<10	<10	160	<10	160	16.1	1.7	0.041
C962110	BANKS	10/29/96	11	<10	160	<10	171	16.9	1.8	0.051
C962189	BANKS	11/14/96	71	<10	200	18	289	26.3	2.8	0.089
C962346	BANKS	12/12/96	93	<10	240	31	364	32.7	4.3	0.122
C952538	BARKERNOBAY	10/11/95	31	<10	410	<10	441	43.5	3.8	0.132
C952756	BARKERNOBAY	11/8/95	36	<10	340	<10	376	36.8	2.9	0.111
C953043	BARKERNOBAY	12/6/95	31	<10	320	<10	351	34.4	3.8	0.113
C960130	BARKERNOBAY	1/10/96	52	<10	700	<10	752	74.2	6.2	0.224

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C960267	BARKERNOBAY	2/8/96	<10	<10	940	<10	940	94.5	9.0	0.430
C960401	BARKERNOBAY	3/7/96	47	<10	1400	<10	1447	144.1	12.4	0.471
C960831	BARKERNOBAY	4/4/96	50	<10	1100	<10	1150	114.2	9.8	0.378
C961049	BARKERNOBAY	5/2/96	51	<10	480	<10	531	52.0	4.9	0.150
C961247	BARKERNOBAY	6/6/96	42	<10	410	<10	452	44.3	3.7	0.117
BL5503	BARKERNOBAY	7/1/96	45	<10	500	<10	545	53.5	4.6	NA
C961639	BARKERNOBAY	7/11/96	40	<10	460	<10	500	49.2	3.9	0.141
BL5510	BARKERNOBAY	7/15/96	36	<10	410	<10	446	43.8	3.6	0.129
BL5517	BARKERNOBAY	7/22/96	39	<10	480	<10	519	51.1	4.0	0.139
BL5532	BARKERNOBAY	7/29/96	35	<10	460	<10	495	48.8	4.0	0.158
C961795	BARKERNOBAY	8/5/96	32	<10	420	<10	452	44.6	3.7	0.125
C961773	BARKERNOBAY	8/7/96	30	<10	430	<10	460	45.4	4.1	0.142
BL5539	BARKERNOBAY	8/12/96	32	<10	420	<10	452	44.6	3.8	0.132
BL5546	BARKERNOBAY	8/19/96	27	<10	390	<10	417	41.2	3.6	0.129
BL5553	BARKERNOBAY	8/26/96	30	<10	480	<10	510	50.4	4.4	0.154
C961830	BARKERNOBAY	9/5/96	32	<10	520	<10	552	54.6	4.3	0.164
C961953	BARKERNOBAY	9/9/96	26	<10	360	<10	386	38.1	3.5	0.126
C961960	BARKERNOBAY	9/16/96	26	<10	410	<10	436	43.1	4.0	0.144
C961967	BARKERNOBAY	9/23/96	25	<10	330	<10	355	35.0	3.3	0.119
C961974	BARKERNOBAY	9/30/96	29	<10	390	<10	419	41.3	4.8	0.136
C961991	BARKERNOBAY	10/3/96	53	220	<100	170	443	24.1	4.7	0.150
C962041	BARKERNOBAY	10/7/96	31	<10	370	<10	401	39.5	3.9	0.129
C962216	BARKERNOBAY	11/7/96	36	<10	370	<10	406	39.8	4.6	0.140
C962321	BARKERNOBAY	12/5/96	38	<10	360	<10	398	39.0	4.6	0.143
C952540	CONCOSPP1	10/11/95	34	<10	290	<10	324	31.6	2.6	0.090
C952758	CONCOSPP1	11/8/95	37	<10	280	<10	317	30.9	2.5	0.091
C953045	CONCOSPP1	12/6/95	37	<10	280	<10	317	30.9	3.0	0.105
C960132	CONCOSPP1	1/10/96	52	<10	520	<10	572	56.1	5.0	0.205
C960269	CONCOSPP1	2/8/96	81	<10	610	<10	691	67.2	6.1	0.242
C960403	CONCOSPP1	3/7/96	170	<10	630	47	847	78.5	6.9	0.238
C960833	CONCOSPP1	4/4/96	98	<10	390	22	510	47.6	3.9	0.118
C961051	CONCOSPP1	5/2/96	86	<10	290	22	398	36.7	3.5	0.113
C961249	CONCOSPP1	6/6/96	58	<10	350	<10	408	39.4	3.4	0.110
C961641	CONCOSPP1	7/11/96	29	<10	280	<10	309	30.3	2.6	0.082
C961775	CONCOSPP1	8/7/96	53	<10	230	13	296	27.7	2.5	0.080
C961832	CONCOSPP1	9/5/96	61	<10	220	17	298	27.6	2.4	0.081
C961993	CONCOSPP1	10/3/96	61	<10	210	19	290	26.7	2.5	0.074
C962218	CONCOSPP1	11/7/96	93	<10	140	55	288	24.1	2.5	0.079
C962323	CONCOSPP1	12/5/96	110	<10	130	82	322	25.9	2.9	0.094
C952596	DMC	10/19/95	33	<10	260	<10	293	28.5	2.3	0.075
C952814	DMC	11/16/95	82	<10	240	23	345	31.5	NA	0.089
C953061	DMC	12/7/95	63	<10	300	<10	363	34.8	3.3	0.115
C960152	DMC	1/18/96	64	<10	550	<10	614	60.0	5.0	0.203
C960281	DMC	2/15/96	54	<10	300	<10	354	34.1	3.5	0.115
C960427	DMC	3/14/96	56	<10	400	<10	456	44.3	3.7	0.118
C960845	DMC	4/11/96	73	<10	420	<10	493	47.6	3.4	0.106
C961080	DMC	5/9/96	57	<10	210	12	279	26.0	2.5	0.066
C961281	DMC	6/13/96	100	<10	260	39	399	35.7	3.0	0.079
C961663	DMC	7/18/96	83	<10	240	34	357	32.2	2.7	0.090
C961723	DMC	8/15/96	100	<10	260	44	404	36.0	3.0	0.093
C961858	DMC	9/12/96	89	<10	220	37	346	30.8	3.0	0.089
C962033	DMC	10/10/96	66	<10	220	20	306	28.1	2.7	0.083
C962188	DMC	11/14/96	83	<10	200	26	309	27.7	2.9	0.097
C962345	DMC	12/12/96	35	<10	340	<10	375	36.7	4.4	0.134
C952492	GREENES	10/1/95	<10	<10	210	<10	210	21.1	1.9	0.056
C952534	GREENES	10/3/95	NA	NA	NA	NA	NA	NA	2.2	0.053
C952535	GREENES	10/6/95	NA	NA	NA	NA	NA	NA	2.1	0.049

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C952536	GREENES	10/8/95	<10	<10	200	<10	200	20.1	1.7	0.049
C952585	GREENES	10/10/95	NA	NA	NA	NA	NA	NA	2.7	0.095
C952547	GREENES	10/12/95	12	<10	180	<10	192	19.0	1.8	0.052
C952587	GREENES	10/15/95	42	<10	320	<10	362	35.2	3.1	0.099
C952633	GREENES	10/17/95	NA	NA	NA	NA	NA	NA	1.7	0.047
C952634	GREENES	10/19/95	NA	NA	NA	NA	NA	NA	2.1	0.046
C952635	GREENES	10/22/95	<10	<10	190	<10	190	19.1	1.7	0.049
C952681	GREENES	10/24/95	NA	NA	NA	NA	NA	NA	1.7	0.045
C952682	GREENES	10/26/95	NA	NA	NA	NA	NA	NA	1.7	0.046
C952683	GREENES	10/29/95	12	<10	240	<10	252	25.0	2.3	0.049
C952752	GREENES	10/31/95	NA	NA	NA	NA	NA	NA	2.0	0.048
C952753	GREENES	11/2/95	NA	NA	NA	NA	NA	NA	2.1	0.054
C952754	GREENES	11/5/95	15	<10	240	<10	255	25.2	2.3	0.061
C952803	GREENES	11/7/95	NA	NA	NA	NA	NA	NA	2.4	0.053
C952765	GREENES	11/9/95	<10	<10	180	<10	180	18.1	2.3	0.076
C952804	GREENES	11/9/95	NA	NA	NA	NA	NA	NA	2.2	0.051
C952805	GREENES	11/12/95	11	<10	260	<10	271	26.9	2.3	0.059
C952851	GREENES	11/14/95	NA	NA	NA	NA	NA	NA	2.2	0.052
C952852	GREENES	11/16/95	NA	NA	NA	NA	NA	NA	2.3	0.059
C952853	GREENES	11/19/95	<10	<10	180	<10	180	18.1	1.8	0.049
C952887	GREENES	11/21/95	NA	NA	NA	NA	NA	NA	2.0	0.051
C952888	GREENES	11/23/95	NA	NA	NA	NA	NA	NA	2.1	0.052
C952889	GREENES	11/26/95	13	<10	200	<10	213	21.1	2.7	0.054
C953250	GREENES	11/28/95	NA	NA	NA	NA	NA	NA	1.8	0.050
C953251	GREENES	11/30/95	NA	NA	NA	NA	NA	NA	1.7	0.048
C953252	GREENES	12/3/95	<10	<10	180	<10	180	18.1	1.9	0.049
C953260	GREENES	12/5/95	NA	NA	NA	NA	NA	NA	2.3	0.049
C953069	GREENES	12/7/95	<10	<10	160	<10	160	16.1	1.8	0.048
C953261	GREENES	12/7/95	NA	NA	NA	NA	NA	NA	1.9	0.047
C953262	GREENES	12/10/95	10	<10	180	<10	190	18.8	2.1	0.050
C953270	GREENES	12/12/95	NA	NA	NA	NA	NA	NA	3.2	0.084
C953271	GREENES	12/14/95	NA	NA	NA	NA	NA	NA	3.2	0.123
C953272	GREENES	12/17/95	13	<10	450	<10	463	46.2	4.3	0.163
C960086	GREENES	12/26/95	NA	NA	NA	NA	NA	NA	2.8	0.077
C960087	GREENES	12/28/95	NA	NA	NA	NA	NA	NA	2.6	0.068
C960088	GREENES	12/31/95	12	<10	230	<10	242	24.0	2.3	0.069
C960096	GREENES	1/2/96	NA	NA	NA	NA	NA	NA	2.9	0.100
C960097	GREENES	1/4/96	NA	NA	NA	NA	NA	NA	2.7	0.101
C960098	GREENES	1/7/96	14	<10	230	<10	244	24.1	2.2	0.068
C960139	GREENES	1/11/96	14	<10	210	<10	224	22.1	2.4	0.063
C960108	GREENES	1/16/96	13	<10	200	<10	213	21.1	2.0	0.057
C960117	GREENES	1/18/96	NA	NA	NA	NA	NA	NA	2.0	0.061
C960118	GREENES	1/21/96	<10	<10	400	<10	400	40.2	3.4	0.127
C960126	GREENES	1/23/96	NA	NA	NA	NA	NA	NA	3.5	0.127
C960127	GREENES	1/25/96	NA	NA	NA	NA	NA	NA	3.1	0.113
C960128	GREENES	1/28/96	<10	<10	240	<10	240	24.1	2.8	0.096
C960225	GREENES	1/30/96	NA	NA	NA	NA	NA	NA	3.1	0.121
C960226	GREENES	2/1/96	NA	NA	NA	NA	NA	NA	2.4	0.094
C960261	GREENES	2/7/96	<10	<10	320	<10	320	32.2	3.2	0.121
C960247	GREENES	2/18/96	<10	<10	180	<10	180	18.1	1.9	0.063
C960573	GREENES	3/5/96	NA	NA	NA	NA	NA	NA	2.5	0.087
C960411	GREENES	3/6/96	<10	<10	260	<10	260	26.1	2.3	0.077
C960582	GREENES	3/10/96	<10	<10	240	<10	240	24.1	2.2	0.092
C960590	GREENES	3/12/96	NA	NA	NA	NA	NA	NA	1.7	0.070
C960591	GREENES	3/14/96	NA	NA	NA	NA	NA	NA	2.3	0.089
C960592	GREENES	3/17/96	<10	<10	310	<10	310	31.2	2.3	0.085
C960600	GREENES	3/19/96	NA	NA	NA	NA	NA	NA	1.8	0.107

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C960601	GREENES	3/21/96	NA	NA	NA	NA	NA	NA	1.9	0.065
C960602	GREENES	3/24/96	<10	<10	240	<10	240	24.1	1.8	0.064
C960727	GREENES	3/26/96	NA	NA	NA	NA	NA	NA	2.0	0.058
C960728	GREENES	3/29/96	NA	NA	NA	NA	NA	NA	1.7	0.053
C960729	GREENES	4/2/96	10	<10	200	<10	210	20.8	1.7	0.048
C960825	GREENES	4/3/96	<10	<10	270	<10	270	27.1	2.3	0.078
C960738	GREENES	4/4/96	NA	NA	NA	NA	NA	NA	2.2	0.086
C960739	GREENES	4/7/96	<10	<10	240	<10	240	24.1	1.9	0.074
C960747	GREENES	4/9/96	NA	NA	NA	NA	NA	NA	1.9	0.055
C960749	GREENES	4/11/96	<10	<10	180	<10	180	18.1	1.8	0.050
C960757	GREENES	4/16/96	NA	NA	NA	NA	NA	NA	1.7	0.044
C960758	GREENES	4/18/96	NA	NA	NA	NA	NA	NA	1.7	0.049
C960759	GREENES	4/21/96	<10	<10	180	<10	180	18.1	1.7	0.050
C960767	GREENES	4/23/96	NA	NA	NA	NA	NA	NA	2.0	0.058
C960768	GREENES	4/25/96	NA	NA	NA	NA	NA	NA	1.8	0.052
C960769	GREENES	4/28/96	<10	<10	160	<10	160	16.1	1.6	0.050
C961066	GREENES	4/30/96	NA	NA	NA	NA	NA	NA	1.6	0.052
C961043	GREENES	5/1/96	<10	<10	160	<10	160	16.1	1.6	0.046
C961067	GREENES	5/2/96	NA	NA	NA	NA	NA	NA	1.5	0.044
C961068	GREENES	5/5/96	<10	<10	150	<10	150	15.1	1.5	0.044
C961099	GREENES	5/7/96	NA	NA	NA	NA	NA	NA	1.5	0.042
C961100	GREENES	5/9/96	NA	NA	NA	NA	NA	NA	1.4	0.040
C961101	GREENES	5/12/96	<10	<10	170	<10	170	17.1	1.5	0.041
C961112	GREENES	5/14/96	NA	NA	NA	NA	NA	NA	1.4	0.039
C961113	GREENES	5/16/96	NA	NA	NA	NA	NA	NA	2.0	0.065
C961114	GREENES	5/19/96	<10	<10	200	<10	200	20.1	1.6	0.065
C961126	GREENES	5/23/96	NA	NA	NA	NA	NA	NA	1.8	0.065
C961127	GREENES	5/26/96	<10	<10	210	<10	210	21.1	1.8	0.067
C961225	GREENES	5/28/96	NA	NA	NA	NA	NA	NA	1.7	0.057
C961226	GREENES	5/31/96	NA	NA	NA	NA	NA	NA	1.8	0.057
C961227	GREENES	6/2/96	<10	<10	180	<10	180	18.1	1.6	0.054
C961260	GREENES	6/3/96	NA	NA	NA	NA	NA	NA	1.5	0.049
C961241	GREENES	6/5/96	NA	NA	NA	NA	NA	NA	1.8	0.049
C961261	GREENES	6/5/96	NA	NA	NA	NA	NA	NA	1.6	0.046
C961262	GREENES	6/8/96	<10	<10	180	<10	180	18.1	1.6	0.046
C961376	GREENES	6/11/96	NA	NA	NA	NA	NA	NA	1.7	0.048
C961377	GREENES	6/12/96	NA	NA	NA	NA	NA	NA	1.4	0.046
C961378	GREENES	6/15/96	<10	<10	180	<10	180	18.1	1.6	0.047
C961506	GREENES	6/17/96	NA	NA	NA	NA	NA	NA	1.8	0.044
C961507	GREENES	6/19/96	NA	NA	NA	NA	NA	NA	1.6	0.045
C961125	GREENES	6/21/96	NA	NA	NA	NA	NA	NA	1.6	0.057
C961508	GREENES	6/22/96	13	<10	180	<10	193	19.0	1.7	0.047
C961549	GREENES	6/24/96	NA	NA	NA	NA	NA	NA	1.7	0.041
C961550	GREENES	6/26/96	NA	NA	NA	NA	NA	NA	1.6	0.044
C961551	GREENES	6/29/96	13	<10	190	<10	203	20.0	1.5	0.045
C961562	GREENES	7/1/96	NA	NA	NA	NA	NA	NA	9.0	0.485
C961567	GREENES	7/3/96	NA	NA	NA	NA	NA	NA	1.6	0.044
C961568	GREENES	7/6/96	<10	<10	190	<10	190	19.1	1.7	0.046
C961576	GREENES	7/9/96	NA	NA	NA	NA	NA	NA	1.5	0.047
C961633	GREENES	7/10/96	<10	<10	180	<10	180	18.1	1.5	0.048
C961577	GREENES	7/11/96	NA	NA	NA	NA	NA	NA	1.5	0.044
C961578	GREENES	7/14/96	<10	<10	190	<10	190	19.1	1.5	0.045
C961586	GREENES	7/16/96	NA	NA	NA	NA	NA	NA	1.5	0.044
C961587	GREENES	7/18/96	NA	NA	NA	NA	NA	NA	1.5	0.045
C961588	GREENES	7/21/96	<10	<10	180	<10	180	18.1	1.8	0.044
C961596	GREENES	7/23/96	NA	NA	NA	NA	NA	NA	1.5	0.042
C961597	GREENES	7/25/96	NA	NA	NA	NA	NA	NA	1.5	0.042

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C961598	GREENES	7/28/96	<10	<10	190	<10	190	19.1	1.6	0.045
C961697	GREENES	7/30/96	NA	NA	NA	NA	NA	NA	1.7	0.043
C961698	GREENES	8/1/96	NA	NA	NA	NA	NA	NA	1.7	0.045
C961699	GREENES	8/4/96	<10	<10	190	<10	190	19.1	1.7	0.047
C961735	GREENES	8/6/96	NA	NA	NA	NA	NA	NA	1.7	0.049
C961710	GREENES	8/7/96	<10	<10	180	<10	180	18.1	1.6	0.043
C961736	GREENES	8/8/96	NA	NA	NA	NA	NA	NA	1.6	0.043
C961737	GREENES	8/11/96	10	<10	190	<10	200	19.8	1.6	0.044
C961759	GREENES	8/13/96	NA	NA	NA	NA	NA	NA	1.7	0.043
C961760	GREENES	8/15/96	NA	NA	NA	NA	NA	NA	1.5	0.042
C961761	GREENES	8/18/96	NA	NA	NA	NA	NA	NA	1.6	0.043
C961769	GREENES	8/20/96	NA	NA	NA	NA	NA	NA	1.7	0.040
C961770	GREENES	8/22/96	NA	NA	NA	NA	NA	NA	1.7	0.044
C961771	GREENES	8/25/96	12	<10	180	<10	192	19.0	1.7	0.046
C961823	GREENES	8/27/96	NA	NA	NA	NA	NA	NA	2.5	0.049
C961824	GREENES	8/29/96	NA	NA	NA	NA	NA	NA	1.8	0.049
C961825	GREENES	9/1/96	12	<10	180	<10	192	19.0	1.7	0.049
C961898	GREENES	9/3/96	NA	NA	NA	NA	NA	NA	1.6	0.049
C961839	GREENES	9/4/96	18	<10	180	<10	198	19.4	1.8	0.050
C961899	GREENES	9/5/96	NA	NA	NA	NA	NA	NA	1.9	0.050
C961900	GREENES	9/8/96	23	<10	180	<10	203	19.8	1.8	0.050
C961983	GREENES	10/2/96	<10	<10	130	<10	130	13.1	1.6	0.040
C962087	GREENES	10/15/96	<10	<10	150	<10	150	15.1	1.5	0.042
C962147	GREENES	11/5/96	11	<10	230	<10	241	23.9	2.4	0.051
C962151	GREENES	11/6/96	10	<10	220	<10	230	22.8	2.3	0.057
C962162	GREENES	11/12/96	<10	<10	160	<10	160	16.1	2.0	0.055
C962167	GREENES	11/20/96	10	<10	190	<10	200	19.8	2.6	0.063
C962172	GREENES	11/26/96	<10	<10	220	<10	220	22.1	2.6	0.070
C962278	GREENES	12/3/96	<10	<10	180	<10	180	18.1	2.4	0.058
C962312	GREENES	12/4/96	<10	<10	170	<10	170	17.1	2.4	0.055
C962283	GREENES	12/10/96	<10	<10	250	<10	250	25.1	2.7	0.081
C962288	GREENES	12/17/96	<10	<10	220	<10	220	22.1	2.4	0.076
C952541	JERSEYPP01	10/11/95	150	<10	830	21	1001	95.6	8.3	0.416
C952759	JERSEYPP01	11/8/95	280	<10	750	100	1130	101.7	7.7	0.407
C953046	JERSEYPP01	12/6/95	210	<10	660	74	944	86.0	8.6	0.459
C960133	JERSEYPP01	1/10/96	790	<10	3700	160	4650	439.0	35.7	1.890
C960270	JERSEYPP01	2/8/96	830	<10	6700	83	7613	739.0	66.1	3.400
C960404	JERSEYPP01	3/7/96	940	<10	7100	95	8135	787.9	68.9	3.560
C960834	JERSEYPP01	4/4/96	820	<10	5800	93	6713	648.4	52.2	2.610
C961052	JERSEYPP01	5/2/96	320	<10	2300	<10	2620	254.6	24.2	1.230
C961250	JERSEYPP01	6/6/96	300	<10	3200	<10	3500	343.6	30.0	1.620
C961776	JERSEYPP01	8/7/96	250	<10	2100	32	2382	231.2	22.0	1.040
C961994	JERSEYPP01	10/3/96	190	13	340	110	653	55.1	5.3	0.223
C962214	JERSEYPP01	11/7/96	500	<10	980	250	1730	149.5	16.1	0.690
C962324	JERSEYPP01	12/5/96	300	20	530	180	1030	86.6	9.8	0.397
C952539	MALLARDIS	10/11/95	110	22	94	97	323	24.1	2.0	0.067
C952757	MALLARDIS	11/8/95	99	210	24	220	553	32.3	2.0	0.063
C953044	MALLARDIS	12/6/95	83	290	15	230	618	34.6	2.4	0.063
C960131	MALLARDIS	1/10/96	170	35	160	150	515	38.8	3.3	0.113
C960268	MALLARDIS	2/8/96	30	<10	500	<10	530	52.4	4.9	0.202
C960832	MALLARDIS	4/4/96	33	<10	300	<10	333	32.6	2.7	0.085
C961050	MALLARDIS	5/2/96	32	<10	200	<10	232	22.4	2.3	0.070
C961248	MALLARDIS	6/6/96	30	<10	220	<10	250	24.3	2.0	0.070
C961638	MALLARDIS	7/11/96	130	52	71	140	393	27.2	1.9	0.064
C961774	MALLARDIS	8/7/96	92	100	24	160	376	23.1	1.9	0.058
C961831	MALLARDIS	9/5/96	97	84	37	130	348	22.3	1.9	0.057
C961992	MALLARDIS	10/3/96	53	220	<100	170	443	24.1	2.1	0.059

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C962217	MALLARDIS	11/7/96	40	260	<100	160	460	24.5	1.8	0.055
C962322	MALLARDIS	12/5/96	43	280	<10	160	483	25.7	2.2	0.070
C952590	MIDDLER	10/18/95	49	<10	310	<10	359	34.7	2.7	0.099
C952808	MIDDLER	11/15/95	41	<10	320	<10	361	35.2	2.9	0.098
C953052	MIDDLER	12/6/95	49	<10	300	<10	349	33.7	3.4	0.122
C960146	MIDDLER	1/17/96	62	<10	550	<10	612	59.8	5.5	0.220
C960275	MIDDLER	2/14/96	93	<10	570	12	675	64.8	6.6	0.232
C960418	MIDDLER	3/13/96	60	<10	390	<10	450	43.6	3.8	0.122
C960839	MIDDLER	4/10/96	<10	<10	400	<10	400	40.2	3.7	0.119
C961074	MIDDLER	5/8/96	78	<10	280	17	375	34.8	3.2	0.103
C961275	MIDDLER	6/12/96	44	<10	310	<10	354	34.4	3.1	0.099
C961647	MIDDLER	7/17/96	39	<10	270	<10	309	27.1	2.5	0.087
C961717	MIDDLER	8/14/96	48	<10	290	<10	338	29.1	2.9	0.098
C961849	MIDDLER	9/11/96	50	<10	270	11	331	31.4	2.5	0.087
C962025	MIDDLER	10/9/96	59	<10	240	15	314	29.3	3.2	0.087
C962197	MIDDLER	11/13/96	60	<10	240	<10	300	24.1	3.0	0.094
C962337	MIDDLER	12/11/96	83	<10	300	17	400	37.2	4.0	0.132
C952489	OLDRIVBACISL	10/1/95	32	<10	310	<10	342	31.2	2.7	0.092
C952531	OLDRIVBACISL	10/3/95	NA	NA	NA	NA	NA	NA	2.6	0.086
C952532	OLDRIVBACISL	10/5/95	NA	NA	NA	NA	NA	NA	2.6	0.092
C952533	OLDRIVBACISL	10/8/95	30	<10	300	<10	330	30.2	2.8	0.089
C952578	OLDRIVBACISL	10/10/95	NA	NA	NA	NA	NA	NA	2.6	0.085
C952583	OLDRIVBACISL	10/12/95	NA	NA	NA	NA	NA	NA	2.4	0.088
C952584	OLDRIVBACISL	10/15/95	31	<10	320	<10	351	32.2	3.2	0.092
C952630	OLDRIVBACISL	10/17/95	NA	NA	NA	NA	NA	NA	2.7	0.091
C952592	OLDRIVBACISL	10/18/95	33	<10	340	<10	373	34.2	2.7	0.100
C952631	OLDRIVBACISL	10/19/95	NA	NA	NA	NA	NA	NA	2.9	0.100
C952632	OLDRIVBACISL	10/22/95	31	<10	360	<10	391	36.2	3.3	0.098
C952678	OLDRIVBACISL	10/24/95	NA	NA	NA	NA	NA	NA	2.8	0.095
C952679	OLDRIVBACISL	10/26/95	NA	NA	NA	NA	NA	NA	2.6	0.094
C952680	OLDRIVBACISL	10/29/95	30	<10	320	<10	350	32.2	3.2	0.092
C952749	OLDRIVBACISL	10/31/95	NA	NA	NA	NA	NA	NA	2.8	0.088
C952750	OLDRIVBACISL	11/2/95	NA	NA	NA	NA	NA	NA	2.8	0.089
C952751	OLDRIVBACISL	11/5/95	33	<10	300	<10	333	30.2	2.5	0.089
C952800	OLDRIVBACISL	11/7/95	NA	NA	NA	NA	NA	NA	2.6	0.086
C952801	OLDRIVBACISL	11/9/95	NA	NA	NA	NA	NA	NA	2.8	0.092
C952802	OLDRIVBACISL	11/12/95	38	<10	340	<10	378	34.2	3.2	0.097
C952848	OLDRIVBACISL	11/14/95	NA	NA	NA	NA	NA	NA	2.7	0.090
C952810	OLDRIVBACISL	11/15/95	36	<10	280	<10	316	28.1	2.7	0.100
C952849	OLDRIVBACISL	11/16/95	NA	NA	NA	NA	NA	NA	3.0	0.095
C952850	OLDRIVBACISL	11/19/95	34	<10	270	<10	304	27.1	3.3	0.098
C952884	OLDRIVBACISL	11/21/95	NA	NA	NA	NA	NA	NA	3.0	0.097
C952885	OLDRIVBACISL	11/23/95	NA	NA	NA	NA	NA	NA	3.3	0.099
C952886	OLDRIVBACISL	11/26/95	36	<10	290	<10	326	29.1	3.4	0.101
C953247	OLDRIVBACISL	11/28/95	NA	NA	NA	NA	NA	NA	3.0	0.102
C953248	OLDRIVBACISL	11/30/95	NA	NA	NA	NA	NA	NA	3.0	0.104
C953249	OLDRIVBACISL	12/3/95	33	<10	310	<10	343	31.2	3.2	0.108
C953257	OLDRIVBACISL	12/5/95	NA	NA	NA	NA	NA	NA	3.0	0.108
C953054	OLDRIVBACISL	12/6/95	32	<10	280	<10	312	28.1	3.1	0.112
C953258	OLDRIVBACISL	12/7/95	NA	NA	NA	NA	NA	NA	3.1	0.108
C953259	OLDRIVBACISL	12/10/95	30	<10	310	<10	340	31.2	3.4	0.118
C953267	OLDRIVBACISL	12/12/95	NA	NA	NA	NA	NA	NA	3.2	0.116
C953268	OLDRIVBACISL	12/14/95	NA	NA	NA	NA	NA	NA	3.9	0.135
C953269	OLDRIVBACISL	12/17/95	42	<10	360	<10	402	36.2	3.7	0.149
C960083	OLDRIVBACISL	12/26/95	NA	NA	NA	NA	NA	NA	4.0	0.163
C960084	OLDRIVBACISL	12/28/95	NA	NA	NA	NA	NA	NA	4.6	0.179
C960085	OLDRIVBACISL	12/31/95	48	<10	480	<10	528	48.2	4.7	0.191

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C960093	OLDRIVBACISL	1/2/96	NA	NA	NA	NA	NA	NA	4.9	0.200
C960094	OLDRIVBACISL	1/4/96	NA	NA	NA	NA	NA	NA	4.9	0.198
C960095	OLDRIVBACISL	1/7/96	40	<10	520	<10	560	52.3	5.0	0.204
C960105	OLDRIVBACISL	1/16/96	36	<10	500	<10	536	50.3	4.8	0.187
C960148	OLDRIVBACISL	1/17/96	36	<10	550	<10	586	55.3	4.8	0.186
C960114	OLDRIVBACISL	1/19/96	NA	NA	NA	NA	NA	NA	4.4	0.170
C960115	OLDRIVBACISL	1/21/96	39	<10	460	<10	499	46.2	4.4	0.173
C960222	OLDRIVBACISL	1/30/96	NA	NA	NA	NA	NA	NA	5.4	0.211
C960223	OLDRIVBACISL	2/2/96	NA	NA	NA	NA	NA	NA	5.9	0.235
C960224	OLDRIVBACISL	2/4/96	48	<10	580	<10	628	58.3	6.3	0.251
C960232	OLDRIVBACISL	2/6/96	NA	NA	NA	NA	NA	NA	7.2	0.279
C960233	OLDRIVBACISL	2/8/96	NA	NA	NA	NA	NA	NA	7.6	0.308
C960234	OLDRIVBACISL	2/11/96	65	<10	760	<10	825	76.4	8.1	0.324
C960242	OLDRIVBACISL	2/13/96	NA	NA	NA	NA	NA	NA	8.0	0.300
C960277	OLDRIVBACISL	2/14/96	68	<10	780	<10	848	78.4	8.2	0.322
C960243	OLDRIVBACISL	2/15/96	NA	NA	NA	NA	NA	NA	8.2	0.307
C960244	OLDRIVBACISL	2/18/96	65	<10	720	<10	785	72.4	8.1	0.307
C960252	OLDRIVBACISL	2/20/96	NA	NA	NA	NA	NA	NA	8.0	0.297
C960253	OLDRIVBACISL	2/22/96	NA	NA	NA	NA	NA	NA	8.4	0.307
C960254	OLDRIVBACISL	2/25/96	92	<10	760	<10	852	76.4	7.5	0.283
C960436	OLDRIVBACISL	2/27/96	NA	NA	NA	NA	NA	NA	6.8	0.250
C960437	OLDRIVBACISL	2/29/96	NA	NA	NA	NA	NA	NA	6.4	0.237
C960438	OLDRIVBACISL	3/3/96	75	<10	610	<10	685	61.3	5.5	0.174
C960577	OLDRIVBACISL	3/5/96	NA	NA	NA	NA	NA	NA	4.5	0.099
C960578	OLDRIVBACISL	3/7/96	NA	NA	NA	NA	NA	NA	4.4	0.144
C960579	OLDRIVBACISL	3/10/96	54	<10	410	<10	464	41.2	3.8	0.123
C960587	OLDRIVBACISL	3/12/96	NA	NA	NA	NA	NA	NA	4.0	0.121
C960420	OLDRIVBACISL	3/13/96	56	<10	440	<10	496	44.2	4.2	0.139
C960588	OLDRIVBACISL	3/14/96	NA	NA	NA	NA	NA	NA	3.9	0.132
C960589	OLDRIVBACISL	3/17/96	66	<10	550	<10	616	55.3	4.8	0.138
C960597	OLDRIVBACISL	3/19/96	NA	NA	NA	NA	NA	NA	3.7	0.116
C960598	OLDRIVBACISL	3/21/96	NA	NA	NA	NA	NA	NA	3.7	0.111
C960599	OLDRIVBACISL	3/24/96	64	<10	440	<10	504	44.2	5.3	0.112
C960726	OLDRIVBACISL	4/2/96	63	<10	400	<10	463	40.2	3.4	0.116
C960736	OLDRIVBACISL	4/4/96	56	<10	410	<10	466	41.2	3.7	0.123
C960744	OLDRIVBACISL	4/9/96	NA	NA	NA	NA	NA	NA	4.3	0.117
C960841	OLDRIVBACISL	4/10/96	53	<10	430	<10	483	43.2	3.8	0.123
C960745	OLDRIVBACISL	4/11/96	NA	NA	NA	NA	NA	NA	4.4	0.121
C960746	OLDRIVBACISL	4/14/96	49	<10	370	<10	419	37.2	3.6	0.122
C960754	OLDRIVBACISL	4/16/96	NA	NA	NA	NA	NA	NA	3.6	0.110
C960755	OLDRIVBACISL	4/18/96	NA	NA	NA	NA	NA	NA	3.6	0.117
C960756	OLDRIVBACISL	4/21/96	62	<10	420	<10	482	42.2	5.4	0.118
C960764	OLDRIVBACISL	4/23/96	NA	NA	NA	NA	NA	NA	3.5	0.110
C960765	OLDRIVBACISL	4/25/96	NA	NA	NA	NA	NA	NA	3.2	0.100
C960766	OLDRIVBACISL	4/25/96	78	<10	300	15	393	30.2	3.6	NA
C961063	OLDRIVBACISL	4/30/96	NA	NA	NA	NA	NA	NA	3.1	0.095
C961064	OLDRIVBACISL	5/2/96	NA	NA	NA	NA	NA	NA	3.2	0.099
C961065	OLDRIVBACISL	5/5/96	62	<10	300	<10	362	30.2	3.4	0.106
C961096	OLDRIVBACISL	5/7/96	NA	NA	NA	NA	NA	NA	3.3	0.100
C961076	OLDRIVBACISL	5/8/96	64	<10	300	11	375	35.5	3.4	0.101
C961097	OLDRIVBACISL	5/9/96	NA	NA	NA	NA	NA	NA	3.2	0.106
C961098	OLDRIVBACISL	5/12/96	68	<10	330	10	408	38.7	3.4	0.104
C961109	OLDRIVBACISL	5/14/96	NA	NA	NA	NA	NA	NA	3.3	0.105
C961110	OLDRIVBACISL	5/16/96	NA	NA	NA	NA	NA	NA	3.2	0.103
C961111	OLDRIVBACISL	5/19/96	62	<10	330	<10	392	33.2	3.3	0.107
C961122	OLDRIVBACISL	5/21/96	NA	NA	NA	NA	NA	NA	3.1	0.109
C961123	OLDRIVBACISL	5/23/96	NA	NA	NA	NA	NA	NA	3.2	0.110

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C961124	OLDRIVBACISL	5/26/96	51	<10	300	<10	351	30.2	3.4	0.108
C961235	OLDRIVBACISL	5/28/96	NA	NA	NA	NA	NA	NA	3.2	0.110
C961236	OLDRIVBACISL	5/30/96	NA	NA	NA	NA	NA	NA	3.5	0.114
C961237	OLDRIVBACISL	6/2/96	36	<10	400	<10	436	42.8	3.7	0.102
C961270	OLDRIVBACISL	6/4/96	NA	NA	NA	NA	NA	NA	3.0	0.080
C961271	OLDRIVBACISL	6/6/96	NA	NA	NA	NA	NA	NA	2.9	0.094
C961272	OLDRIVBACISL	6/9/96	24	<10	300	<10	324	31.9	2.7	0.094
C961400	OLDRIVBACISL	6/11/96	NA	NA	NA	NA	NA	NA	2.7	0.093
C961277	OLDRIVBACISL	6/12/96	NA	NA	NA	NA	NA	NA	2.8	0.090
C961401	OLDRIVBACISL	6/13/96	NA	NA	NA	NA	NA	NA	2.5	0.094
C961402	OLDRIVBACISL	6/16/96	20	<10	290	<10	310	30.6	2.5	0.095
C961516	OLDRIVBACISL	6/18/96	NA	NA	NA	NA	NA	NA	2.5	0.081
C961517	OLDRIVBACISL	6/20/96	NA	NA	NA	NA	NA	NA	2.3	0.083
C961518	OLDRIVBACISL	6/23/96	20	<10	260	<10	280	27.6	2.4	0.087
C961559	OLDRIVBACISL	6/25/96	NA	NA	NA	NA	NA	NA	2.5	0.080
C961560	OLDRIVBACISL	6/27/96	NA	NA	NA	NA	NA	NA	2.4	0.085
C961561	OLDRIVBACISL	6/30/96	19	<10	260	<10	279	27.5	2.4	0.082
C961606	OLDRIVBACISL	7/2/96	NA	NA	NA	NA	NA	NA	2.4	0.070
C961607	OLDRIVBACISL	7/4/96	NA	NA	NA	NA	NA	NA	2.3	0.078
C961608	OLDRIVBACISL	7/7/96	20	<10	240	<10	260	25.6	2.3	0.078
C961613	OLDRIVBACISL	7/9/96	NA	NA	NA	NA	NA	NA	2.1	0.079
C961614	OLDRIVBACISL	7/11/96	NA	NA	NA	NA	NA	NA	2.1	0.078
C961615	OLDRIVBACISL	7/14/96	28	<10	250	<10	278	27.2	2.1	0.080
C961620	OLDRIVBACISL	7/16/96	NA	NA	NA	NA	NA	NA	2.1	0.080
C961649	OLDRIVBACISL	7/17/96	32	<10	240	<10	272	26.5	2.1	0.077
C961621	OLDRIVBACISL	7/18/96	NA	NA	NA	NA	NA	NA	2.5	0.079
C961622	OLDRIVBACISL	7/21/96	36	<10	240	<10	276	26.8	2.3	0.076
C961627	OLDRIVBACISL	7/23/96	NA	NA	NA	NA	NA	NA	2.0	0.073
C961628	OLDRIVBACISL	7/25/96	NA	NA	NA	NA	NA	NA	2.0	0.072
C961629	OLDRIVBACISL	7/28/96	40	<10	240	<10	280	27.1	2.1	0.073
C961623	OLDRIVBACISL	7/30/96	NA	NA	NA	NA	NA	NA	2.1	0.073
C961690	OLDRIVBACISL	7/30/96	NA	NA	NA	NA	NA	NA	2.2	0.072
C961694	OLDRIVBACISL	7/30/96	NA	NA	NA	NA	NA	NA	2.1	0.070
C961695	OLDRIVBACISL	8/1/96	NA	NA	NA	NA	NA	NA	2.3	0.075
C961696	OLDRIVBACISL	8/4/96	48	<10	230	10	288	27.2	2.2	0.081
C961732	OLDRIVBACISL	8/6/96	NA	NA	NA	NA	NA	NA	2.3	0.068
C961733	OLDRIVBACISL	8/8/96	NA	NA	NA	NA	NA	NA	2.1	0.076
C961734	OLDRIVBACISL	8/11/96	54	<10	210	14	278	25.9	2.2	0.074
C961715	OLDRIVBACISL	8/14/96	55	<10	220	14	289	26.9	2.2	0.073
C961758	OLDRIVBACISL	8/20/96	54	<10	200	15	269	24.9	2.1	0.074
C961768	OLDRIVBACISL	8/27/96	49	<10	200	12	261	24.4	2.2	0.074
C961822	OLDRIVBACISL	9/3/96	49	<10	210	12	271	25.4	2.2	0.076
C961897	OLDRIVBACISL	9/10/96	49	<10	210	13	272	25.4	2.2	0.072
C961851	OLDRIVBACISL	9/11/96	43	<10	210	<10	253	24.3	2.3	0.070
C961907	OLDRIVBACISL	9/17/96	46	<10	280	<10	326	31.5	3.3	0.072
C961917	OLDRIVBACISL	9/24/96	37	<10	190	<10	227	21.8	2.1	0.070
C962002	OLDRIVBACISL	9/26/96	NA	NA	NA	NA	NA	NA	2.3	0.068
C962003	OLDRIVBACISL	9/29/96	45	<10	170	12	227	21.1	2.2	0.072
C962082	OLDRIVBACISL	10/8/96	NA	NA	NA	NA	NA	NA	2.1	0.067
C962027	OLDRIVBACISL	10/9/96	58	<10	180	20	258	23.5	2.2	0.072
C962083	OLDRIVBACISL	10/10/96	NA	NA	NA	NA	NA	NA	2.0	0.066
C962084	OLDRIVBACISL	10/13/96	66	<10	170	25	261	23.4	2.0	0.070
C962099	OLDRIVBACISL	10/15/96	NA	NA	NA	NA	NA	NA	2.2	0.066
C962100	OLDRIVBACISL	10/17/96	NA	NA	NA	NA	NA	NA	2.3	0.072
C962101	OLDRIVBACISL	10/20/96	81	<10	190	33	304	26.9	2.4	0.072
C962115	OLDRIVBACISL	10/29/96	92	<10	140	52	284	23.8	2.4	0.073
C962145	OLDRIVBACISL	10/31/96	NA	NA	NA	NA	NA	NA	2.6	0.078

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH μg/L	Br3CH μg/L	CHCl3 μg/L	Br2ClCH μg/L	THMFP μg/L	TFPC μg/L	DOC mg/L	UVA abs.
C962146	OLDRIVBACISL	11/4/96	87	<10	180	39	306	26.7	2.5	0.080
C962160	OLDRIVBACISL	11/7/96	NA	NA	NA	NA	NA	NA	2.6	0.077
C962161	OLDRIVBACISL	11/10/96	86	<10	150	39	275	23.6	2.5	0.078
C962164	OLDRIVBACISL	11/12/96	NA	NA	NA	NA	NA	NA	2.5	0.069
C962199	OLDRIVBACISL	11/13/96	91	<10	163	42	296	25.5	2.6	0.080
C962165	OLDRIVBACISL	11/14/96	NA	NA	NA	NA	NA	NA	3.3	0.080
C962159	OLDRIVBACISL	11/15/96	NA	NA	NA	NA	NA	NA	2.4	0.068
C962166	OLDRIVBACISL	11/17/96	94	<10	140	56	290	24.2	3.0	0.081
C962169	OLDRIVBACISL	11/20/96	NA	NA	NA	NA	NA	NA	2.7	0.074
C962170	OLDRIVBACISL	11/22/96	NA	NA	NA	NA	NA	NA	3.2	0.085
C962171	OLDRIVBACISL	11/25/96	110	<10	130	68	308	25.0	3.0	0.085
C962275	OLDRIVBACISL	11/26/96	NA	NA	NA	NA	NA	NA	3.0	0.075
C962276	OLDRIVBACISL	11/28/96	NA	NA	NA	NA	NA	NA	2.9	0.090
C962277	OLDRIVBACISL	12/1/96	110	<10	140	76	326	26.5	3.0	0.091
C962280	OLDRIVBACISL	12/3/96	NA	NA	NA	NA	NA	NA	3.0	0.091
C962281	OLDRIVBACISL	12/5/96	NA	NA	NA	NA	NA	NA	3.5	0.104
C962282	OLDRIVBACISL	12/8/96	110	<10	170	60	340	28.6	3.2	0.105
C962285	OLDRIVBACISL	12/10/96	NA	NA	NA	NA	NA	NA	3.3	0.106
C962339	OLDRIVBACISL	12/11/96	120	<10	200	52	372	31.9	3.6	0.117
C962286	OLDRIVBACISL	12/12/96	NA	NA	NA	NA	NA	NA	4.0	0.116
C962287	OLDRIVBACISL	12/15/96	110	<10	240	46	396	34.8	3.9	0.128
C952595	PESCADERO01	10/19/95	180	36	150	130	496	37.5	3.6	0.084
C952813	PESCADERO01	11/16/95	180	17	210	100	507	40.9	NA	0.095
C953060	PESCADERO01	12/7/95	150	29	160	120	459	35.4	3.9	0.064
C960151	PESCADERO01	1/18/96	150	40	88	120	398	28.7	2.9	0.103
C960280	PESCADERO01	2/15/96	180	31	180	140	531	40.8	4.5	0.109
C960426	PESCADERO01	3/14/96	230	55	200	190	675	50.5	4.8	0.154
C960844	PESCADERO01	4/11/96	180	16	280	110	586	48.4	4.5	0.117
C961079	PESCADERO01	5/9/96	140	18	160	110	428	33.5	3.4	0.080
C961280	PESCADERO01	6/13/96	360	18	720	180	1278	110.0	9.5	0.255
C961662	PESCADERO01	7/18/96	180	16	320	110	626	52.5	4.6	0.136
C961722	PESCADERO01	8/15/96	220	19	400	140	779	65.3	6.9	0.182
C961857	PESCADERO01	9/12/96	230	18	490	120	858	73.9	7.8	0.204
C962032	PESCADERO01	10/10/96	280	29	410	170	889	72.9	8.0	0.153
C962187	PESCADERO01	11/14/96	140	36	96	110	382	28.0	3.7	0.059
C952549	SACWSACINT	10/12/95	<10	<10	140	<10	140	14.1	1.4	0.046
C952767	SACWSACINT	11/9/95	14	<10	240	<10	254	25.1	2.5	0.107
C953071	SACWSACINT	12/7/95	11	<10	190	<10	201	19.9	2.1	0.059
C960141	SACWSACINT	1/11/96	14	<10	200	<10	214	21.1	2.0	0.060
C960263	SACWSACINT	2/7/96	<10	<10	370	<10	370	37.2	3.3	0.151
C960413	SACWSACINT	3/6/96	<10	<10	240	<10	240	24.1	1.9	0.062
C960827	SACWSACINT	4/3/96	<10	<10	270	<10	270	27.1	2.0	0.072
C961045	SACWSACINT	5/1/96	<10	<10	160	<10	160	16.1	1.6	0.045
C961243	SACWSACINT	6/5/96	<10	<10	170	<10	170	17.1	1.5	0.045
C961635	SACWSACINT	7/10/96	<10	<10	180	<10	180	18.1	1.4	0.044
C961712	SACWSACINT	8/7/96	<10	<10	170	<10	170	17.1	1.5	0.043
C961841	SACWSACINT	9/4/96	15	<10	180	<10	195	19.2	1.7	0.049
C961985	SACWSACINT	10/2/96	<10	<10	130	<10	130	13.1	1.3	0.036
C962153	SACWSACINT	11/6/96	12	<10	220	<10	232	23.0	2.2	0.059
C962314	SACWSACINT	12/4/96	<10	<10	140	<10	140	14.1	1.7	0.047
C952594	SJRMOSSDALE	10/19/95	43	<10	270	<10	313	30.3	2.4	0.077
C952812	SJRMOSSDALE	11/16/95	110	<10	210	53	373	29.2	NA	0.078
C953059	SJRMOSSDALE	12/7/95	96	<10	200	48	344	27.1	3.0	0.081
C960150	SJRMOSSDALE	1/18/96	110	<10	220	52	382	30.2	3.2	0.089
C960279	SJRMOSSDALE	2/15/96	54	<10	330	<10	384	37.1	3.5	0.110
C960425	SJRMOSSDALE	3/14/96	43	<10	390	<10	433	42.3	4.8	0.113
C960843	SJRMOSSDALE	4/11/96	73	<10	320	16	409	37.5	2.7	0.081

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C961078	SJRMOSSDALE	5/9/96	54	<10	220	<10	274	26.1	2.4	0.067
C961279	SJRMOSSDALE	6/13/96	100	<10	220	46	366	32.1	2.8	0.074
C961661	SJRMOSSDALE	7/18/96	120	<10	220	68	408	30.9	2.8	0.085
C961721	SJRMOSSDALE	8/15/96	120	<10	250	51	421	33.9	3.1	0.096
C961856	SJRMOSSDALE	9/12/96	100	<10	220	47	367	29.4	3.2	0.083
C962031	SJRMOSSDALE	10/10/96	92	<10	190	43	325	25.8	2.7	0.076
C962186	SJRMOSSDALE	11/14/96	100	<10	190	50	340	26.4	3.3	0.081
C962343	SJRMOSSDALE	12/12/96	34	<10	660	<10	694	68.8	7.8	0.275
C952764	STATENPP02	11/9/95	420	<10	2750	50	3220	307.2	27.3	1.616
C953068	STATENPP02	12/7/95	520	<10	1900	160	2580	229.1	23.6	1.070
C960138	STATENPP02	1/11/96	350	<10	4400	<10	4750	467.9	48.6	2.060
C960260	STATENPP02	2/7/96	300	<10	3400	<10	3700	363.7	45.0	1.740
C960410	STATENPP02	3/6/96	540	<10	4100	71	4711	455.7	43.0	1.740
C960824	STATENPP02	4/3/96	570	<10	2900	150	3620	341.9	31.0	1.200
C961042	STATENPP02	5/1/96	100	<10	550	13	663	63.4	6.2	0.278
C961240	STATENPP02	6/5/96	140	<10	620	29	789	74.2	6.9	0.254
C961632	STATENPP02	7/10/96	40	<10	750	<10	790	78.3	7.0	0.332
C961709	STATENPP02	8/7/96	41	<10	810	<10	851	84.4	15.8	0.306
C961838	STATENPP02	9/4/96	280	<10	1600	56	1936	184.5	9.0	0.807
C961982	STATENPP02	10/2/96	100	<10	620	<10	720	69.6	21.6	1.020
C962150	STATENPP02	11/6/96	330	<10	1800	74	2204	209.4	40.6	1.020
C962311	STATENPP02	12/4/96	430	<40	3200	<40	3630	353.1	NA	1.810
C952589	STATION09	10/18/95	40	<10	340	<10	380	37.1	2.9	0.104
C952807	STATION09	11/15/95	42	<10	330	<10	372	36.2	3.1	0.112
C953051	STATION09	12/6/95	42	<10	320	<10	362	35.2	3.5	0.126
C960145	STATION09	1/17/96	47	<10	570	<10	617	60.7	5.3	0.235
C960274	STATION09	2/14/96	96	<10	680	<10	776	75.4	8.2	0.313
C960417	STATION09	3/13/96	58	<10	400	<10	458	44.5	4.3	0.141
C960838	STATION09	4/10/96	<10	<10	420	<10	420	42.2	3.9	NA
C961073	STATION09	5/8/96	76	<10	270	17	363	33.7	3.0	0.103
C961274	STATION09	6/12/96	35	<10	310	<10	345	33.7	3.0	0.098
C961646	STATION09	7/17/96	32	<10	270	<10	302	29.5	2.3	0.092
C961716	STATION09	8/14/96	47	<10	210	11	268	25.2	2.4	0.090
C961848	STATION09	9/11/96	47	<10	260	<10	307	29.6	2.7	0.087
C962024	STATION09	10/9/96	54	<10	190	16	260	24.0	2.4	0.076
C962196	STATION09	11/13/96	86	<10	180	35	301	26.4	2.8	0.087
C962336	STATION09	12/11/96	120	<10	230	47	397	34.6	3.8	0.126
C952456	TWITCHELLPP01	9/30/95	NA	NA	NA	NA	NA	NA	6.3	0.245
C952457	TWITCHELLPP01	10/2/95	270	<10	620	93	983	87.5	6.5	0.412
C952503	TWITCHELLPP01	10/4/95	NA	NA	NA	NA	NA	NA	8.2	0.358
C952504	TWITCHELLPP01	10/7/95	NA	NA	NA	NA	NA	NA	5.8	0.293
C952505	TWITCHELLPP01	10/10/95	240	<10	480	100	820	71.6	5.8	0.327
C952554	TWITCHELLPP01	10/11/95	NA	NA	NA	NA	NA	NA	7.9	0.400
C952555	TWITCHELLPP01	10/14/95	NA	NA	NA	NA	NA	NA	5.9	0.330
C952556	TWITCHELLPP01	10/16/95	250	<10	600	96	946	84.2	6.6	0.395
C952604	TWITCHELLPP01	10/23/95	220	<10	520	98	838	74.0	5.9	0.362
C952650	TWITCHELLPP01	10/25/95	NA	NA	NA	NA	NA	NA	6.2	0.369
C952651	TWITCHELLPP01	10/28/95	NA	NA	NA	NA	NA	NA	6.2	0.346
C952652	TWITCHELLPP01	10/30/95	270	<10	600	120	990	87.0	6.6	0.378
C952721	TWITCHELLPP01	11/1/95	NA	NA	NA	NA	NA	NA	7.4	0.417
C952722	TWITCHELLPP01	11/4/95	NA	NA	NA	NA	NA	NA	10.3	0.583
C952723	TWITCHELLPP01	11/6/95	300	<10	900	89	1289	117.6	8.2	0.516
C952772	TWITCHELLPP01	11/8/95	NA	NA	NA	NA	NA	NA	7.4	0.434
C952773	TWITCHELLPP01	11/11/95	NA	NA	NA	NA	NA	NA	8.8	0.485
C952774	TWITCHELLPP01	11/13/95	240	<10	500	120	860	74.8	5.9	0.356
C952819	TWITCHELLPP01	11/15/95	NA	NA	NA	NA	NA	NA	6.7	0.343
C952820	TWITCHELLPP01	11/17/95	NA	NA	NA	NA	NA	NA	7.5	0.376

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C952822	TWITCHELLPP01	11/20/95	240	<10	760	78	1078	98.5	8.0	0.468
C952855	TWITCHELLPP01	11/20/95	NA	NA	NA	NA	NA	NA	8.7	0.384
C952856	TWITCHELLPP01	11/22/95	NA	NA	NA	NA	NA	NA	7.2	0.360
C952857	TWITCHELLPP01	11/25/95	NA	NA	NA	NA	NA	NA	7.1	0.298
C952858	TWITCHELLPP01	11/27/95	210	<10	460	85	755	66.5	6.1	0.359
C952936	TWITCHELLPP01	11/29/95	NA	NA	NA	NA	NA	NA	9.3	0.461
C952937	TWITCHELLPP01	12/2/95	NA	NA	NA	NA	NA	NA	9.3	0.498
C952938	TWITCHELLPP01	12/4/95	220	<10	540	100	860	76.2	9.4	0.408
C953155	TWITCHELLPP01	12/6/95	NA	NA	NA	NA	NA	NA	8.5	0.507
C953156	TWITCHELLPP01	12/9/95	NA	NA	NA	NA	NA	NA	7.9	0.462
C953157	TWITCHELLPP01	12/11/95	280	<10	1100	61	1441	134.6	13.0	0.607
C953219	TWITCHELLPP01	12/13/95	NA	NA	NA	NA	NA	NA	26.6	1.120
C953220	TWITCHELLPP01	12/16/95	NA	NA	NA	NA	NA	NA	25.0	1.090
C953221	TWITCHELLPP01	12/18/95	290	<10	1200	86	1576	146.8	13.0	0.709
C960005	TWITCHELLPP01	1/8/96	260	<10	2800	<10	3060	300.5	29.1	1.550
C960028	TWITCHELLPP01	1/15/96	NA	NA	NA	NA	NA	NA	30.4	1.390
C960029	TWITCHELLPP01	1/17/96	NA	NA	NA	NA	NA	NA	32.3	1.520
C960030	TWITCHELLPP01	1/20/96	NA	NA	NA	NA	NA	NA	34.8	1.570
C960031	TWITCHELLPP01	1/22/96	300	<10	3000	<10	3300	323.5	31.5	1.490
C960055	TWITCHELLPP01	1/24/96	NA	NA	NA	NA	NA	NA	32.2	1.420
C960056	TWITCHELLPP01	1/27/96	NA	NA	NA	NA	NA	NA	33.0	1.460
C960057	TWITCHELLPP01	1/29/96	310	<10	2800	<10	3110	304.1	35.3	1.610
C960168	TWITCHELLPP01	1/31/96	NA	NA	NA	NA	NA	NA	39.1	1.970
C960169	TWITCHELLPP01	2/3/96	NA	NA	NA	NA	NA	NA	40.5	1.800
C960170	TWITCHELLPP01	2/5/96	320	<10	3900	<10	4220	415.4	49.2	2.220
C960193	TWITCHELLPP01	2/19/96	NA	NA	NA	NA	NA	NA	37.5	1.690
C960194	TWITCHELLPP01	2/21/96	NA	NA	NA	NA	NA	NA	54.9	1.910
C960195	TWITCHELLPP01	2/24/96	NA	NA	NA	NA	NA	NA	44.4	2.620
C960196	TWITCHELLPP01	2/26/96	290	<10	3600	<10	3890	383.1	36.0	1.620
C960604	TWITCHELLPP01	3/4/96	NA	NA	NA	NA	NA	NA	36.6	1.620
C960605	TWITCHELLPP01	3/6/96	NA	NA	NA	NA	NA	NA	40.3	1.770
C960606	TWITCHELLPP01	3/9/96	NA	NA	NA	NA	NA	NA	41.7	1.810
C960465	TWITCHELLPP01	3/11/96	400	40	3600	40	4080	395.3	32.5	1.680
C960631	TWITCHELLPP01	3/13/96	NA	NA	NA	NA	NA	NA	56.0	2.500
C960632	TWITCHELLPP01	3/16/96	NA	NA	NA	NA	NA	NA	43.1	1.950
C960633	TWITCHELLPP01	3/18/96	420	<10	3600	<10	4020	392.6	37.0	1.660
C960656	TWITCHELLPP01	3/20/96	NA	NA	NA	NA	NA	NA	36.9	1.580
C960879	TWITCHELLPP01	3/22/96	370	<10	2100	43	2513	240.6	29.0	1.140
C960771	TWITCHELLPP01	3/24/96	NA	NA	NA	NA	NA	NA	24.2	1.150
C960659	TWITCHELLPP01	3/25/96	370	<10	2400	48	2818	271.1	27.7	1.170
C960772	TWITCHELLPP01	3/27/96	NA	NA	NA	NA	NA	NA	22.3	1.000
C960773	TWITCHELLPP01	3/30/96	NA	NA	NA	NA	NA	NA	23.4	1.070
C960774	TWITCHELLPP01	4/1/96	370	<10	2400	49	2819	271.1	18.6	1.080
C960798	TWITCHELLPP01	4/3/96	NA	NA	NA	NA	NA	NA	33.0	1.520
C960799	TWITCHELLPP01	4/6/96	NA	NA	NA	NA	NA	NA	22.7	1.060
C960800	TWITCHELLPP01	4/8/96	260	<10	2500	<10	2760	270.3	23.6	1.150
C960853	TWITCHELLPP01	4/15/96	340	<10	1500	60	1900	179.1	23.6	0.741
C960877	TWITCHELLPP01	4/17/96	NA	NA	NA	NA	NA	NA	17.3	0.826
C960878	TWITCHELLPP01	4/20/96	NA	NA	NA	NA	NA	NA	20.1	0.949
C960902	TWITCHELLPP01	4/24/96	NA	NA	NA	NA	NA	NA	22.6	1.100
C960903	TWITCHELLPP01	4/27/96	NA	NA	NA	NA	NA	NA	18.3	0.846
C960904	TWITCHELLPP01	4/29/96	330	<10	1500	53	1883	178.0	17.3	0.849
C961057	TWITCHELLPP01	5/1/96	NA	NA	NA	NA	NA	NA	NA	0.955
C961058	TWITCHELLPP01	5/4/96	280	<10	1300	49	1629	154.0	16.0	0.894
C961085	TWITCHELLPP01	5/6/96	NA	NA	NA	NA	NA	NA	17.4	0.947
C961086	TWITCHELLPP01	5/8/96	NA	NA	NA	NA	NA	NA	16.1	0.894
C961087	TWITCHELLPP01	5/11/96	280	<10	1300	47	1627	153.9	13.9	0.724

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH μg/L	Br3CH μg/L	CHCl3 μg/L	Br2ClCH μg/L	THMFP μg/L	TFPC μg/L	DOC mg/L	UVA abs.
C961091	TWITCHELLPP01	5/20/96	320	<10	2000	37	2357	226.6	15.6	0.880
C961222	TWITCHELLPP01	5/27/96	NA	NA	NA	NA	NA	NA	14.4	0.799
C961224	TWITCHELLPP01	5/30/96	230	<10	920	54	1204	112.4	11.1	0.532
C961257	TWITCHELLPP01	6/3/96	NA	NA	NA	NA	NA	NA	14.9	0.756
C961258	TWITCHELLPP01	6/5/96	NA	NA	NA	NA	NA	NA	14.7	0.785
C961259	TWITCHELLPP01	6/8/96	240	<10	880	63	1183	109.7	11.0	0.627
C961373	TWITCHELLPP01	6/10/96	NA	NA	NA	NA	NA	NA	12.2	0.667
C961374	TWITCHELLPP01	6/12/96	NA	NA	NA	NA	NA	NA	12.7	0.688
C961375	TWITCHELLPP01	6/15/96	190	<10	1300	27	1517	146.1	12.3	0.648
C961503	TWITCHELLPP01	6/17/96	NA	NA	NA	NA	NA	NA	13.4	0.625
C961533	TWITCHELLPP01	6/19/96	170	20	1400	20	1610	155.3	14.0	0.738
C961505	TWITCHELLPP01	6/22/96	170	<10	1200	21	1391	134.3	11.2	0.601
C961546	TWITCHELLPP01	6/24/96	NA	NA	NA	NA	NA	NA	9.0	0.485
C961547	TWITCHELLPP01	6/26/96	NA	NA	NA	NA	NA	NA	10.9	0.470
C961563	TWITCHELLPP01	7/1/96	NA	NA	NA	NA	NA	NA	11.6	0.694
C961564	TWITCHELLPP01	7/3/96	NA	NA	NA	NA	NA	NA	11.8	0.565
C961565	TWITCHELLPP01	7/6/96	210	<10	1600	27	1837	177.7	14.4	0.766
C961573	TWITCHELLPP01	7/8/96	NA	NA	NA	NA	NA	NA	12.5	0.651
C961574	TWITCHELLPP01	7/10/96	NA	NA	NA	NA	NA	NA	12.4	0.647
C961575	TWITCHELLPP01	7/13/96	170	<10	1200	24	1394	134.4	11.0	0.554
C961583	TWITCHELLPP01	7/15/96	NA	NA	NA	NA	NA	NA	11.2	0.577
C961679	TWITCHELLPP01	7/17/96	150	<10	1500	<10	1650	161.7	12.6	0.730
C961585	TWITCHELLPP01	7/20/96	140	<10	1300	<10	1440	140.9	12.9	0.679
C961593	TWITCHELLPP01	7/22/96	NA	NA	NA	NA	NA	NA	13.1	0.743
C961594	TWITCHELLPP01	7/24/96	NA	NA	NA	NA	NA	NA	14.3	0.751
C961595	TWITCHELLPP01	7/27/96	160	<10	1900	<10	2060	202.7	16.5	0.867
C961684	TWITCHELLPP01	7/29/96	NA	NA	NA	NA	NA	NA	14.0	0.745
C961685	TWITCHELLPP01	7/31/96	NA	NA	NA	NA	NA	NA	15.3	0.844
C961686	TWITCHELLPP01	8/3/96	230	<10	2100	22	2352	229.2	18.7	1.030
C961701	TWITCHELLPP01	8/5/96	NA	NA	NA	NA	NA	NA	14.6	0.822
C961702	TWITCHELLPP01	8/7/96	NA	NA	NA	NA	NA	NA	17.4	0.938
C961703	TWITCHELLPP01	8/10/96	180	<10	1800	<10	1980	194.1	16.3	0.876
C961789	TWITCHELLPP01	8/16/96	170	<10	1700	<10	1870	183.3	15.8	0.797
C961741	TWITCHELLPP01	8/19/96	180	<10	1800	<10	1980	194.1	18.2	0.883
C961812	TWITCHELLPP01	8/20/96	190	<10	1800	<10	1990	194.8	16.5	0.753
C961748	TWITCHELLPP01	8/26/96	170	<10	1400	23	1593	154.5	13.5	0.714
C961945	TWITCHELLPP01	9/4/96	140	11	260	78	489	41.4	3.8	0.506
C961866	TWITCHELLPP01	9/9/96	170	<10	920	30	1120	106.6	9.6	0.532
C961873	TWITCHELLPP01	9/16/96	150	<10	660	32	842	79.2	6.7	0.379
C961880	TWITCHELLPP01	9/23/96	150	<10	680	32	862	81.2	6.7	0.377
C961887	TWITCHELLPP01	9/30/96	140	<10	670	29	839	79.3	7.6	0.389
C962073	TWITCHELLPP01	10/2/96	NA	NA	NA	NA	NA	NA	6.9	0.392
C962074	TWITCHELLPP01	10/5/96	170	<10	530	49	749	68.5	6.2	0.351
C962072	TWITCHELLPP01	10/7/96	NA	NA	NA	NA	NA	NA	6.6	0.372
C962127	TWITCHELLPP01	10/23/96	200	<10	390	83	673	58.6	5.6	0.260
C962215	TWITCHELLPP01	11/7/96	180	<10	470	57	707	63.7	6.6	0.393
C962240	TWITCHELLPP01	11/13/96	190	<10	480	74	744	66.4	6.7	0.374
C962320	TWITCHELLPP01	12/5/96	290	<20	1500	41	1831	174.4	20.6	0.902
C952545	VENICE	10/12/95	160	<10	5700	<10	5860	584.6	53.8	3.130
C952763	VENICE	11/9/95	150	<10	3630	<10	3780	375.8	34.4	1.876
C960137	VENICE	1/11/96	140	<10	3700	<10	3840	382.1	35.9	1.720
C960409	VENICE	3/6/96	290	<10	6200	<10	6490	644.4	60.2	2.990
C960823	VENICE	4/3/96	290	<10	6200	<10	6490	644.4	60.1	2.870
C961041	VENICE	5/1/96	210	<10	3700	<10	3910	387.2	39.9	2.110
C961239	VENICE	6/5/96	230	<10	3800	<10	4030	398.8	34.9	1.810
C961708	VENICE	8/7/96	72	<10	2800	<10	2872	286.7	23.7	1.280
C961837	VENICE	9/4/96	72	<10	1900	<10	1972	196.2	16.9	1.060

NA- Not analyzed.

Table 12-8. THMFP Data (continued)

Sample Number	Station	SampDate	BrCl2CH µg/L	Br3CH µg/L	CHCl3 µg/L	Br2ClCH µg/L	THMFP µg/L	TFPC µg/L	DOC mg/L	UVA abs.
C961981	VENICE	10/2/96	67	<10	980	<10	1047	103.4	11.3	0.599
C962149	VENICE	11/6/96	95	<10	3500	<10	3595	358.7	34.3	1.600
C962310	VENICE	12/4/96	110	<20	2500	<20	2610	259.3	25.8	1.250
C961665	VERNALIS	7/18/96	120	<10	240	62	422	36.5	3.0	0.092
C961725	VERNALIS	8/15/96	100	<10	280	42	422	37.9	4.0	0.096
C961860	VERNALIS	9/12/96	84	<10	230	31	345	31.1	2.9	0.087
C962035	VERNALIS	10/10/96	38	<10	480	<10	518	51.0	3.2	0.080
C962190	VERNALIS	11/14/96	85	<10	190	34	309	27.3	3.2	0.080
C962347	VERNALIS	12/12/96	29	<10	670	<10	699	69.5	8.1	0.292

NA- Not analyzed.

Table 12-9. Mineral Data

Sample Number	Station Name	Date	Alk. mg/L	B mg/L	Br mg/L	Cl mg/L	Hardness mg/L	Mg mg/L	K mg/L	Na mg/L	SO4 mg/L	TDS mg/L
C952548	AMERICAN	10/12/95	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C952766	AMERICAN	11/9/95	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C953070	AMERICAN	12/7/95	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C960140	AMERICAN	1/11/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C960262	AMERICAN	2/7/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C960412	AMERICAN	3/6/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C960826	AMERICAN	4/3/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C961044	AMERICAN	5/1/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C961242	AMERICAN	6/5/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C961634	AMERICAN	7/10/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C961836	AMERICAN	9/4/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C961840	AMERICAN	9/4/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C961984	AMERICAN	10/2/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C962152	AMERICAN	11/6/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C962313	AMERICAN	12/4/96	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
C952591	BACON01	10/18/95	NA	NA	0.38	NA	NA	NA	NA	NA	NA	NA
C952809	BACON01	11/15/95	NA	NA	0.33	NA	NA	NA	NA	NA	NA	NA
C953053	BACON01	12/6/95	NA	NA	0.32	NA	NA	NA	NA	NA	NA	NA
C960147	BACON01	1/17/96	NA	NA	0.16	NA	NA	NA	NA	NA	NA	NA
C960276	BACON01	2/14/96	NA	NA	0.22	NA	NA	NA	NA	NA	NA	NA
C960419	BACON01	3/13/96	NA	NA	0.16	NA	NA	NA	NA	NA	NA	NA
C960840	BACON01	4/10/96	NA	NA	0.22	NA	NA	NA	NA	NA	NA	NA
C961075	BACON01	5/8/96	NA	NA	0.24	NA	NA	NA	NA	NA	NA	NA
C961276	BACON01	6/12/96	NA	NA	0.07	NA	NA	NA	NA	NA	NA	NA
C961648	BACON01	7/17/96	NA	NA	0.05	NA	NA	NA	NA	NA	NA	NA
C961718	BACON01	8/14/96	NA	NA	0.14	NA	NA	NA	NA	NA	NA	NA
C961850	BACON01	9/11/96	NA	NA	0.18	NA	NA	NA	NA	NA	NA	NA
C962023	BACON01	10/9/96	NA	NA	0.25	NA	NA	NA	NA	NA	NA	NA
C962198	BACON01	11/13/96	NA	NA	0.16	NA	NA	NA	NA	NA	NA	NA
C962338	BACON01	12/11/96	NA	NA	0.26	NA	NA	NA	NA	NA	NA	NA
C952597	BANKS	10/19/95	44	0.1	0.06	19	52	6	1.6	19	18	124
C952815	BANKS	11/16/95	52	<0.1	0.06	20	59	7	1.5	19	18	132
C953062	BANKS	12/7/95	61	0.3	0.10	39	80	9	1.6	32	28	177
C960153	BANKS	1/18/96	89	0.3	0.23	72	137	15	2.9	62	74	329
C960282	BANKS	2/15/96	57	0.3	0.11	43	95	11	2.5	38	50	225
C960428	BANKS	3/14/96	50	0.2	0.07	30	70	8	2	28	37	161
C960846	BANKS	4/11/96	63	0.2	0.13	49	92	11	1.7	42	56	235
C961081	BANKS	5/9/96	51	0.2	0.13	47	84	10	1.7	38	51	208
C961282	BANKS	6/13/96	8.2	0.2	0.06	21	54	6	1.6	20	21	125
C961664	BANKS	7/18/96	50	<0.1	0.05	15	56	7	1.3	14	12	116
C961724	BANKS	8/15/96	52	<0.1	0.10	27	52	6	1.6	19	14	135
C961859	BANKS	9/12/96	61	<0.1	0.09	26	63	8	1.8	22	15	143
C962030	BANKS	10/10/96	72	<0.1	0.11	36	72	9	2	29	21	171
C962189	BANKS	11/14/96	68	0.1	0.18	54	78	10	2.3	39	24	199
C962346	BANKS	12/12/96	62	0.1	0.21	68	78	10	3	47	28	222
BL5503	BARKERNOBAY	7/1/96	99	NA	0.05	NA	NA	NA	NA	NA	NA	NA
BL5510	BARKERNOBAY	7/15/96	91	NA	0.04	NA	NA	NA	NA	NA	NA	NA
BL5517	BARKERNOBAY	7/22/96	88	NA	0.04	NA	NA	NA	NA	NA	NA	NA
BL5532	BARKERNOBAY	7/29/96	86	NA	0.04	NA	NA	NA	NA	NA	NA	NA
BL5539	BARKERNOBAY	8/12/96	79	NA	0.06	NA	NA	NA	NA	NA	NA	NA
BL5546	BARKERNOBAY	8/19/96	80	NA	0.04	NA	NA	NA	NA	NA	NA	NA
BL5553	BARKERNOBAY	8/26/96	88	NA	0.06	NA	NA	NA	NA	NA	NA	NA
C952538	BARKERNOBAY	10/11/95	88	0.2	0.03	14	88	13	1.5	19	17	156
C952756	BARKERNOBAY	11/8/95	80	0.1	0.04	19	80	12	1.6	22	18	154
C953043	BARKERNOBAY	12/6/95	82	0.1	0.04	19	87	12	1.3	21	22	162
C960130	BARKERNOBAY	1/10/96	99	0.2	0.06	51	121	19	2.3	46	51	284
C960267	BARKERNOBAY	2/8/96	53	0.2	0.01	6	44	6	2.1	12	5	105
C960401	BARKERNOBAY	3/7/96	91	0.2	0.04	19	91	13	2	27	21	194
C960831	BARKERNOBAY	4/4/96	83	0.2	0.05	24	80	12	2	30	24	194
C961049	BARKERNOBAY	5/2/96	147	0.4	0.10	30	66	25	2.2	41	51	262
C961247	BARKERNOBAY	6/6/96	112	0.3	0.06	21	115	17	2.1	28	30	191
C961639	BARKERNOBAY	7/11/96	91	0.2	0.04	16	95	14	2	22	22	151
C961773	BARKERNOBAY	8/7/96	81	0.1	0.03	13	78	11	1	16	16	143
C961795	BARKERNOBAY	8/5/96	82	NA	0.03	NA	NA	NA	NA	NA	NA	NA

NA- Not analyzed.

Table 12-9. Mineral Data (continued)

Sample Number	Station Name	Date	Alk. mg/L	B mg/L	Br mg/L	Cl mg/L	Hardness mg/L	Mg mg/L	K mg/L	Na mg/L	SO4 mg/L	TDS mg/L
C961829	BARKERNOBAY	9/5/96	85	0.2	0.03	15	84	12	2.1	19	17	144
C961953	BARKERNOBAY	9/9/96	81	NA	0.03	NA	NA	NA	NA	NA	NA	NA
C961960	BARKERNOBAY	9/16/96	90	NA	0.04	NA	NA	NA	NA	NA	NA	NA
C961967	BARKERNOBAY	9/23/96	94	NA	0.03	NA	NA	NA	NA	NA	NA	NA
C961974	BARKERNOBAY	9/30/96	100	NA	0.04	NA	NA	NA	NA	NA	NA	NA
C961991	BARKERNOBAY	10/3/96	102	0.2	0.04	17	91	13	2.3	21	20	188
C962041	BARKERNOBAY	10/7/96	104	NA	0.04	NA	NA	NA	NA	NA	NA	NA
C962216	BARKERNOBAY	11/7/96	111	0.2	0.05	26	107	15	2.4	27	24	208
C962321	BARKERNOBAY	12/5/96	115	0.2	0.05	35	111	16	2.5	35	31	227
C952540	CONCOSPP1	10/11/95	51	0.1	0.04	14	56	7	2.3	15	14	116
C952758	CONCOSPP1	11/8/95	50	<0.1	0.04	18	49	7	1.2	18	17	120
C953045	CONCOSPP1	12/6/95	55	<0.1	0.05	18	63	8	1.4	18	16	124
C960132	CONCOSPP1	1/10/96	65	0.1	0.08	28	81	10	1.9	26	30	185
C960269	CONCOSPP1	2/8/96	75	0.2	0.12	44	108	14	2.3	37	44	235
C960403	CONCOSPP1	3/7/96	119	0.9	0.34	113	217	29	3	104	125	524
C960833	CONCOSPP1	4/4/96	79	0.4	0.18	69	124	16	1.7	61	76	310
C961051	CONCOSPP1	5/2/96	76	0.4	0.18	65	119	15	1.9	60	68	292
C961249	CONCOSPP1	6/6/96	54	0.1	0.08	30	72	9	1.8	27	31	156
C961641	CONCOSPP1	7/11/96	51	<0.1	0.03	13	55	7	1.3	13	13	98
C961772	CONCOSPP1	8/7/96	51	<0.1	0.09	30	56	7	1.3	22	14	137
C961832	CONCOSPP1	9/5/96	62	<0.1	0.11	37	63	8	1.8	29	17	155
C961993	CONCOSPP1	10/3/96	72	<0.1	0.12	36	58	8	2.5	28	16	169
C962218	CONCOSPP1	11/7/96	68	0.1	0.30	86	91	13	2.5	57	31	267
C962323	CONCOSPP1	12/5/96	71	0.1	0.41	136	106	16	3.8	87	38	359
C952596	DMC	10/19/95	34	<0.1	0.05	17	39	4	1.2	14	14	101
C952814	DMC	11/16/95	76	0.2	0.18	58	105	12	2	47	48	264
C953061	DMC	12/7/95	65	0.2	0.10	35	86	10	1.4	30	33	191
C960152	DMC	1/18/96	69	0.1	0.08	31	88	10	2	26	31	181
C960281	DMC	2/15/96	47	0.2	0.09	35	77	9	1.8	36	50	194
C960427	DMC	3/14/96	53	0.2	0.08	32	73	8	1.9	30	39	174
C960845	DMC	4/11/96	61	0.3	0.12	47	86	10	1.7	40	52	226
C961080	DMC	5/9/96	46	0.2	0.11	41	77	9	1.5	35	47	194
C961281	DMC	6/13/96	69	0.3	0.20	67	123	14	2.2	57	67	295
C961663	DMC	7/18/96	74	0.2	0.18	53	123	14	2.2	48	55	267
C961723	DMC	8/15/96	86	0.4	0.24	69	124	13	2.6	55	71	340
C961855	DMC	9/12/96	92	0.3	0.23	67	130	14	2.7	61	73	340
C962033	DMC	10/10/96	76	0.1	0.13	40	86	10	2.5	33	33	201
C962188	DMC	11/14/96	66	0.1	0.14	46	77	9	2.1	35	24	178
C962345	DMC	12/12/96	46	0.1	0.06	22	48	5	2.3	22	23	128
C952547	GREENES	10/12/95	58	<0.1	0.01	6	54	6	1.1	10	9	97
C952765	GREENES	11/9/95	49	<0.1	<0.01	5	50	6	1.2	8	5	92
C953069	GREENES	12/7/95	51	<0.1	0.01	5	46	5	0.8	7	4	80
C960139	GREENES	1/11/96	68	<0.1	0.02	8	66	8	1.3	12	12	122
C960261	GREENES	2/7/96	36	<0.1	<0.01	4	43	5	1.1	6	5	75
C960411	GREENES	3/6/96	50	<0.1	<0.01	4	46	5	1	6	5	86
C960825	GREENES	4/3/96	4.4	<0.1	<0.01	4	43	5	0.9	5	7	82
C961043	GREENES	5/1/96	55	<0.1	0.01	4	46	5	0.9	6	7	70
C961241	GREENES	6/5/96	45	<0.1	<0.01	4	43	5	0.9	6	5	70
C961633	GREENES	7/10/96	46	<0.1	<0.01	4	43	5	1	6	4	71
C961710	GREENES	8/7/96	48	<0.1	0.01	4	43	5	0.9	6	4	82
C961839	GREENES	9/4/96	68	<0.1	0.03	5	56	7	1.4	10	7	104
C961983	GREENES	10/2/96	55	<0.1	0.01	5	50	6	1.4	7	6	99
C962151	GREENES	11/6/96	56	<0.1	0.01	8	48	5	1.5	8	7	94
C962312	GREENES	12/4/96	68	<0.1	0.01	4	62	7	1.5	10	5	91
C952541	JERSEYPP01	10/11/95	76	0.2	0.22	80	138	17	1.7	51	47	304
C952759	JERSEYPP01	11/8/95	80	0.2	0.51	157	175	23	2.9	89	57	450
C953046	JERSEYPP01	12/6/95	101	0.2	0.54	168	201	25	1.5	106	64	498
C960133	JERSEYPP01	1/10/96	142	0.7	1.35	580	604	75	6.9	295	279	1630
C960270	JERSEYPP01	2/8/96	150	1	1.38	687	767	97	8.5	370	378	2040
C960404	JERSEYPP01	3/7/96	179	1	1.52	614	692	86	10	344	322	1770
C960834	JERSEYPP01	4/4/96	158	0.8	1.12	466	545	68	7.2	255	284	1540
C961052	JERSEYPP01	5/2/96	123	0.4	0.52	194	242	32	1.6	134	100	647
C961250	JERSEYPP01	6/6/96	110	0.4	0.40	111	164	21	2.7	83	64	443
C961642	JERSEYPP01	7/11/96	75	0.3	NA	75	131	16	2.4	53	44	302

NA- Not analyzed.

Table 12-9. Mineral Data (continued)

Sample Number	Station Name	Date	Alk. mg/L	B mg/L	Br mg/L	Cl mg/L	Hardness mg/L	Mg mg/L	K mg/L	Na mg/L	SO4 mg/L	TDS mg/L
C961776	JERSEYPP01	8/7/96	62	0.4	0.40	188	293	33	3.4	107	196	732
C961994	JERSEYPP01	10/3/96	85	0.2	0.62	170	152	21	4.3	105	53	485
C962214	JERSEYPP01	11/7/96	119	0.4	1.35	412	353	47	8.5	220	128	1010
C962324	JERSEYPP01	12/5/96	112	0.3	1.00	362	316	41	5.6	192	140	930
C952539	MALLARDIS	10/11/95	54	0.1	0.73	212	122	21	5.2	123	36	464
C952757	MALLARDIS	11/8/95	55	0.4	4.36	1210	502	99	15	672	171	2330
C953044	MALLARDIS	12/6/95	61	0.5	6.16	1610	617	122	37	973	230	3090
C960131	MALLARDIS	1/10/96	64	0.1	0.80	227	116	19	5.1	137	43	527
C960268	MALLARDIS	2/8/96	58	0.1	0.03	14	68	8	1.9	16	14	132
C960832	MALLARDIS	4/4/96	59	0.1	0.05	20	68	8	1.3	18	22	141
C961050	MALLARDIS	5/2/96	59	0.1	0.06	20	63	8	1.3	18	18	128
C961248	MALLARDIS	6/6/96	43	<0.1	0.04	13	50	6	1.4	13	9	90
C961638	MALLARDIS	7/11/96	52	0.1	0.96	340	169	30	8.2	188	54	681
C961774	MALLARDIS	8/7/96	54	0.3	3.80	1040	370	71	22	572	146	2020
C961831	MALLARDIS	9/5/96	59	0.2	2.48	645	254	47	14	384	94	1310
C961990	MALLARDIS	10/3/96	76	0.6	9.78	2440	746	146	46	1310	336	4680
C962217	MALLARDIS	11/7/96	75	0.9	12.1	3370	1020	201	63	1920	432	6120
C962322	MALLARDIS	12/5/96	78	0.9	9.94	3220	970	192	NA	1820	447	6060
C952590	MIDDLER	10/18/95	39	<0.1	0.08	26	52	6	1.1	20	20	122
C952808	MIDDLER	11/15/95	49	<0.1	0.05	19	59	7	1.6	18	17	124
C953052	MIDDLER	12/6/95	56	0.1	0.08	28	69	7	1.2	25	24	155
C960146	MIDDLER	1/17/96	64	0.1	0.09	30	82	9	2	24	29	178
C960275	MIDDLER	2/14/96	60	0.2	0.16	60	123	14	3.1	42	57	273
C960418	MIDDLER	3/13/96	50	0.2	0.09	39	82	9	1.9	30	40	177
C960839	MIDDLER	4/10/96	52	0.2	0.10	41	80	9	1.7	34	43	187
C961074	MIDDLER	5/8/96	56	0.2	0.15	54	95	11	1.8	44	57	239
C961275	MIDDLER	6/12/96	41	0.1	0.06	21	57	6	1.6	20	21	121
C961647	MIDDLER	7/17/96	50	<0.1	0.05	16	59	7	1.3	15	15	112
C961717	MIDDLER	8/14/96	52	<0.1	0.09	22	54	6	1.5	18	17	137
C961849	MIDDLER	9/11/96	63	0.1	0.08	23	68	8	1.9	21	20	141
C962025	MIDDLER	10/9/96	72	<0.1	0.11	35	80	9	2.3	31	30	194
C962197	MIDDLER	11/13/96	67	0.1	0.11	35	73	8	2.2	30	26	172
C962337	MIDDLER	12/11/96	62	0.1	0.16	57	86	10	2.8	42	36	227
C952592	OLDRIVBACISL	10/18/95	46	<0.1	0.04	14	50	6	1	15	15	106
C952810	OLDRIVBACISL	11/15/95	51	<0.1	0.05	18	56	7	1.4	16	11	114
C953054	OLDRIVBACISL	12/6/95	52	<0.1	0.04	15	52	6	0.8	15	12	109
C960148	OLDRIVBACISL	1/17/96	60	<0.1	0.04	18	74	9	1.7	15	19	143
C960277	OLDRIVBACISL	2/14/96	61	0.2	0.10	33	98	11	3.1	28	40	207
C960420	OLDRIVBACISL	3/13/96	53	0.2	0.08	34	80	9	1.8	30	44	180
C960841	OLDRIVBACISL	4/10/96	52	0.2	0.07	30	68	8	1.5	26	34	156
C961076	OLDRIVBACISL	5/8/96	59	0.2	0.10	46	86	10	1.8	38	48	216
C961277	OLDRIVBACISL	6/12/96	42	<0.1	0.03	10	46	5	1.2	11	10	86
C961649	OLDRIVBACISL	7/17/96	49	<0.1	0.04	14	50	6	1.2	13	9	92
C961715	OLDRIVBACISL	8/14/96	50	<0.1	0.12	29	54	7	1.5	21	9	124
C961851	OLDRIVBACISL	9/11/96	59	<0.1	0.08	23	56	7	1.6	19	10	114
C962027	OLDRIVBACISL	10/9/96	67	<0.1	0.12	37	70	9	1.9	27	14	151
C962199	OLDRIVBACISL	11/13/96	60	<0.1	0.23	69	74	10	2.6	47	19	206
C962339	OLDRIVBACISL	12/11/96	60	<0.1	0.31	89	84	12	3.9	62	24	251
C952595	PESCADERO01	10/19/95	NA	NA	0.98	NA	NA	NA	NA	NA	NA	NA
C952813	PESCADERO01	11/16/95	NA	NA	0.66	NA	NA	NA	NA	NA	NA	NA
C953060	PESCADERO01	12/7/95	NA	NA	0.56	NA	NA	NA	NA	NA	NA	NA
C960151	PESCADERO01	1/18/96	NA	NA	1.10	NA	NA	NA	NA	NA	NA	NA
C960280	PESCADERO01	2/15/96	NA	NA	0.76	NA	NA	NA	NA	NA	NA	NA
C960426	PESCADERO01	3/14/96	NA	NA	1.12	NA	NA	NA	NA	NA	NA	NA
C960844	PESCADERO01	4/11/96	NA	NA	0.72	NA	NA	NA	NA	NA	NA	NA
C961079	PESCADERO01	5/9/96	NA	NA	0.59	NA	NA	NA	NA	NA	NA	NA
C961280	PESCADERO01	6/13/96	NA	NA	0.83	NA	NA	NA	NA	NA	NA	NA
C961662	PESCADERO01	7/18/96	NA	NA	0.47	NA	NA	NA	NA	NA	NA	NA
C961722	PESCADERO01	8/15/96	NA	NA	0.70	NA	NA	NA	NA	NA	NA	NA
C961857	PESCADERO01	9/12/96	NA	NA	0.80	NA	NA	NA	NA	NA	NA	NA
C962032	PESCADERO01	10/10/96	NA	NA	0.77	NA	NA	NA	NA	NA	NA	NA
C962187	PESCADERO01	11/14/96	NA	NA	1.02	NA	NA	NA	NA	NA	NA	NA
C952549	SACWSACINT	10/12/95	55	<0.1	<0.01	4	52	6	1	6	6	86
C952767	SACWSACINT	11/9/95	67	<0.1	0.01	8	60	8	1.5	11	10	128

NA- Not analyzed.

Table 12-9. Mineral Data (continued)

Sample Number	Station Name	Date	Alk. mg/L	B mg/L	Br mg/L	Cl mg/L	Hardness mg/L	Mg mg/L	K mg/L	Na mg/L	SO4 mg/L	TDS mg/L
C953071	SACWSACINT	12/7/95	70	<0.1	0.01	5	62	7	0.9	9	7	106
C960141	SACWSACINT	1/11/96	72	<0.1	0.02	7	68	8	1.2	11	10	117
C960263	SACWSACINT	2/7/96	34	<0.1	<0.01	2	36	4	1.2	4	1	65
C960413	SACWSACINT	3/6/96	51	<0.1	<0.01	3	50	6	1	6	5	73
C960827	SACWSACINT	4/3/96	47	<0.1	<0.01	3	46	5	0.8	6	7	93
C961045	SACWSACINT	5/1/96	60	0.1	<0.01	4	52	6	0.9	7	7	74
C961243	SACWSACINT	6/5/96	54	<0.1	0.01	4	52	6	0.9	6	5	81
C961630	SACWSACINT	7/10/96	50	<0.1	<0.01	3	50	6	1	6	4	79
C961707	SACWSACINT	8/7/96	56	<0.1	0.01	4	46	5	0.9	7	5	87
C961841	SACWSACINT	9/4/96	74	<0.1	0.02	6	66	8	1.2	11	7	98
C961985	SACWSACINT	10/2/96	57	<0.1	<0.01	3	50	6	1.2	6	5	97
C962153	SACWSACINT	11/6/96	67	<0.1	0.02	5	62	7	1.5	9	7	103
C962314	SACWSACINT	12/4/96	NA	NA	0.01	NA	NA	NA	NA	NA	NA	NA
C952594	SJRMOSSDALE	10/19/95	39	<0.1	0.06	22	48	5	1.4	20	17	119
C952812	SJRMOSSDALE	11/16/95	111	0.3	0.31	91	163	19	3	81	77	439
C953059	SJRMOSSDALE	12/7/95	104	0.4	0.32	94	153	17	2.5	88	90	427
C960150	SJRMOSSDALE	1/18/96	116	0.6	0.37	130	199	21	3.1	111	138	560
C960279	SJRMOSSDALE	2/15/96	42	0.2	0.08	29	64	7	1.6	32	44	170
C960425	SJRMOSSDALE	3/14/96	52	0.1	0.06	23	64	7	1.8	23	31	145
C960843	SJRMOSSDALE	4/11/96	62	0.2	0.13	49	88	10	1.8	44	60	242
C961078	SJRMOSSDALE	5/9/96	47	0.2	0.11	39	76	8	1.6	34	47	192
C961279	SJRMOSSDALE	6/13/96	76	0.4	0.24	78	141	16	2.2	65	82	341
C961660	SJRMOSSDALE	7/18/96	100	0.5	0.31	91	182	20	2.8	84	103	460
C961661	SJRMOSSDALE	7/18/96	101	0.5	0.31	100	182	20	2.7	84	112	459
C961721	SJRMOSSDALE	8/15/96	102	0.5	0.31	89	156	16	2.9	70	97	429
C961856	SJRMOSSDALE	9/12/96	108	0.4	0.27	79	151	16	3	73	84	390
C962031	SJRMOSSDALE	10/10/96	101	0.2	0.26	77	130	14	2.6	64	67	347
C962186	SJRMOSSDALE	11/14/96	113	0.3	0.27	81	149	16	2.5	74	78	392
C962343	SJRMOSSDALE	12/12/96	50	0.1	0.04	18	50	5	4.3	19	21	134
C952764	STATENPP02	11/9/95	NA	NA	0.56	NA	NA	NA	NA	NA	NA	NA
C953068	STATENPP02	12/7/95	NA	NA	1.04	NA	NA	NA	NA	NA	NA	NA
C960138	STATENPP02	1/11/96	NA	NA	0.41	NA	NA	NA	NA	NA	NA	NA
C960260	STATENPP02	2/7/96	NA	NA	0.37	NA	NA	NA	NA	NA	NA	NA
C960410	STATENPP02	3/6/96	NA	NA	0.74	NA	NA	NA	NA	NA	NA	NA
C960824	STATENPP02	4/3/96	NA	NA	1.00	NA	NA	NA	NA	NA	NA	NA
C961042	STATENPP02	5/1/96	NA	NA	0.17	NA	NA	NA	NA	NA	NA	NA
C961240	STATENPP02	6/5/96	NA	NA	0.20	NA	NA	NA	NA	NA	NA	NA
C961632	STATENPP02	7/10/96	NA	NA	0.04	NA	NA	NA	NA	NA	NA	NA
C961709	STATENPP02	8/7/96	NA	NA	0.04	NA	NA	NA	NA	NA	NA	NA
C961838	STATENPP02	9/4/96	NA	NA	0.53	NA	NA	NA	NA	NA	NA	NA
C961982	STATENPP02	10/2/96	NA	NA	0.25	NA	NA	NA	NA	NA	NA	NA
C962150	STATENPP02	11/6/96	NA	NA	0.65	NA	NA	NA	NA	NA	NA	NA
C962311	STATENPP02	12/4/96	NA	NA	0.69	NA	NA	NA	NA	NA	NA	NA
C952589	STATION09	10/18/95	47	0.1	0.06	19	56	7	1.1	19	20	120
C952807	STATION09	11/15/95	49	<0.1	0.05	19	59	7	1.5	17	16	127
C953051	STATION09	12/6/95	53	<0.1	0.06	19	63	8	1.1	16	17	128
C960145	STATION09	1/17/96	58	0.1	0.05	22	70	8	1.8	19	22	154
C960274	STATION09	2/14/96	70	0.4	0.16	58	136	16	3.2	47	68	299
C960417	STATION09	3/13/96	53	0.3	0.09	37	80	9	1.9	34	42	184
C960838	STATION09	4/10/96	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA
C961073	STATION09	5/8/96	59	0.3	0.15	53	92	11	1.8	45	57	237
C961274	STATION09	6/12/96	43	0.1	NA	16	52	6	1.4	16	17	107
C961646	STATION09	7/17/96	48	<0.1	0.04	13	50	6	1.3	14	10	108
C961716	STATION09	8/14/96	49	<0.1	0.11	28	57	7	1.4	21	11	133
C961847	STATION09	9/11/96	62	0.1	0.08	24	68	8	1.7	21	20	148
C962024	STATION09	10/9/96	67	<0.1	0.12	34	70	9	1.7	26	16	150
C962196	STATION09	11/13/96	65	<0.1	0.19	59	76	10	2.6	40	20	194
C962336	STATION09	12/11/96	63	0.1	0.30	91	87	12	4	61	28	344
C952457	TWITCHELLPP01	10/2/95	77	0.2	0.49	129	108	14	2.2	81	14	372
C952505	TWITCHELLPP01	10/10/95	76	0.2	0.54	136	106	13	2.3	88	15	395
C952556	TWITCHELLPP01	10/16/95	78	0.2	0.55	148	104	13	1.8	91	15	387
C952604	TWITCHELLPP01	10/23/95	76	0.2	0.53	151	110	14	2.5	91	15	415
C952652	TWITCHELLPP01	10/30/95	78	0.2	0.52	149	108	14	2.6	93	17	408
C952723	TWITCHELLPP01	11/6/95	75	0.2	0.55	152	113	14	2.6	96	20	420

NA- Not analyzed.

Table 12-9. Mineral Data (continued)

Sample Number	Station Name	Date	Alk. mg/L	B mg/L	Br mg/L	Cl mg/L	Hardness mg/L	Mg mg/L	K mg/L	Na mg/L	SO4 mg/L	TDS mg/L
C952774	TWITCHELLPP01	11/13/95	74	0.2	0.56	157	103	14	2.4	95	18	414
C952822	TWITCHELLPP01	11/20/95	73	0.2	0.55	157	110	14	2.7	96	20	414
C952858	TWITCHELLPP01	11/27/95	74	0.2	0.50	146	110	14	2.4	87	17	404
C952938	TWITCHELLPP01	12/4/95	74	0.2	0.50	140	115	14	2.4	86	16	395
C953157	TWITCHELLPP01	12/11/95	66	0.2	0.53	155	109	13	4.2	83	27	443
C953221	TWITCHELLPP01	12/18/95	54	0.2	0.57	228	232	29	3.5	126	102	661
C960005	TWITCHELLPP01	1/8/96	82	0.3	0.31	153	201	25	6.4	97	89	575
C960031	TWITCHELLPP01	1/22/96	74	0.3	0.36	151	240	28	5.9	100	118	607
C960057	TWITCHELLPP01	1/29/96	74	0.3	0.48	211	329	40	5	123	181	834
C960170	TWITCHELLPP01	2/5/96	74	1.00	0.41	211	359	43	6.2	137	204	881
C960196	TWITCHELLPP01	2/26/96	75	0.3	0.46	200	379	46	5.1	132	226	888
C960465	TWITCHELLPP01	3/11/96	91	0.4	0.56	233	400	48	4.1	145	237	928
C960633	TWITCHELLPP01	3/18/96	87	0.4	0.55	243	417	51	3.9	150	252	981
C960659	TWITCHELLPP01	3/25/96	87	0.3	0.58	206	284	35	3.1	129	177	746
C960774	TWITCHELLPP01	4/1/96	84	0.3	0.55	185	232	29	2.8	115	110	684
C960800	TWITCHELLPP01	4/8/96	84	0.3	0.56	176	221	27	2.7	107	110	600
C960853	TWITCHELLPP01	4/15/96	80	0.2	0.54	168	198	25	2.4	97	81	545
C960879	TWITCHELLPP01	3/22/96	88	0.3	0.53	180	203	25	2.5	107	93	613
C961533	TWITCHELLPP01	6/19/96	70	0.2	0.21	67	100	12	1.7	50	33	319
C961677	TWITCHELLPP01	7/17/96	71	0.2	0.20	69	104	13	1.8	50	38	378
C961789	TWITCHELLPP01	8/16/96	69	0.2	0.23	80	129	16	2	66	64	374
C961812	TWITCHELLPP01	8/20/96	65	0.2	0.24	73	104	13	1.8	55	46	311
C961943	TWITCHELLPP01	9/4/96	80	0.2	0.45	127	124	15	2.2	72	11	399
C962127	TWITCHELLPP01	10/23/96	79	0.2	0.37	104	90	11	2.5	70	20	320
C962238	TWITCHELLPP01	11/13/96	75	0.2	0.43	115	92	11	2.6	75	19	340
C952545	VENICE	10/12/95	NA	NA	0.14	NA	NA	NA	NA	NA	NA	NA
C952763	VENICE	11/9/95	NA	NA	0.09	NA	NA	NA	NA	NA	NA	NA
C960137	VENICE	1/11/96	NA	NA	0.13	NA	NA	NA	NA	NA	NA	NA
C960409	VENICE	3/6/96	NA	NA	0.34	NA	NA	NA	NA	NA	NA	NA
C960823	VENICE	4/3/96	NA	NA	0.33	NA	NA	NA	NA	NA	NA	NA
C961041	VENICE	5/1/96	NA	NA	0.30	NA	NA	NA	NA	NA	NA	NA
C961239	VENICE	6/5/96	NA	NA	0.29	NA	NA	NA	NA	NA	NA	NA
C961708	VENICE	8/7/96	NA	NA	0.06	NA	NA	NA	NA	NA	NA	NA
C961837	VENICE	9/4/96	NA	NA	0.09	NA	NA	NA	NA	NA	NA	NA
C961980	VENICE	10/2/96	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA
C962148	VENICE	11/6/96	NA	NA	0.10	NA	NA	NA	NA	NA	NA	NA
C962310	VENICE	12/4/96	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA
C961665	VERNALIS	7/18/96	96	0.5	0.29	92	180	20	2.8	82	111	449
C961720	VERNALIS	8/15/96	92	0.4	0.25	73	135	14	2.8	59	80	369
C961860	VERNALIS	9/12/96	86	0.3	0.20	61	124	13	2.6	58	72	319
C962035	VERNALIS	10/10/96	94	0.2	0.24	71	128	14	2.8	60	67	321
C962190	VERNALIS	11/14/96	99	0.3	0.25	67	130	14	2.6	66	72	341
C962347	VERNALIS	12/12/96	48	0.1	0.04	17	48	5	4.7	17	21	128

NA- Not analyzed.

Table 12-10. Minor Element Data

Sample Number	Station Name	Sample Date	As mg/L	Cu mg/L	Se mg/L
C952597	BANKS	10/19/95	0.002	<0.005	<0.001
C952815	BANKS	11/16/95	0.002	<0.005	<0.001
C953062	BANKS	12/7/95	0.002	0.008	<0.001
C960153	BANKS	1/18/96	0.002	<0.005	<0.001
C960282	BANKS	2/15/96	0.001	<0.005	<0.001
C960428	BANKS	3/14/96	0.001	<0.005	<0.001
C960846	BANKS	4/11/96	0.001	<0.005	<0.001
C961081	BANKS	5/9/96	0.001	<0.005	0.001
C961282	BANKS	6/13/96	0.002	0.013	<0.001
C961664	BANKS	7/18/96	0.002	<0.005	<0.001
C961724	BANKS	8/15/96	0.002	<0.005	<0.001
C962034	BANKS	10/10/96	0.002	<0.005	<0.001
C962189	BANKS	11/14/96	0.002	<0.005	<0.001
C962353	BANKS	12/12/96	0.001	<0.005	<0.001
C952538	BARKERNOBAY	10/11/95	0.002	<0.005	<0.001
C952756	BARKERNOBAY	11/8/95	0.002	<0.005	<0.001
C953043	BARKERNOBAY	12/6/95	0.002	<0.005	<0.001
C960130	BARKERNOBAY	1/10/96	0.002	<0.005	<0.001
C960267	BARKERNOBAY	2/8/96	0.002	0.005	<0.001
C960401	BARKERNOBAY	3/7/96	0.002	<0.005	<0.001
C960831	BARKERNOBAY	4/4/96	0.002	<0.005	<0.001
C961049	BARKERNOBAY	5/2/96	0.002	<0.005	<0.001
C961247	BARKERNOBAY	6/6/96	0.003	<0.005	<0.001
C961639	BARKERNOBAY	7/11/96	0.003	<0.005	<0.001
C961773	BARKERNOBAY	8/7/96	0.003	<0.005	<0.001
C961830	BARKERNOBAY	9/5/96	0.003	<0.005	<0.001
C961991	BARKERNOBAY	10/3/96	0.003	<0.005	<0.001
C962216	BARKERNOBAY	11/7/96	0.002	<0.005	<0.001
C962321	BARKERNOBAY	12/5/96	0.002	<0.005	<0.001
C952540	CONCOSPP1	10/11/95	0.002	<0.005	<0.001
C952758	CONCOSPP1	11/8/95	0.002	<0.005	<0.001
C953045	CONCOSPP1	12/6/95	0.002	<0.005	<0.001
C960132	CONCOSPP1	1/10/96	0.002	<0.005	<0.001
C960269	CONCOSPP1	2/8/96	0.002	<0.005	<0.001
C960403	CONCOSPP1	3/7/96	0.002	<0.005	<0.001
C960833	CONCOSPP1	4/4/96	0.002	<0.005	<0.001
C961051	CONCOSPP1	5/2/96	0.002	<0.005	<0.001
C961249	CONCOSPP1	6/6/96	0.003	0.007	<0.001
C961641	CONCOSPP1	7/11/96	0.002	<0.005	<0.001
C961772	CONCOSPP1	8/7/96	0.002	<0.005	<0.001
C961832	CONCOSPP1	9/5/96	0.002	<0.005	<0.001
C961993	CONCOSPP1	10/3/96	0.002	<0.005	<0.001
C962218	CONCOSPP1	11/7/96	0.002	<0.005	<0.001
C962323	CONCOSPP1	12/5/96	0.002	<0.005	<0.001
C952596	DMC	10/19/95	<0.001	<0.005	<0.001
C952814	DMC	11/16/95	0.002	<0.005	<0.001
C953061	DMC	12/7/95	0.002	<0.005	<0.001
C960152	DMC	1/18/96	0.002	<0.005	<0.001
C960281	DMC	2/15/96	0.001	<0.005	0.001
C960427	DMC	3/14/96	0.001	<0.005	<0.001
C960845	DMC	4/11/96	0.001	<0.005	<0.001
C961080	DMC	5/9/96	<0.001	<0.005	0.001
C961281	DMC	6/13/96	0.001	<0.005	0.001
C961663	DMC	7/18/96	0.002	<0.005	0.001
C961723	DMC	8/15/96	0.002	<0.005	0.002
C961855	DMC	9/12/96	0.002	<0.005	0.002
C962033	DMC	10/10/96	0.002	<0.005	<0.001
C962188	DMC	11/14/96	0.002	<0.005	<0.001
C962352	DMC	12/12/96	0.001	<0.005	<0.001
C952547	GREENES	10/12/95	0.001	<0.005	<0.001
C952765	GREENES	11/9/95	0.002	<0.005	<0.001
C953069	GREENES	12/7/95	0.002	<0.005	<0.001
C960139	GREENES	1/11/96	0.002	<0.005	<0.001
C960261	GREENES	2/7/96	<0.001	<0.005	<0.001

NA- Not analyzed.

Table 12-10. Minor Element Data (continued)

Sample Number	Station Name	Sample Date	As mg/L	Cu mg/L	Se mg/L
C960411	GREENES	3/6/96	0.001	<0.005	<0.001
C960825	GREENES	4/3/96	0.001	<0.005	<0.001
C961043	GREENES	5/1/96	0.001	<0.005	<0.001
C961241	GREENES	6/5/96	0.001	<0.005	<0.001
C961633	GREENES	7/10/96	0.001	<0.005	<0.001
C961710	GREENES	8/7/96	0.001	<0.005	<0.001
C961839	GREENES	9/4/96	0.002	<0.005	<0.001
C961983	GREENES	10/2/96	0.001	<0.005	<0.001
C962151	GREENES	11/6/96	0.001	<0.005	<0.001
C962312	GREENES	12/4/96	0.002	<0.005	<0.001
C952541	JERSEYPP01	10/11/95	0.003	<0.005	<0.001
C952759	JERSEYPP01	11/8/95	0.003	<0.005	<0.001
C953046	JERSEYPP01	12/6/95	0.003	<0.005	<0.001
C960133	JERSEYPP01	1/10/96	0.004	<0.005	<0.001
C960270	JERSEYPP01	2/8/96	0.005	<0.005	<0.001
C960404	JERSEYPP01	3/7/96	0.005	<0.005	<0.001
C960834	JERSEYPP01	4/4/96	0.006	0.008	<0.001
C961052	JERSEYPP01	5/2/96	0.004	<0.005	<0.001
C961250	JERSEYPP01	6/6/96	0.010	<0.005	<0.001
C961642	JERSEYPP01	7/11/96	0.007	<0.005	<0.001
C961776	JERSEYPP01	8/7/96	0.006	<0.005	<0.001
C961994	JERSEYPP01	10/3/96	0.003	<0.005	<0.001
C962214	JERSEYPP01	11/7/96	0.005	<0.005	<0.001
C962324	JERSEYPP01	12/5/96	0.002	<0.005	<0.001
C952549	SACWSACINT	10/12/95	0.001	<0.005	<0.001
C952767	SACWSACINT	11/9/95	0.002	<0.005	<0.001
C953071	SACWSACINT	12/7/95	0.002	<0.005	<0.001
C960141	SACWSACINT	1/11/96	0.002	<0.005	<0.001
C960263	SACWSACINT	2/7/96	<0.001	<0.005	<0.001
C960413	SACWSACINT	3/6/96	0.001	<0.005	<0.001
C960827	SACWSACINT	4/3/96	0.001	<0.005	0.001
C961045	SACWSACINT	5/1/96	0.001	<0.005	<0.001
C961243	SACWSACINT	6/5/96	0.001	<0.005	<0.001
C961630	SACWSACINT	7/10/96	0.001	<0.005	<0.001
C961707	SACWSACINT	8/7/96	0.001	<0.005	<0.001
C961841	SACWSACINT	9/4/96	0.002	<0.005	<0.001
C961985	SACWSACINT	10/2/96	0.001	<0.005	<0.001
C962153	SACWSACINT	11/6/96	0.002	<0.005	<0.001
C962314	SACWSACINT	12/4/96	0.002	<0.005	<0.001
C952594	SJRMOSSDALE	10/19/95	0.001	<0.005	<0.001
C952812	SJRMOSSDALE	11/16/95	0.002	<0.005	<0.001
C953059	SJRMOSSDALE	12/7/95	0.002	<0.005	0.002
C960150	SJRMOSSDALE	1/18/96	0.002	<0.005	0.003
C960279	SJRMOSSDALE	2/15/96	0.001	<0.005	0.001
C960425	SJRMOSSDALE	3/14/96	0.001	<0.005	<0.001
C960843	SJRMOSSDALE	4/11/96	0.001	<0.005	<0.001
C961078	SJRMOSSDALE	5/9/96	<0.001	<0.005	0.001
C961279	SJRMOSSDALE	6/13/96	0.001	<0.005	0.002
C961660	SJRMOSSDALE	7/18/96	0.002	<0.005	0.003
C961721	SJRMOSSDALE	8/15/96	0.002	<0.005	0.002
C961856	SJRMOSSDALE	9/12/96	0.002	<0.005	0.002
C962031	SJRMOSSDALE	10/10/96	0.002	<0.005	<0.001
C962186	SJRMOSSDALE	11/14/96	0.002	<0.005	0.001
C961665	VERNALIS	7/18/96	0.002	<0.005	0.003
C961720	VERNALIS	8/15/96	0.002	<0.005	0.002
C961860	VERNALIS	9/12/96	0.002	<0.005	0.002
C962035	VERNALIS	10/10/96	0.002	<0.005	0.001
C962190	VERNALIS	11/14/96	0.001	<0.005	<0.001

NA- Not analyzed.

Chapter 13. Data Quality Assessment for Municipal Water Quality Investigations Data from October 1, 1995 through December 31, 1996

In assessing MWQI data available from October 1, 1995 through December 31, 1996, QA/QC Unit staff used four sources of data which had been recorded on hard copy or electronically. These sources included Bryte Chemical Laboratory and Contract laboratory analysis sheets, laboratory QC reports, the database developed for the Water Quality Assessment Branch of the DPLA, and QC reports written by QA/QC Unit staff. For the five quality control parameters assessed in this report, from the low percentages of analyses which exceeded QC standards that the MWQI data are high quality.

Holding Times

Holding times for samples are significant for QA/QC purposes. The holding time consists of the time during which a water sample can be stored after collection and preservation without significantly affecting the accuracy of analysis. During this period a total of 19,606 analyses were conducted. Holding times for various analytes exceeded hold time limits in 116 analyses, or approximately 0.6 percent of all analyses. Of the 116 analyses in which hold time limits were exceeded, 80 of them were for samples obtained for the USGS/DWR TOC Study (Soil TOC Study). These analyses make up 4.3 percent of the 1,849 analyses conducted for the Soil TOC Study. Table 13-1 lists the hold time limits exceeded for the MWQI Program, excluding those for the Soil TOC Study. Table 13-2 lists the hold time limits exceeded for the Soil TOC Study.

Matrix Spikes

Matrix spikes provide information on the accuracy of the analytical results for environmental samples. The accuracy of analytical results for environmental samples may be affected by matrix interference. Matrix spikes are prepared by adding a known concentration of method analytes to an environmental sample. Similar to laboratory control samples, one matrix spike is generally prepared for every ten samples.

During this period, 1,817 matrix spikes were performed. Of this total, only 22 matrix spikes (1.2 percent) exceeded control limits. Table 13-3 lists the matrix spikes which exceeded control limits. Table 13-4 lists the total number of matrix spikes performed according to analytes.

Laboratory Control Samples

LCS provide information on the accuracy of the analytical results. Laboratory control samples are prepared by adding a known concentration of method analyte(s) to a clean matrix. Generally, one LCS is prepared for every ten samples. During this

Table 13-1. MWQI Holding Times Exceeded

Analyte	Sample Date	Date Analyzed	Holding Time	Holding Time Limit	Station Name
Alkalinity	26-Feb-96	13-Mar-96	16	14	Ag Drain on Twitchell Isl., P.P. No. 1
Color (True)	09-Nov-95	13-Nov-95	4	2	Sacramento River at Greene's Ldg.
Color (True)	09-Nov-95	13-Nov-95	4	2	Sacramento River at W. Sac Intake
Color (True)	13-Nov-95	16-Nov-95	3	2	Ag Drain on Twitchell Isl., P.P. No. 1
Color (True)	22-Mar-96	23-Apr-96	32	2	Ag Drain on Twitchell Isl., P.P. No. 1
Color (True)	15-Apr-96	18-Apr-96	3	2	Ag Drain on Twitchell Isl., P.P. No. 1
Nitrate (as N)	06-Dec-95	08-Jan-96	33	28	Barker Slough P.P.
Nitrate (as N)	06-Dec-95	08-Jan-96	33	28	Contra Costa PP Number 01
Nitrate (as N)	06-Dec-95	08-Jan-96	33	28	Nutrient Field Blank - Filtered
Nitrate (as N)	06-Dec-95	08-Jan-96	33	28	Twitchell Siphon Number 05
Nitrate (as N)	07-Dec-95	08-Jan-96	32	28	Delta P.P. Headworks
Nitrate (as N)	07-Dec-95	08-Jan-96	32	28	DMC Intake @ Lindemann Rd.
Nitrate (as N)	07-Dec-95	08-Jan-96	32	28	Nutrient Field Blank - Filtered
Nitrate + Nitrite	06-Dec-95	08-Jan-96	33	28	Barker Slough P.P.
Nitrate + Nitrite	06-Dec-95	08-Jan-96	33	28	Contra Costa PP Number 01
Nitrate + Nitrite	06-Dec-95	08-Jan-96	33	28	Nutrient Field Blank - Filtered
Nitrate + Nitrite	06-Dec-95	08-Jan-96	33	28	Twitchell Siphon Number 05
Nitrate + Nitrite	07-Dec-95	08-Jan-96	32	28	Delta P.P. Headworks
Nitrate + Nitrite	07-Dec-95	08-Jan-96	32	28	DMC Intake @ Lindemann Rd.
Nitrate + Nitrite	07-Dec-95	08-Jan-96	32	28	Nutrient Field Blank - Filtered
Nitrite	06-Dec-95	08-Jan-96	33	28	Barker Slough P.P.
Nitrite	06-Dec-95	08-Jan-96	33	28	Contra Costa P.P. Number 01
Nitrite	06-Dec-95	08-Jan-96	33	28	Nutrient Field Blank - Filtered
Nitrite	06-Dec-95	08-Jan-96	33	28	Twitchell Siphon Number 05
Nitrite	07-Dec-95	08-Jan-96	32	28	Delta P.P. Headworks
Nitrite	07-Dec-95	08-Jan-96	32	28	DMC Intake @ Lindemann Rd.
Nitrite	07-Dec-95	08-Jan-96	32	28	Nutrient Field Blank - Filtered
Cyanide	06-Dec-95	26-Dec-95	20	14	Barker Slough P.P.
Cyanide	06-Dec-95	26-Dec-95	20	14	Contra Costa P.P. Number 01
Cyanide	06-Dec-95	26-Dec-95	20	14	Old River at Bacon Island
Cyanide	07-Dec-95	26-Dec-95	19	14	Delta P.P. Headworks
Cyanide	07-Dec-95	26-Dec-95	19	14	DMC Intake @ Lindemann Rd.
Turbidity, Hach.	13-Nov-95	16-Nov-95	3	2	Ag Drain on Twitchell Isl., P.P. No. 1
Endothall	11-Sep-96	20-Sep-96	9	7	Old River @ Bacon Island
Endothall	12-Sep-96	20-Sep-96	8	7	Old River nr. Byron
Endothall	12-Sep-96	20-Sep-96	8	7	Delta P.P. Headworks

Table 13-2. DWR/USGS Soil TOC Holding Times Exceeded

Analyte	Sample Date	Date Analyzed	Holding Time	Holding Time Limit	Station Name
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island Lysimeter No. 2
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island Lysimeter No. 3
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island Piezometer No. 1
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island Piezometer No. 2
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island Piezometer No. 3
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island Piezometer No.4
Boron	28-May-96	03-Jul-96	36	28	Twitchell Island Piezometer No.5
Boron	28-May-96	03-Jul-96	36	28	Twitchell Island Piezometer No.6
Boron	28-May-96	03-Jul-96	36	28	Twitchell Island Piezometer No.7
Bromide	06-Feb-96	11-Jul-96	156	28	Twitchell Island Lysimeter No. 1
Bromide	06-Feb-96	11-Jul-96	156	28	Twitchell Island Lysimeter No. 2
Bromide	07-Feb-96	11-Jul-96	155	28	Twitchell Island Lysimeter No. 3
Bromide	07-Feb-96	11-Jul-96	155	28	Twitchell Island Lysimeter No. 4
Bromide	14-Feb-96	11-Jul-96	148	28	Twitchell Island Lysimeter No. 1
Bromide	14-Feb-96	11-Jul-96	148	28	Twitchell Island Lysimeter No. 4
Bromide	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 1
Bromide	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 2
Bromide	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 3
Bromide	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 4
Bromide	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 1
Bromide	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 2
Bromide	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 3
Bromide	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 4
Bromide	10-Apr-96	11-Jul-96	92	28	Twitchell Island Lysimeter No. 4
Chloride	06-Feb-96	11-Jul-96	156	28	Twitchell Island Lysimeter No. 1
Chloride	06-Feb-96	11-Jul-96	156	28	Twitchell Island Lysimeter No. 2
Chloride	07-Feb-96	11-Jul-96	155	28	Twitchell Island Lysimeter No. 3
Chloride	07-Feb-96	11-Jul-96	155	28	Twitchell Island Lysimeter No. 4
Chloride	14-Feb-96	11-Jul-96	148	28	Twitchell Island Lysimeter No. 1
Chloride	14-Feb-96	11-Jul-96	148	28	Twitchell Island Lysimeter No. 4
Chloride	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 1
Chloride	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 2
Chloride	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 3
Chloride	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 4
Chloride	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 1
Chloride	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 2
Chloride	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 3
Chloride	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 4
Chloride	10-Apr-96	11-Jul-96	92	28	Twitchell Island Lysimeter No. 4

Table 13-2. DWR/USGS Soil TOC Holding Times Exceeded (cont.)

Analyte	Sample Date	Date Analyzed	Holding Time	Holding Time Limit	Station Name
Chloride	10-Apr-96	13-May-96	33	28	Twitchell Island Piezometer No. 1
Chloride	10-Apr-96	13-May-96	33	28	Twitchell Island Piezometer No. 2
Chloride	10-Apr-96	13-May-96	33	28	Twitchell Island Piezometer No. 3
Chloride	10-Apr-96	13-May-96	33	28	Twitchell Island Piezometer No.4
Chloride	22-May-96	24-Jun-96	33	28	Twitchell Island Lysimeter No. 2
Chloride	22-May-96	24-Jun-96	33	28	Twitchell Island Lysimeter No. 3
Chloride	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No. 1
Chloride	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No. 2
Chloride	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No. 3
Chloride	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No.4
Sulfate	06-Feb-96	11-Jul-96	156	28	Twitchell Island Lysimeter No. 1
Sulfate	06-Feb-96	11-Jul-96	156	28	Twitchell Island Lysimeter No. 2
Sulfate	07-Feb-96	11-Jul-96	155	28	Twitchell Island Lysimeter No. 3
Sulfate	07-Feb-96	11-Jul-96	155	28	Twitchell Island Lysimeter No. 4
Sulfate	14-Feb-96	11-Jul-96	148	28	Twitchell Island Lysimeter No. 1
Sulfate	14-Feb-96	11-Jul-96	148	28	Twitchell Island Lysimeter No. 4
Sulfate	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 1
Sulfate	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 2
Sulfate	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 3
Sulfate	22-Feb-96	11-Jul-96	140	28	Twitchell Island Lysimeter No. 4
Sulfate	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 1
Sulfate	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 2
Sulfate	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 3
Sulfate	11-Mar-96	11-Jul-96	122	28	Twitchell Island Lysimeter No. 4
Sulfate	10-Apr-96	11-Jul-96	92	28	Twitchell Island Lysimeter No. 4
Sulfate	10-Apr-96	13-May-96	33	28	Twitchell Island Piezometer No. 1
Sulfate	10-Apr-96	13-May-96	33	28	Twitchell Island Piezometer No. 2
Sulfate	10-Apr-96	13-May-96	33	28	Twitchell Island Piezometer No.4
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island Lysimeter No. 2
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island Lysimeter No. 3
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No. 1
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No. 2
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No. 3
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island Piezometer No.4
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island, Ditch 1
Sulfate	22-May-96	24-Jun-96	33	28	Twitchell Island, Drain No. 6
Chloride	22 May-96	24-June-96	33	28	Twitchell Island, Ditch 1

Table 13-2. DWR/USGS Soil TOC Holding Times Exceeded (cont.)

Analyte	Sample Date	Date Analyzed	Holding Time	Holding Time Limit	Station Name
Chloride	22 May-96	24-June-96	33	28	Twitchell Island, Drain No. 6
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island, Ditch 1
Boron	22-May-96	03-Jul-96	42	28	Twitchell Island, Ditch 1
Diss. Solids	28-May-96	24-June-96	27	14	Twitchell Island Piezometer No. 5

Table 13-3. Matrix Spike Control Limits Exceeded

Sample Number	Analyte	Matrix Spike % Recovery	Control limits	Project
C961252	Barium	79.6	82-118	MWQI
C961285	Dibromoacetonitrile	135	78-118	MWQI
C961286	Dibromoacetonitrile	135	78-118	MWQI
C961403	Diquat	<25	38-108	MWQI
C961404	Dibromoacetonitrile	122	78-118	MWQI
C961405	Dibromoacetonitrile	122	78-118	MWQI
C961406	Trichloroacetonitrile	145	56-138	MWQI
C961407	Trichloroacetonitrile	145	56-138	MWQI
C961408	Trichloroacetonitrile	145	56-138	MWQI
C961641	Alkalinity	112	88-111	MWQI
BL5535	Alkalinity	112.5	88-111	MWQI
C961845	Endothall	156	D-147	MWQI
C960444	Bromide	81	82-118	Soil TOC
C961789	Calcium	54.6	85-115	Soil TOC
C961789	Magnesium	64.4	85-115	Soil TOC
C961789	Sodium	40.8	85-115	Soil TOC
C961790	Calcium	83.6	85-115	Soil TOC
C961790	Magnesium	84.3	85-115	Soil TOC
C961790	Sodium	17.7	85-115	Soil TOC
C961946	Barium	68.7	82-118	Soil TOC
C969146	Nickel	76.2	83-120	Soil TOC
C962349	Nitrate	62	78-118	MWQI

Table 13-4. MWQI Matrix Spike Totals

Analyte	Matrix Spike Totals
Bromide	163
Sulfate	136
Alkalinity	125
Nitrate	114
Calcium	107
Magnesium	107
Sodium	106
Potassium	101
Chloride	99
Boron	98
Arsenic	80
Selenium	70
Carbamates	40
THMFP	36
Ammonia	33
Nitrite	21
Copper	20
Cadmium	19
Zinc	19
Ammonia	18
Barium	18
Manganese	18
Mercury	16
Copper	16
Iron	16
Chromium	14
Lead	12
Silver	12
Nickel	11
SDS Haloacetic Acids	11
Molybdenum	10
Thallium	10
Fluoride	9
Orthophosphate	9
SDS Trihalomethanes	9
Aluminum	9
Phosphate	7

Table 13-4. MWQI Matrix Spike Totals (cont.)

Analyte	Matrix Spike Totals
Antimony	7
Beryllium	7
Cyanide	7
Endothall	6
Tot. Ammonia & Org. Nitrogen	6
Phosphorus	6
Diquat	5
Bromochloroacetonitrile	5
Chloral hydrate	5
Chloropicrin	5
Dibromoacetonitrile	5
Dichloroacetonitrile	5
Trichloroacetonitrile	5
1,1,1-Trichloro-2-propanone	5
1,1-Dichloro-2-propanone	5
DBCP	2
EDB	2
Oil & Grease	1
2,4-D	1
2,4,5-T	1
2,4,5-TP	1
Bentazon	1
Dalapon	1
Dicamba	1
Dinoseb	1
Picloram	1
Pentachlorophenol	1
TOTAL	**1,817**

period 1,629 LCS were performed. Of this total, only six (0.3 percent) exceeded control limits. Table 13-5 lists the LCS which exceeded control limits. Table 13-6 lists the total number of LCS performed according to analytes.

Method Blanks

Method blanks are those samples which contain any reagents used in the preparation and analysis procedure. The preferred outcome from analysis of method blanks is a less than detectable concentration of the analyte of interest. During this period a total of 1,677 method blank results were recorded. None of the results exceeded method blank control standards. Table 13-7 lists the total number of method blanks analyzed according to analytes.

Field Duplicates

Field duplicates are replicate samples obtained at predetermined sites in order to evaluate within-batch error at the laboratory. For field duplicates, results are compared using a RPD between the duplicate results. As a general rule for field duplicates, an RPD of up to 15 percent is acceptable for metals, 20 percent for inorganics, and 30 percent for organics. During this period 2,038 field duplicate analytes were sampled for and subsequently analyzed. Of this total, only 21 duplicate analytical results (1 percent) exceeded acceptable RPD limits. Table 13-8 lists the duplicate analytical results which exceeded acceptable RPD limits.

Special Projects

TOC Removal from Delta Agricultural Drainage

This project was carried out to study the feasibility of removing TOC from agricultural drainage into the Sacramento-San Joaquin Delta. To date, five analyses for Ammonia have been received from Bryte Laboratory. No QC problems were associated with these initial analyses.

Soil TOC (January 1997)

For the Soil TOC Study in January 1997, a total of 27 analyses were received including those for metals and THMFP. No QC problems were associated with analyses performed in January 1997.

SDS and *E. coli* Data

For the SDS and *E. coli* data in January 1997, a total of 57 analyses were received including those for SDS THMs, SDS HAAs, THMFP, total and fecal coliforms, *E. coli*, DOC, and UVA. No QC problems have been found to be associated with these analyses.

Table 13-5. LCS Control Limits Exceeded

Sample Number	Analyte	LCS % Recovery	Control Limits	Project
C961826	Dieldrin	139	47-127	MWQI
C961827	Heptachlor epoxide	135	45-129	MWQI
C961844	Atrazine	38	50-141	MWQI
C961844	Metribuzin	53	56-131	MWQI
C961404	Silver	121.7	85-115	MWQI
C961946	Silver	77.2	85-115	Soil TOC

Table 13-6. MWQI LCS Totals

Analyte	LCS Totals
DOC	164
Bromide	147
Sulfate	102
Chloride	93
Alkalinity	73
Nitrate	72
Boron	60
Magnesium	53
Calcium	53
Sodium	53
Potassium	52
Arsenic	48
Selenium	42
Carbamates	31
Copper	13
THMFP	11
Mercury	11
Bis (2-ethylhexyl) adipate	11
Bis (2-ethylhexyl) phthalate	11
Benzo (a) pyrene	11
Antimony	10
Beryllium	10
Cyanide	10
Aldrin	10
2,4-D	10
2,4,5-T	10
2,4,5-TP	10
Bentazon	10
Dalapon	10
Dicamba	10
Dinoseb	10
Pentachlorophenol	10
Picloram	10
Endothall	10
Diquat	10
Chromium	10
Cadmium	10

Table 13-6. MWQI LCS Totals (cont.)

Analyte	LCS Totals
Zinc	10
Copper	10
Nitrite	10
SDS Haloacetic Acids	10
Atrazine	9
Metribuzin	9
Molinate	9
Propachlor	9
Simazine	9
Thiobencarb	9
Chlorothalonil	9
Dieldrin	9
Heptachlor	9
Heptachlor epoxide	9
Bromochloroacetonitrile	9
Chloral hydrate	9
Chloropicrin	9
Dibromoacetonitrile	9
Dichloroacetonitrile	9
Trichloroacetonitrile	9
1,1,1-Trichloro-2-propanone	9
1,1-Dichloro-2-propanone	9
Iron	9
VOC	9
Barium	9
Silver	9
Manganese	9
Lead	9
Nickel	8
Ethylene thiourea	8
Molybdenum	7
Thallium	7
Hexachlorobenzene	7
Hexachlorocyclopentadiene	7
Lindane	7
Fluoride	5
Aluminum	5

Table 13-6. MWQI LCS Totals (cont.)

Analyte	LCS Totals
EDB	5
Methoxychlor	5
DBCP	5
Orthophosphate	3
Phosphate	3
Ammonia	3
Tot. Ammonia & Org. Nitrogen	3
Phosphorus	3
Ammonia	1
Total	**1,629**

Table 13-7. MWQI Method Blank Totals

Analyte	Method Blank Totals
Bromide	153
DOC	145
Sulfate	96
Chloride	92
Nitrate	78
THMFP	65
Boron	58
Calcium	49
Potassium	49
Magnesium	48
Sodium	48
Arsenic	46
Selenium	40
Ammonia	25
Carbamates	24
Ethylene thiourea	21
Alachlor	11
Atrazine	11
Bromocil	11
Butachlor	11
Demeton	11
Diazinon	11
Dimethoate	11
Disulfoton	11
Metolachlor	11
Metribuzin	11
Molinate	11
Prometryn	11
Propachlor	11
Simazine	11
Thiobencarb	11
Bis (2-ethylhexyl) adipate	11
Bis (2-ethylhexyl) phthalate	11
Benzo (a) pyrene	11
Nitrite	11
Ammonia	11
Mercury	9

Table 13-7. MWQI Method Blank Totals (cont.)

Analyte	Method Blank Totals
Antimony	9
Beryllium	9
Cyanide	9
2,4-D	9
2,4,5-T	9
2,4,5-TP	9
Bentazon	9
Dalapon	9
Dicamba	9
Dinoseb	9
Pentachlorophenol	9
Picloram	9
Diquat	9
Endothall	9
Aldrin	8
Chlordane	8
Chlorothalonil	8
Dieldrin	8
Heptachlor	8
PCB's	8
Bromochloroacetonitrile	8
Chloral hydrate	8
Chloropicrin	8
Dibromoacetonitrile	8
Dichloroacetonitrile	8
Trichloroacetonitrile	8
1,1,1-Trichloro-2-propanone	8
1,1-Dichloro-2-propanone	8
Cadmium	8
Chromium	8
Iron	8
Zinc	8
Copper	8
Barium	7
Lead	7
Manganese	7
SDS Trihalomethanes	7

Table 13-7. MWQI Method Blank Totals (cont.)

Analyte	Method Blank Totals
Silver	7
Hexachlorobenzene	6
Hexachlorocyclopentadiene	6
Lindane	6
Methoxychlor	6
Toxaphene	6
Copper	6
Orthophosphate	6
Fluoride	6
Aluminum	6
Nickel	6
Tot. Ammonia & Org. Nitrogen	5
Phosphorus	5
Molybdenum	5
Endrin	5
Thallium	5
DBCP	4
EDB	4
Phosphate	4
Oil & Grease	1
Total	**1,677**

Table 13-8. Field Duplicate RPD's Exceeded

Analyte	Sample Number	Concentration	Duplicate Sample Number	Concentration	RPD	Project
Boron	C961241	0.1 mg/L	C961238(D)	0.2 mg/L	67%	MWQI
Aluminum	C961796	0.126 mg/L	C961794(D)	0.083 mg/L	41%	MWQI
Manganese	BL5518	0.006 mg/L	BL5516(D)	0.018 mg/L	100%	MWQI
Dibromochloro-methane	C961647	5 ug/L	C961645(D)	9 ug/L	57%	MWQI
DOC	C961840	2.4 mg/L	C961836(D)	1.7 mg/L	34%	MWQI
DOC	C961898	1.6 mg/L	C961891(D)	2.4 mg/L	40%	MWQI
Bromoform	C961775	2 ug/L	C961772(D)	1 ug/L	67%	MWQI
Bromide	C961970	0.04 mg/L	C961966(D)	0.03 mg/L	29%	MWQI
Nitrate	C961830	2.9 mg/L	C961829(D)	0.7 mg/L	122%	MWQI
Boron	C961945	0.1 mg/L	C961943(D)	0.2 mg/L	67%	MWQI
Iron	C961955	0.066 mg/L	C961952(D)	0.033 mg/L	67%	MWQI
Aluminum	C961955	0.026 mg/L	C961952(D)	0.017 mg/L	42%	MWQI
Iron	C961970	0.074 mg/L	C961966(D)	0.059 mg/L	23%	MWQI
Aluminum	C961976	0.027 mg/L	C961973(D)	0.021 mg/L	25%	MWQI
Arsenic	C962346	0.001 mg/L	C962342(D)	0.002 mg/L	67%	MWQI
Ammonia	C962125	2.1 mg/L	C962120(D)	3 mg/L	35%	MWQI
Selenium	C961661	0.002 mg/L	C961660(D)	0.003 mg/L	40%	Soil TOC
Nitrate	C961712	0.9 mg/L	C961707(D)	0.2 mg/L	127%	Soil TOC
Nitrate	C961793	0.1 mg/L	C961786(D)	0.2 mg/L	67%	Soil TOC
Dichloroacetic Acid	C962034	0.36 ug/L	C962030(D)	0.25 ug/L	36%	Soil TOC
Bromochloroacetic Acid	C962034	0.22 ug/L	C962030(D)	0.16 ug/L	32%	Soil TOC

Chapter 14. Delta Island Water Use Study

The Delta Island Water Use Study was designed to obtain quantitative and qualitative information on Delta island water use and drainage water quality. The Study was a collaborative effort between DWR and USGS. In this Study, DWR staff collected data on water quality of drainage from Twitchell Island, while USGS staff obtained power use data. The objectives of the Study were:

- To obtain baseline water quality information on water siphoned onto Twitchell Island for irrigation and on agricultural drainage that was pumped off the island
- To calculate mass loads of chemical constituents (e.g., TOC, salts) pumped off Twitchell Island
- To compare the mass loading of chemical constituents from Delta islands to mass loading in the Delta by the major rivers
- To obtain available power records for Delta island drainage pumps
- To relate power to the quantity of water pumped off an island through the use of pump efficiency tests
- To estimate diversion volume and measure drainage volume for Twitchell Island
- To obtain an estimate of the quantity of agricultural drainage for the entire Delta
- To relate the estimate of agricultural drainage quality and quantity to land use
- To refine DWR's DICU model by using data from the Study
- To obtain a better understanding of the Delta in order to test the effects of various water management options on the water quality of the Delta

Data collection for this Study ended in April 1996. Water quality data were presented in *Municipal Water Quality Investigations Program Annual Report Water Year 1995*. USGS published the data on drainage, surface water withdrawals, and land use on Twitchell Island in *Drainage-Return, Surface-Water Withdrawal, and Land-Use Data for the Sacramento-San Joaquin Delta, with Emphasis on Twitchell Island, California*, USGS Open-File Report 97-350. A copy of this report is included in the following pages.

Drainage-Return, Surface-Water Withdrawal, and Land-Use Data for the Sacramento-San Joaquin Delta, with Emphasis on Twitchell Island, California

U.S. Geological Survey
Open-File Report 97-350

Prepared in cooperation with the
CALIFORNIA DEPARTMENT OF WATER RESOURCES

Drainage-Return, Surface-Water Withdrawal, and Land-Use Data for the Sacramento-San Joaquin Delta, with Emphasis on Twitchell Island, California

By William E. Templin *and* Daniel E. Cherry

U.S. GEOLOGICAL SURVEY

Open-File Report 97–350

Prepared in cooperation with the
CALIFORNIA DEPARTMENT OF WATER RESOURCES

Sacramento, California
1997

U.S. DEPARTMENT OF THE INTERIOR
BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY
Gordon P. Eaton, Director

For additional information write to:

District Chief
U.S. Geological Survey
Placer Hall
6000 J Street, Suite 2012
Sacramento, CA 95819-6129

Copies of this report can be purchased from:

U.S. Geological Survey
Information Services
Box 25286
Federal Center
Denver, CO 80225

CONTENTS

FIGURES

TABLES

CONVERSION FACTORS, VERTICAL DATUM, DEFINITION, AND SELECTED WATER-UNIT RELATIONS

Conversion Factors

Multiply	By	To obtain
acre	0.4047	hectare
acre-foot (acre-ft)	1,234	cubic meter
acre-foot per year (acre-ft/yr)	1,234	cubic meter per year
mile (mi)	1.609	kilometer
square mile (mi^2)	259.0	hectare
	2.590	square kilometer

Vertical Datum

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929—a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Definition

An acre-foot is the quantity of water required to cover 1 acre to a depth of 1 foot.

Selected Water-Unit Relations

1 gallon = 8.3453 pounds
1 million gallons = 3.07 acre-feet
1 thousand acre-feet per year = 1.121 million gallons per day
1 cubic foot = 62.4 pounds
1 cubic foot = 7.48 gallons
1 acre-foot = 325,851 gallons
1 acre-foot = 43,560 cubic feet
1 kilowatt = 0.7457 horsepower
1 kilowatt hour = 0.000293 British Thermal Units

Drainage-Return, Surface-Water Withdrawal, and Land-Use Data for the Sacramento-San Joaquin Delta, with Emphasis on Twitchell Island, California

By William E. Templin *and* Daniel E. Cherry

ABSTRACT

Partial data on drainage returns and surface-water withdrawals are presented for areas of the Sacramento-San Joaquin Delta, California, for March 1994 through February 1996. These areas cover most of the delta. Data are also presented for all drainage returns and some surface-water withdrawals for Twitchell Island, which is in the western part of the delta. Changes in land use between 1968 and 1991 are also presented for the delta.

Measurements of monthly drainage returns and surface-water withdrawals were made using flowmeters installed in siphons and drain pipes on Twitchell Island. Estimates of monthly returns throughout the delta were made using electric power-consumption data with pump-efficiency-test data. For Twitchell Island, monthly measured drainage returns for the 1995 calendar year totaled about 11,200 acre-feet, whereas drainage returns estimated from power-consumption data totaled 5 percent less at about 10,600 acre-feet. Monthly surface-water withdrawals onto Twitchell Island through 12 of the 21 siphons totaled about 2,400 acre-feet for 1995. For most of the delta, the monthly estimated drainage returns for 1995 totaled about 430,000 acre-feet. The area consisting of Bouldin, Brannan, Staten, Tyler, and Venice Islands had the largest estimated drainage returns for calendar year 1995.

Between 1968 and 1991, native vegetation in the delta decreased by 25 percent (about 40,000 acres), and grain and hay crops increased by 340 percent (about 71,000 acres). For Twitchell Island, native vegetation decreased about 77 percent (about 850 acres), while field crop acreage increased by about 44 percent (about 780 acres).

INTRODUCTION

The Sacramento-San Joaquin Delta of California is an area consisting of about 738,000 acres of islands and channels (fig. 1) that receive runoff from about 40 percent of the State's land area (California Department of Water Resources, 1993). About 500,000 acres of the delta is agricultural land, much of which is below sea level and is dependent on levees for protection from flooding. The delta is part of California's water-delivery system, which stores water in reservoirs north and south of the delta and delivers irrigation water to millions of acres of farm land south of the delta and drinking water to two-thirds of the State's population. Many of California's water issues involve delta water use issues.

In 1993, a cooperative study of the Sacramento-San Joaquin River Delta was started by the U.S. Geological Survey (USGS) and the California Department of Water Resources (DWR), Division of Local Assistance, Municipal Water Quality Investigations Section, and Division of Planning, Delta Modeling Section. The purpose of the study was to update drainage-return data for delta islands, to quantify surface-water withdrawls, and to compile digitized land-use data needed to improve DWR's model of consumptive use on the delta islands.

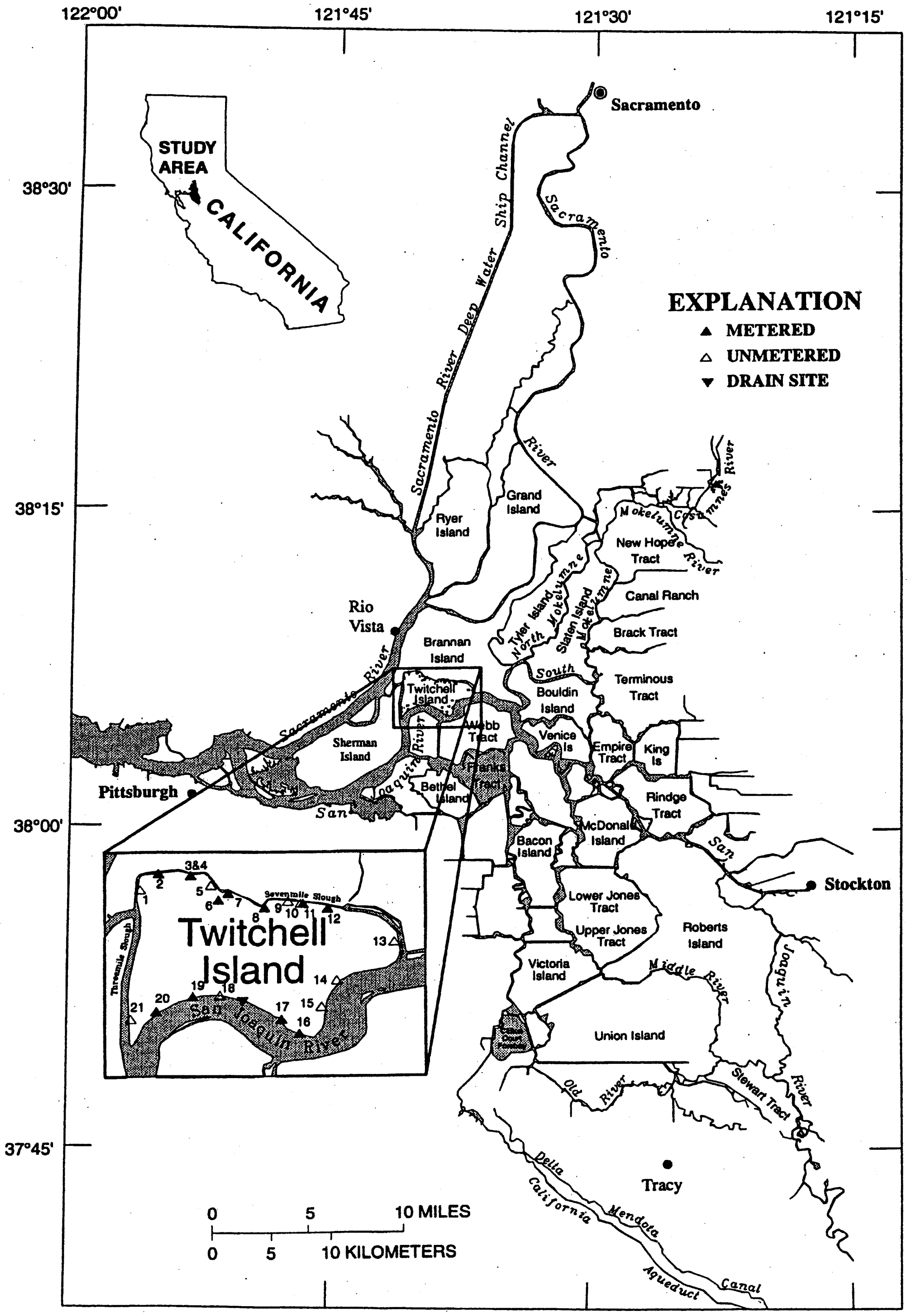


Figure 1. Locations of the Sacramento-San Joaquin Delta and of the withdrawal siphons and the drain site on Twitchell Island.

The methods used for the drainage study are similar to the methods used during a study by the California Department of Water Resources (1956). Since 1956, the need for more current water-use information has increased with increased concerns about water and land use in the delta and the effects of these uses on the quality and quantity of water available from the delta. Knowledge of water consumption in the delta is needed to estimate freshwater discharge to San Francisco Bay. Agricultural drainage pumped off the islands into delta channels contains natural organic chemicals that form carcinogens (such as trihalomethanes) when the water is chlorinated for municipal use. Island drainage also introduces pesticide residues into the habitat of threatened fish species.

The objectives of this study were to estimate drainage returns using electrical power-consumption data, to measure selected surface-water withdrawals, to digitize land-use maps for 1968, and to compare the 1968 maps with the digital land-use maps available for 1991. The study involved estimating drainage returns for 236 drains with electrically powered pumps, quantifying surface-water withdrawals at 12 of the 1,800 surface-water withdrawal sites, and digitizing the 1968 land-use maps. Twitchell Island was selected for intensive monitoring of drainage returns and surface-water withdrawals because it is owned by DWR and because one of the withdrawal siphons on the island was already being measured.

The purpose of this report is to present data on delta drainage returns and surface-water withdrawals collected between March 1994 and February 1996, a tabulation of changes in delta land use between 1968 and 1991 for the areas of DWR's consumptive-use model, and methods used to obtain these data.

The authors gratefully acknowledge the assistance of personnel from other agencies and companies who have contributed to this study. In particular, we would like to recognize Rick Carter, Linda Carter, and Joe DaCruz, Reclamation District 1601; Todd Bruce and Michael Menard, Pacific Gas and Electric Company; Kim Robinson, Electronic Engineering; Leonard Kirkpatrick, Kirkpatrick & Associates; and Ted Mayer, Sharman Incorporated.

DRAINAGE RETURNS

To prevent flooding of the delta islands, drainage returns—which are a combination of precipitation, seepage, unconsumed irrigation water, and surface-water withdrawals for other uses—are pumped into adjacent channels (fig. 2). To obtain a record of Twitchell Island's drainage returns, DWR collected weekly drainage-return and electric power-consumption data at its one drain site (fig. 1). Independently, USGS collected monthly drainage-return and electric power-consumption data at the Twitchell Island drain site and obtained monthly power-consumption records from Pacific Gas and Electric Company (PG&E). USGS used this power-consumption data with pump-efficiency-test data provided by PG&E, Twitchell Island Reclamation District, and DWR to make additional drainage-return estimates.

Measurement Using Flowmeters

The drain on Twitchell Island was equipped with a flowmeter during this study; it is the only drain site of the 236 drains (fig. 3) in the PG&E data base known to be equipped with a flowmeter. Thus, drainage returns were measured at this drain site. McCrometer invasive flowmeters with straightening vanes were used to measure flows discharged by the main pump and the auxiliary pump at the drain site. These flowmeters are reported to have an absolute relative error of less than 2 percent (Schwankl and Hanson, 1993, p. 6). The data were obtained by manually recording dial readings and calculating cumulative flows. Electric power-consumption readings were also manually recorded during each visit.

DWR recorded weekly drainage returns for Twitchell Island between August 1994 and January 1996 (table 1). USGS recorded monthly drainage returns within 1 day of the first day of each month (table 2). Drainage returns pumped from Twitchell Island during 1995 totaled 11,232 acre-ft (table 2). The largest monthly drainage returns during 1995 were pumped during January and March (2,499 and 1,926 acre-ft, respectively), and the smallest monthly total returns were pumped during September, October, and November (323, 298, and 340 acre-ft, respectively) (table 2).

Estimates Using Electric Power-Consumption Data

Drainage returns can be estimated using electric power-consumption data with pump-efficiency-test data. PG&E maintains a pump-efficiency-test data base that includes 58 of 236 drains in the delta for which they have electric power-consumption records. Additional drains may operate in the delta, but a complete inventory of the drains in the delta was beyond the scope of this study. At the time of this study, the data

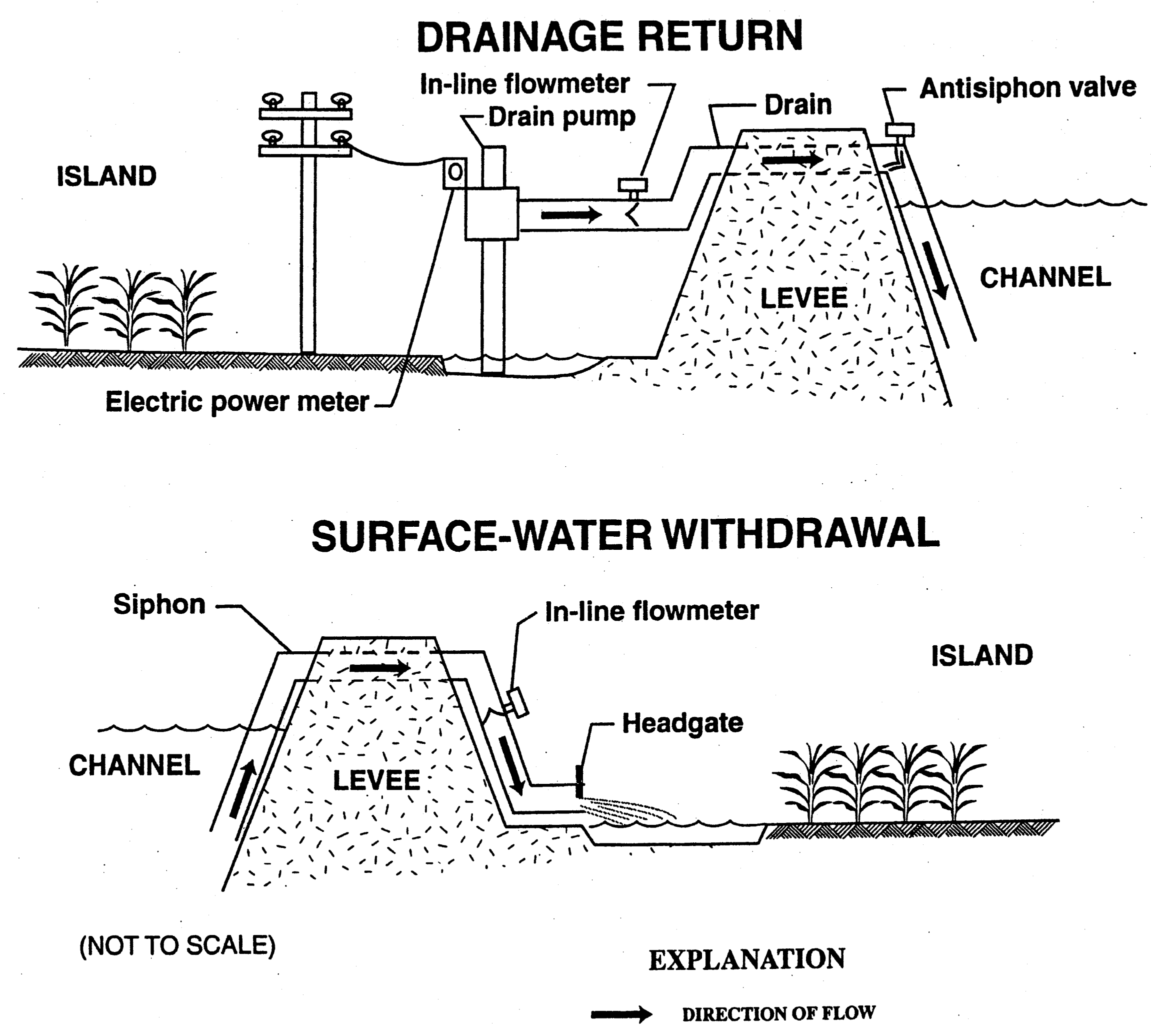


Figure 2. A schematic of a drainage-return site and a surface-water withdrawal siphon similar to those on Twitchell Island in the Sacramento-San Joaquin Delta, California.

base contained data on 220 pump-efficiency tests done at the 58 drains. USGS acquired the power records from PG&E with an agreement that the records would be released only after being aggregated into areas more than 36 mi^2. For Twitchell Island, USGS computed monthly drainage-return estimates using power-consumption data collected during site visits with PG&E pump-efficiency data.

Methods

An empirical equation called the unit power-consumption method (Diamond and Williamson, 1983, p. 7) or the coefficient of power method (Ogilbee and Mitten, 1970, p. 7) was used to estimate drainage returns from the power-consumption data. The equation has the form

pumpage (acre-feet) = power (kilowatt hours)/unit-use coefficient (kilowatt hours per acre-foot).

The unit-use coefficient is determined by conducting pump-efficiency tests during which pumpage and power consumption are measured. The unit power-consumption method is the most convenient method of estimating pumpage because the needed data are

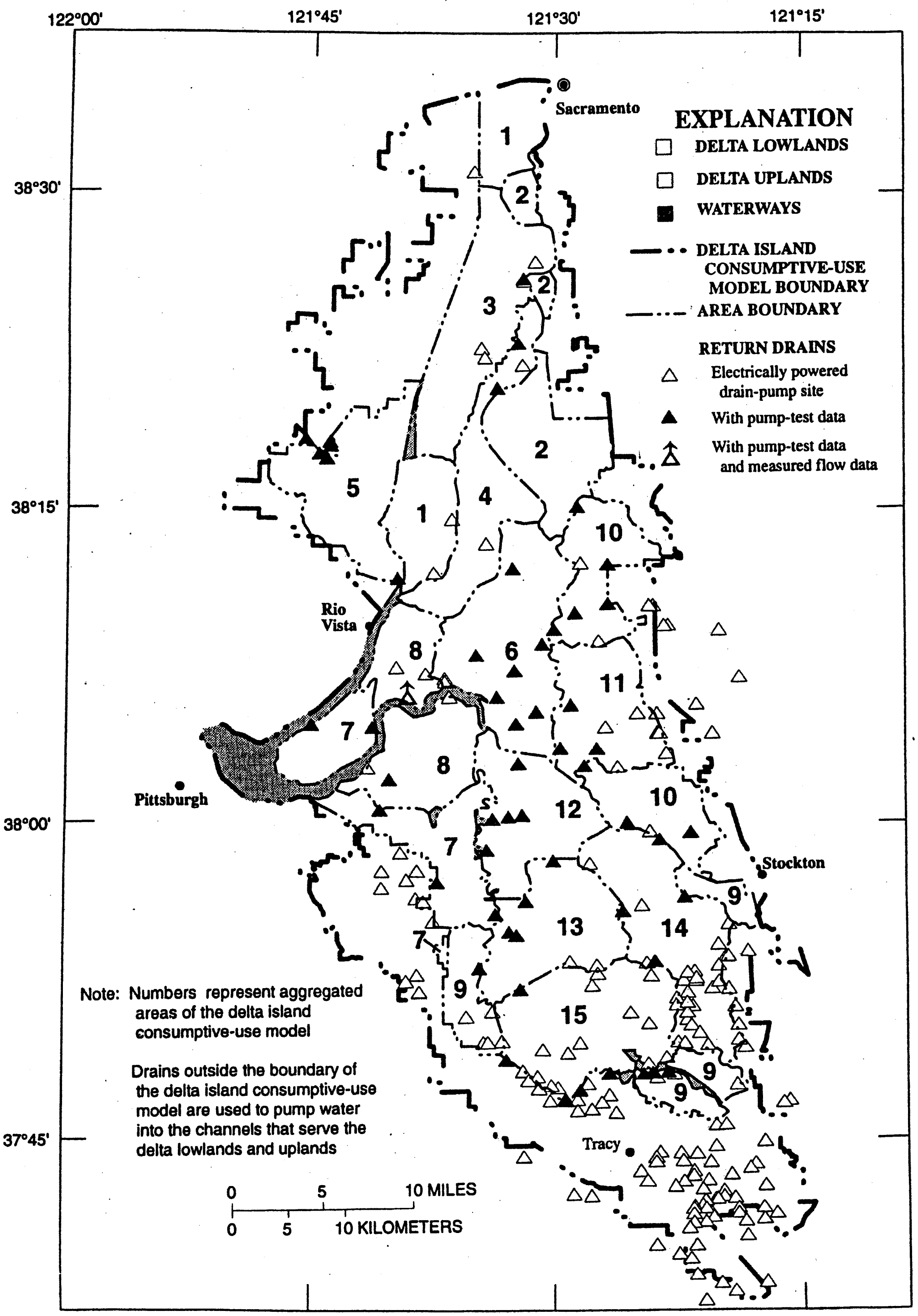


Figure 3. Locations of the return drains in the Sacramento-San Joaquin Delta, California, and of the aggregated areas of the California Department of Water Resources' delta island consumptive-use model. Boundaries of areas generally are the channels.

Table 1. Drainage returns from Twitchell Island in the Sacramento-San Joaquin Delta measured weekly by the California Department of Water Resources, August 9, 1994, to January 8, 1996[1]

[Values, in acre-feet, are the differences between successive readings of cumulative flows. NR, not read]

Date meter was read	East pump	West pump	Total
08/09/94	67.32	282.75	350.07
08/16/94	NR	NR	NR
08/23/94	65.95	329.59	395.54
08/30/94	19.04	117.75	136.79
09/06/94	17.37	95.59	112.96
09/13/94	15.98	128.59	144.57
09/20/94	20.80	156.33	177.13
09/27/94	20.24	153.54	173.78
10/05/94	28.34	182.99	211.33
10/11/94	20.11	127.87	147.98
10/17/94	14.06	103.58	117.64
10/26/94	33.51	69.50	103.01
11/02/94	3.80	73.66	77.46
11/09/94	0	101.64	101.64
11/16/94	0	111.43	111.43
11/23/94	0	106.94	106.94
11/30/94	0	122.12	122.12
12/07/94	.10	141.97	142.07
12/14/94	.00	156.98	156.98
12/21/94	.13	199.69	199.82
12/28/94	NR	NR	NR
01/04/95	115.06	538.40	653.46
01/11/95	213.27	287.17	500.44
01/18/95	267.25	297.04	564.29
01/25/95	261.30	298.15	559.45
02/01/95	252.60	300.25	552.85
02/08/95	68.74	303.86	372.60
02/15/95	12.71	282.78	295.49
02/22/95	14.07	274.10	288.17
03/01/95	.39	213.76	214.15
03/08/95	61.26	279.53	340.79
03/15/95	213.30	321.45	534.75
03/22/95	125.35	299.82	425.17
03/29/95	226.37	330.73	557.10
04/05/95	.11	207.22	207.33
04/12/95	.25	177.72	177.97
04/19/95	6.91	161.85	168.76
04/26/95	.20	163.79	163.99

Date meter was read	East pump	West pump	Total
05/01/95	0	112.50	112.50
05/08/95	67.48	96.55	164.03
05/15/95	50.14	104.18	154.32
05/22/95	2.67	143.28	145.95
05/29/95	0	157.26	157.26
06/05/95	3.46	115.04	118.50
06/12/95	10.80	110.59	121.39
06/19/95	16.92	110.55	127.47
06/26/95	4.67	134.16	138.83
07/03/95	.27	143.92	144.19
07/10/95	0	114.22	114.22
07/17/95	0	145.04	145.04
07/24/95	0	157.27	157.27
07/31/95	0	225.91	225.91
08/07/95	0	206.58	206.58
08/14/95	0	210.03	210.03
08/21/95	0	205.90	205.90
08/28/95	0	173.57	173.57
09/05/95	0	135.69	135.69
09/11/95	0	69.04	69.04
09/18/95	0	72.04	72.04
09/25/95	21.59	46.98	68.57
10/02/95	43.06	29.53	72.59
10/10/95	25.57	47.03	72.60
10/16/95	27.39	38.49	65.88
10/23/95	4.16	56.00	60.16
10/30/95	NR	NR	NR
11/06/95	32.36	116.49	148.85
11/14/95	NR	NR	NR
11/20/95	63.53	89.45	152.98
11/27/95	0	74.73	74.73
12/04/95	55.60	24.96	80.56
12/11/95	NR	NR	NR
12/18/95	119.65	191.67	311.32
01/08/95	66.57	711.60	778.17
Total	2,781.78	11,870.38	14,652.16

[1]Because of differences in periods of record, monthly totals for these meter readings may not agree with totals in table 2. However, the total for August 1994 through December 1995 agree (14,652 acre-feet).

usually available (Ogilbee and Mitten, 1970, p. 7; Diamond and Williamson, 1983, p. 7).

For Twitchell Island, the mean unit-use coefficient for all PG&E pump-efficiency tests provided by the Twitchell Island Reclamation District, 50 kilowatt hours per acre-ft, was used with USGS records of electrical power consumption for the Twitchell Island drain to calculate drainage returns. For the 58 drains in the

Table 2. Drainage returns from Twitchell Island in the Sacramento-San Joaquin Delta, California, measured monthly by the U.S. Geological Survey, August 1994 through January 1996

[Values are in acre-feet]

Month	West pump	East pump	Total
1994			
August	743	155	898
September	590	82	672
October	477	89	566
November	469	0	469
December	815	0	815
Total	3,094	326	3,420
1995			
January	1,390	1,109	2,499
February	1,074	96	1,170
March	1,300	626	1,926
April	756	7	763
May	535	121	656
June	521	36	557
July	736	0	736
August	846	0	846
September	265	58	323
October	227	71	298
November	224	116	340
December	903	214	1,118
Total	8,777	2,454	11,232
Total for 1994-95	11,871	2,780	14,652
1996			
January	1,007	326	1,333
Total for period of record	12,878	3,106	15,985

delta with pump-efficiency-test data, the mean unit-use coefficient for each drain was used with PG&E power-consumption records to calculate drainage returns. These coefficients ranged from a high of 83 kilowatt hours per acre-ft to a low of 18 kilowatt hours per acre-ft. For the remaining 178 drains in the delta for which no pump-efficiency-test data were available, using pump horsepower to infer a unit-use coefficient was considered. However, coefficient-horsepower plots of the 220 pump-efficiency-test results indicated that the correlation of the data in the present pump-efficiency-test data base is poor (fig. 4). Therefore, the mean unit-use coefficient of all pump tests in the pump-efficiency-test data base, 40.6 kilowatt hours per acre-ft, was used with the power-consumption data to calculate drainage returns for the remaining 178 drains. Drainage-return estimates were aggregated into larger areas using the geographic information system, ARC/INFO.

Results

Drainage returns from Twitchell Island were estimated using both USGS and PG&E power-consumption records for the drain (table 3, fig. 5). Both USGS and PG&E power-consumption records indicate that the total drainage-return estimates for 1995 was about 10,600 acre-ft. The total for estimated returns was about 5 percent less than the total for the measured returns (about 11,200 acre-ft). Monthly drainage returns for 1995, estimated from USGS power-consumption records, ranged from 14 percent less than the measured returns in April to almost 4 percent more than the measured returns in December (table 3). Differences between the estimated monthly drainage returns generated from USGS and DWR power-consumption records probably result primarily because of different intervals between the meter readings. The most notable difference was in March 1995 (fig. 5); this large difference occurred because the meter had not been read by PG&E since December 1994.

Monthly drainage returns were estimated for the 236 drains in the delta using PG&E power-consumption data for January 1995 through February 1996. The estimates for the 236 drains were aggregated into 62 of the 142 subareas in DWR's delta island consumptive-use model; these 62 subareas cover most of the delta (the shaded areas on fig. 6). To meet a confidentiality agreement with PG&E, which restricts the releasing of pumping data for individual accounts or for areas of less than 36 mi^2, the estimates for the drainage returns were then aggregated into 17 areas for reporting (table 4): the 15 areas within the delta island consumptive-use model area, which represent the delta lowlands; the delta upland area; and the area just outside the boundary of the delta island consumptive-use model (fig. 3). (The drains outside the delta island consumptive-use model boundary are used to pump water into the channels that serve the delta lowlands and uplands and thus were used for this study.) The data were aggregated using ARC/INFO (fig. 6). Of the 236 drains with power-consumption data, 215 of the drains are in the 62 subareas, with 91 of the drains in the delta uplands; the remaining 21 drains are outside the model boundary. Area 2 is the only aggregated area for which there were no power-consumption data available to make drainage estimates.

Area 6 (fig. 3), which consists of Bouldin, Brannan, Staten, Tyler, and Venice Islands, had the largest estimated drainage returns (about 73,000 and 96,400 acre-ft for calendar year 1995 and for the period

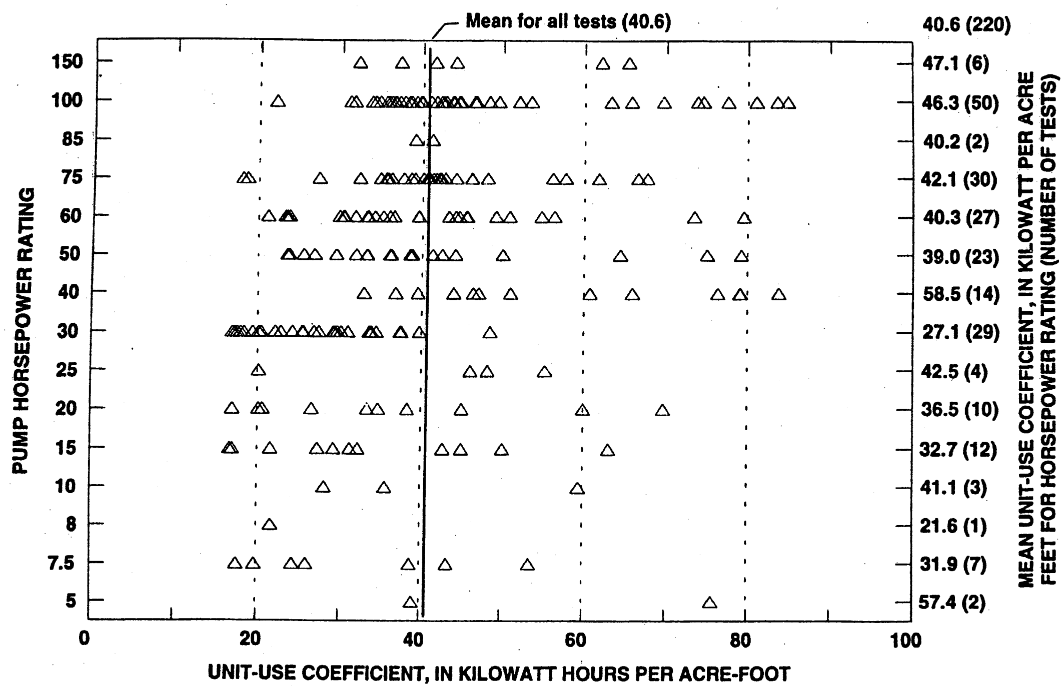


Figure 4. Horsepower ratings of pumps as related to unit-use coefficients derived from pump-efficiency tests for drains in the Sacramento-San Joaquin Delta, California.

January 1995 through February 1996, respectively, table 4). The 1995 estimate for area 6 was about 17 percent of the total estimated drainage returns (430,000 acre-ft) for the delta and about 18 percent of the total estimated drainage returns (about 537,000 acre-ft) for the period January 1995 through February 1996. Monthly drainage-return estimates were largest in March 1995 (about 61,900 acre-ft) and smallest in November 1995 (about 11,200 acre-ft). Drainage-return estimates were also large in August 1995 and January and February 1996 (about 53,100; 50,600; and 55,100 acre-ft, respectively) (table 4).

SURFACE-WATER WITHDRAWALS ONTO TWITCHELL ISLAND

Water is siphoned from the channels of the delta over the levees onto the islands (fig. 2). The hydraulic properties of each siphon and the opening of the delivery end of the pipe control the flow rate through each siphon. Although the hydraulic properties of a siphon can be readily estimated, doing so for a large number of siphons is a laborious task that had not been done at the time of this study. Even if hydraulic information were available, data on the time histories of pipe openings and tides would also be needed to estimate the quantities of water withdrawn by a siphon. Instead of recording pipe openings and tides, USGS and DWR used flowmeters to measure withdrawals onto Twitchell Island for 12 of the 21 siphons.

Methods

At the time of this study, DWR (Environmental Services Office) and the California Department of Fish and Game were using McCrometer flowmeters in a study of the effectiveness of fish screens on siphons in the delta, including siphon 16 on Twitchell Island (fig. 1). Eleven additional McCrometer flowmeters were installed on the siphons on Twitchell Island for this study. The flowmeters were operated by DWR and USGS. The data were obtained by manually recording dial readings and calculating cumulative flows.

Results

DWR recorded flowmeter readings weekly between August 9, 1994, and January 8, 1996 (table 5)

Table 3. Drainage returns from Twitchell Island in the Sacramento-San Joaquin Delta, California, estimated and measured monthly by the U.S. Geological Survey, August 1994 through January 1996

[Values are in acre-feet. USGS, U.S. Geological Survey; PG&E, Pacific Gas and Electric Company]

Month	Estimated drainage returns using data collected by USGS (A)	Estimated drainage returns using data from PG&E (B)	Metered drainage returns (C)	Difference between estimated returns (USGS data) and metered returns (A - C)	Percent difference $\frac{A-C}{C}x100$	Difference between estimated returns (PG&E data) and metered returns (B - C)	Percent difference $\frac{B-C}{C}x100$
1994							
August	743	0	898	-155	-17.3	-898	-100.0
September	599	855	672	-73	-10.9	183	27.2
October	512	1,289	566	-54	-9.5	723	127.7
November	391	1,319	469	-78	-16.6	850	181.2
December	698	741	815	-117	-14.4	-74	-9.1
Total (excludes percentages)	2,943	4,204	3,420	-477	-13.9	784	22.9
1995							
January	2,489	0	2,499	-10	-0.4	-2,499	-100.0
February	1,077	0	1,170	-93	-7.9	-1,170	-100.0
March	1,809	6,239	1,926	-117	-6.1	4,313	223.9
April	653	0	763	-110	-14.4	-763	-100.0
May	586	1,205	656	-70	-10.7	549	83.7
June	483	0	557	-74	-13.3	-557	-100.0
July	647	1,039	736	-89	-12.1	303	41.2
August	751	796	846	-95	-11.2	-50	-5.9
September	317	0	323	-6	-1.9	-323	-100.0
October	296	288	298	-2	-0.7	-10	-3.4
November	349	354	340	9	2.6	14	4.1
December	1,160	663	1,118	42	3.8	-455	-40.7
Total (excludes percentages)	10,617	10,584	11,232	-615	-5.5	-648	-5.8
1996							
January	1,457	1,812	1,333	124	9.2	479	35.9
TOTAL (excludes percentages)	15,017	16,600	15,985	-968	-6.1	615	3.8

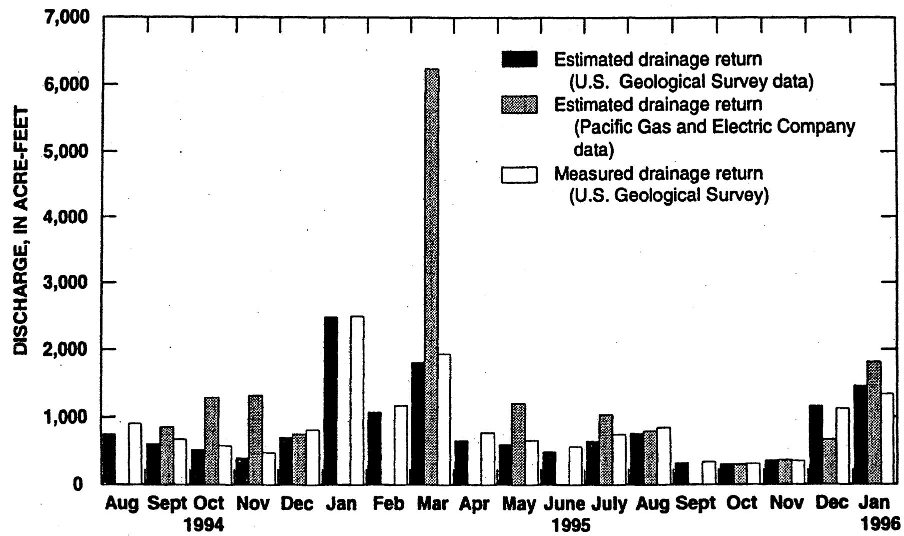


Figure 5. Estimated and measured monthly totals for drainage returns from Twitchell Island in the Sacramento-San Joaquin Delta, California, August 1994 through January 1996. Estimates were made by the U.S. Geological Survey using U.S. Geological Survey and Pacific Gas and Electric Company data.

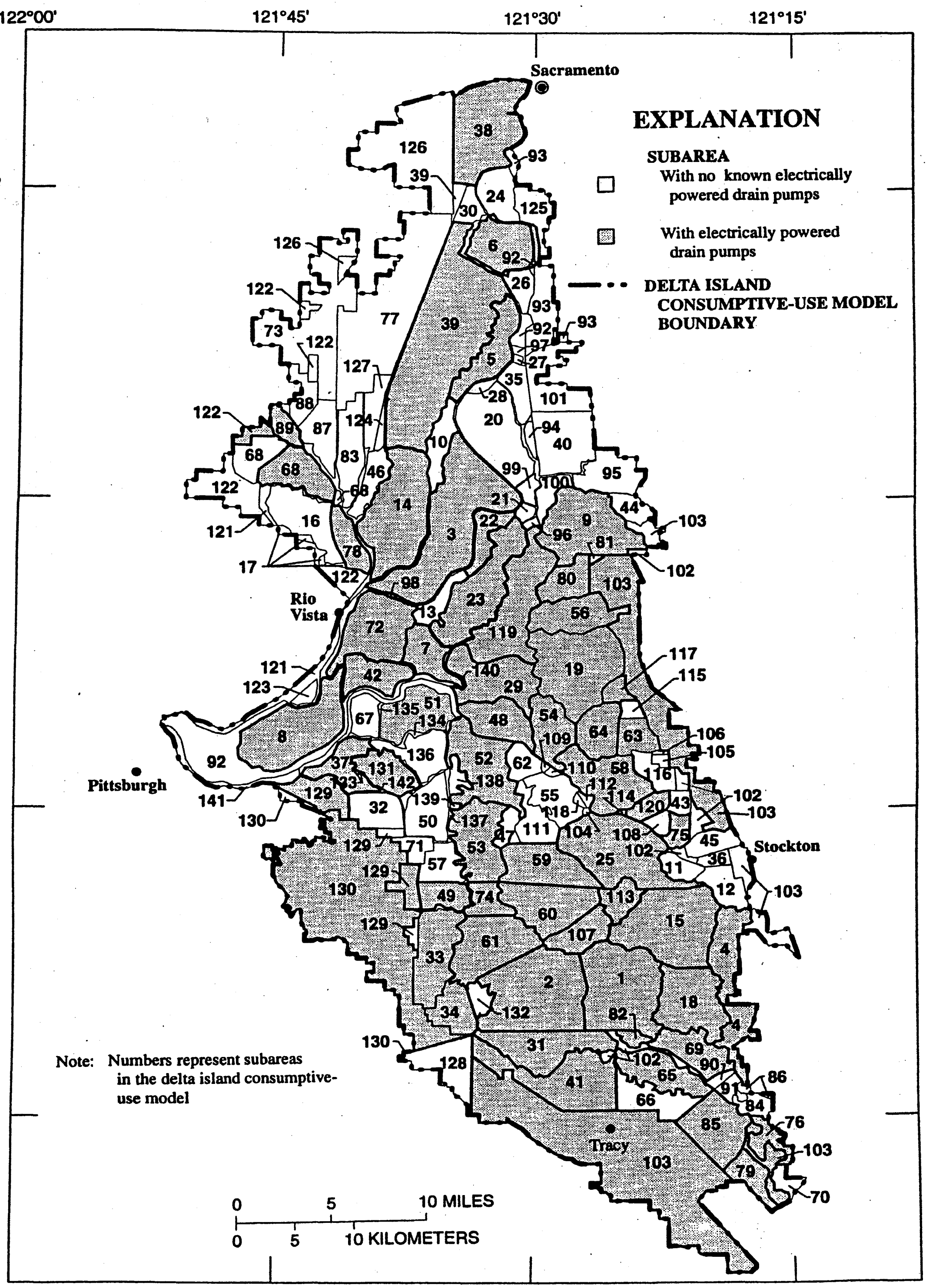


Figure 6. Subareas of the California Department of Water Resources' delta island consumptive-use model for the Sacramento-San Joaquin Delta, California.

Table 4. Drainage returns estimated monthly for aggregated areas of the California Department of Water Resources' delta island consumptive-use model for the Sacramento-San Joaquin Delta, California, January 1995 through February 1996

[Area 2 is omitted because no power-consumption data were available. Values are in acre-feet. Area boundaries are shown on figure 3]

	Aggregated area								
	([1])	1	3	4	5	6	7	8	9
Number of pumps	21	2	5	4	2	9	6	6	13
1995									
January	5	0	1,037	0	0	3,086	37	95	184
February	59	0	953	1,638	1,205	6,233	2,523	173	1,047
March	4	0	838	591	2,472	19,409	2,310	6,374	225
April	90	384	1,413	1,756	288	3,254	2,251	163	2,098
May	301	0	329	726	472	9,545	834	13,463	2,246
June	538	0	294	4,487	671	5,046	885	525	2,095
July	323	0	164	406	1,156	4,573	1,345	2,425	3,436
August	538	0	182	490	1,261	8,957	26	2,865	3,614
September	555	0	109	8	0	1,634	0	0	62
October	233	0	9	216	157	1,910	41	391	1,438
November	115	0	13	0	145	2,217	45	662	188
December	8	0	50	152	264	7,313	187	2,175	372
Total	2,769	384	5,391	10,470	8,091	73,177	10,484	29,311	17,005
1996									
January	25	0	276	404	437	13,432	208	3,451	210
February	41	0	688	1,146	1,295	9,838	538	3,828	487
Total	66	0	964	1,550	1,732	23,270	746	7,279	697
TOTAL	2,835	384	6,355	12,020	9,823	96,447	11,230	36,590	17,702

	Aggregated area							
	10	11	12	13	14	15	([2])	Total
Number of pumps	12	8	5	7	29	16	91	236
1995								
January	8,383	4,907	7,115	7,832	3,627	611	744	37,663
February	6,941	2,681	5,262	11,689	3,626	116	1,385	45,531
March	10,683	6,227	4,865	3,851	1,297	1,429	1,280	61,855
April	5,367	2,441	5,620	10,253	3,586	316	2,859	42,139
May	3,953	1,010	1,409	2,998	3,277	1,433	3,198	45,194
June	3,542	2,196	2,063	2,570	2,596	729	5,066	33,303
July	7,133	4,278	2,082	1,754	4,015	1,123	4,781	38,994
August	7,529	3,844	6,062	6,612	4,368	922	5,816	53,086
September	5,197	1,784	2,809	2,882	3,879	446	4,595	23,960
October	2,594	582	1,623	1,905	1,875	402	2,824	16,200
November	1,971	592	1,896	1,927	705	114	614	11,204
December	4,286	3,000	1,547	1,788	303	287	318	22,050
Total	67,579	33,542	42,353	56,061	33,154	7,928	33,480	431,179
1996								
January	4,361	4,635	8,024	10,876	3,266	473	486	50,564
February	12,391	6,252	4,963	7,701	3,841	865	1,199	55,073
Total	16,752	10,887	12,987	18,577	7,107	1,338	1,685	105,637
TOTAL	84,331	44,429	55,340	74,638	40,261	9,266	35,165	536,816

[1]Area outside the delta uplands and lowlands.

[2]Delta uplands.

Table 5. Surface-water withdrawals from the 12 metered siphons on Twitchell Island in the Sacramento-San Joaquin Delta, California, measured weekly by the California Department of Water Resources, August 9, 1994, through January 8, 1996

[Values are in acre-feet. NR, not read; --, no data. Because of different periods of record, these totals will not agree with totals for period in table 6]

Date meter was read	Siphon number and flowmeter number												Total
	No. 2, 95-981-12	No. 3, 95-983-8	No. 4, 94-4586-12	No. 6, 94-5142-08	No. 7, 95-985-16	No. 8, 95-980-10	No. 11, 95-987-18	No. 12, 95-982-12	No. 16, 92-1612-7	No. 17, 94-4559-24	No. 19, 95-986-16	No. 20, 95-984-16	
08/09/94	--	--	--	NR	--	--	--	--	25.06	26.71	--	--	51.77
08/16/94	--	--	--	NR	--	--	--	--	11.23	NR	--	--	11.23
08/23/94	--	--	--	NR	--	--	--	--	18.58	26.02	--	--	44.60
08/30/94	--	--	--	NR	--	--	--	--	6.26	0	--	--	6.26
09/06/94	--	--	--	NR	--	--	--	--	NR	0	--	--	0
09/13/94	--	--	--	NR	--	--	--	--	6.34	0	--	--	6.34
09/20/94	--	--	--	NR	--	--	--	--	NR	0	--	--	0
09/27/94	--	--	--	0.02	--	--	--	--	0	0	--	--	.02
10/11/94	--	--	--	0	--	--	--	--	14.25	0	--	--	14.25
10/19/94	--	--	--	0	--	--	--	--	6.77	0	--	--	6.77
10/26/94	--	--	--	0	--	--	--	--	0	0	--	--	0
11/02/94	--	--	--	0	--	--	--	--	0	0	--	--	0
11/09/94	--	--	--	0	--	--	--	--	0	0	--	--	0
11/16/94	--	--	--	0	--	--	--	--	.08	0	--	--	.08
11/25/94	--	--	--	0	--	--	--	--	0	0	--	--	0
11/30/94	--	--	--	0	--	--	--	--	0	0	--	--	0
12/07/94	--	--	--	0	--	--	--	--	0	0	--	--	0
12/14/94	--	--	--	0	--	--	--	--	0	0	--	--	0
12/21/94	--	--	--	0	--	--	--	--	1.64	0	--	--	1.64
01/04/95	--	--	--	0	--	--	--	--	0	0	--	--	0
01/11/95	--	--	--	NR	--	--	--	--	0	0	--	--	0
01/18/95	--	--	--	0	--	--	--	--	0	0	--	--	0
01/25/95	--	--	--	0	--	--	--	--	0	0	--	--	0
02/01/95	--	--	--	0	--	--	--	--	0	0	--	--	0
02/08/95	--	--	--	0	--	--	--	--	0	0	--	--	0
02/15/95	--	--	--	0	--	--	--	--	0	0	--	--	0
02/22/95	--	--	--	0	--	--	--	--	0	0	--	--	0

Table 5. Surface-water withdrawals from the 12 metered siphons on Twitchell Island in the Sacramento-San Joaquin Delta, California, measured weekly by the California Department of Water Resources, August 9, 1994, through January 8, 1996—Continued

Date meter was read	Siphon number and flowmeter number												Total
	No. 2, 95-981-12	No. 3, 95-983-8	No. 4, 94-4586-12	No. 6, 94-5142-08	No. 7 95-985-16	No. 8, 95-980-10	No. 11, 95-987-18	No. 12, 95-982-12	No. 16, 92-1612-7	No. 17, 94-4559-24	No. 19, 95-986-16	No. 20, 95-984-16	
03/01/95	--	--	--	0	--	--	--	--	0.54	0	--	--	0.54
03/08/95	--	--	--	0	--	--	--	--	0	0	--	--	0
03/15/95	--	--	--	0	--	--	--	--	NR	0	--	--	0
03/22/95	--	--	--	0	--	--	--	--	NR	0	--	--	0
03/29/95	--	--	--	0	--	--	--	--	0	0	--	--	0
04/05/95	--	--	--	NR	--	--	--	--	0	0	--	--	0
04/12/95	--	--	--	0	--	--	--	--	0	0	--	--	0
04/19/95	--	--	--	NR	--	--	--	--	0	0	--	--	0
04/26/95	--	--	--	NR	--	--	--	--	0	0	--	--	0
05/01/95	--	--	--	NR	--	--	--	--	0	0	--	--	0
05/08/95	--	--	--	NR	--	--	--	--	0	0	--	--	0
05/15/95	--	--	--	NR	--	--	--	--	NR	NR	--	--	0
05/22/95	--	--	--	0	--	--	--	--	0	0	--	--	0
05/30/95	--	--	--	0	--	--	--	--	0	0	--	--	0
06/05/95	--	--	--	NR	--	--	--	--	5.96	0	--	--	5.96
06/12/95	--	--	--	NR	--	--	--	--	4.99	0	--	--	4.99
06/19/95	NR	0	0	0	0	0	36.42	0	5.10	0	0	0	41.52
06/26/95	0	NR	NR	0	NR	0	77.49	NR	4.52	0	0	NR	82.01
07/03/95	0	0	0	0	0	0	74.57	NR	11.39	0	0	.02	85.98
07/10/95	0	0	0	0	0	4.30	55.06	NR	0	0	0	.01	59.37
07/17/95	0	.40	0	0	0	18.67	77.85	0	12.16	0	0	0	109.08
07/24/95	0	0	0	0	0	22.84	122.07	0	11.49	0	46.05	0	202.45
07/31/95	0	.07	.01	0	0	30.41	145.29	0	34.07	0	36.76	0	246.61
08/07/95	0	NR	NR	NR	NR	NR	NR	NR	.13	0	12.34	3.30	15.77
08/14/95	0	40.44	42.53	0	0	32.73	207.42	.04	35.53	1.74	0	1.93	362.36
08/21/95	0	15.49	22.79	0	0	27.20	50.53	0	22.85	53.06	102.07	.03	294.02
08/28/95	0	30.42	0	0	NR	22.99	96.03	0	27.02	50.46	24.70	3.27	254.89

Table 5. Surface-water withdrawals from the 12 metered siphons on Twitchell Island in the Sacramento-San Joaquin Delta, California, measured weekly by the California Department of Water Resources, August 9, 1994, through January 8, 1996—Continued

Date meter was read	Siphon number and flowmeter number												Total
	No. 2, 95-981-12	No. 3, 95-983-8	No. 4, 94-4586-12	No. 6, 94-5142-08	No. 7 95-985-16	No. 8, 95-980-10	No. 11, 95-987-18	No. 12, 95-982-12	No. 16, 92-1612-7	No. 17, 94-4559-24	No. 19, 95-986-16	No. 20, 95-984-16	
09/05/95	0	16.45	0	0	0	16.73	58.25	0	25.38	0.99	0	0	117.80
09/11/95	0	0	0	0	0	0	22.61	0	.11	0	0	0	22.72
09/18/95	0	0	0	0	0	0	0	0	0	0	0	0	0
09/25/95	0	0	0	0	0	0	0	0	0	0	0	NR	0
10/02/95	0	0	0	0	0	0	0	0	0	0	0	.11	.11
10/10/95	0	0	0	0	0	0	0	0	0	0	0	0	0
10/16/95	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0
10/23/95	0	0	0	0	0	0	0	0	0	0	0	0	0
10/30/95	0	0	0	0	0	0	0	0	0	0	0	0	0
11/06/95	0	NR	NR	NR	NR	NR	NR	NR	0	0	0	NR	0
11/14/95	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0
11/20/95	0	NR	NR	NR	NR	NR	NR	NR	0	0	0	NR	0
11/27/95	0	0	0	NR	0	NR	0	NR	0	0	0	NR	0
12/04/95	0	0	0	NR	NR	0	0	0	0	0	0	NR	0
12/11/95	0	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0
12/18/95	0	0	0	0	0	NR	0	0	0	0	0	NR	0
01/08/96	0	0	0	0	0	0	0	0	0	0	399.45	NR	399.45
Total	0	103.27	65.33	0.02	0	175.87	1,023.59	0.04	291.45	158.98	621.37	8.67	2,448.59

for the 12 metered siphons on Twitchell Island, and USGS recorded readings monthly between March 1994 and January 1996 (table 6). Measured surface-water withdrawals were largest during July and August 1995. Because 9 of the 21 siphons on the island were not measured, it is not known if total monthly withdrawals for Twitchell Island were also largest during July and August.

Withdrawals at siphon 16 totaled more than 400 acre-ft during a 23-month period of record and more than 200 acre-ft for calendar year 1995 (table 6). At siphons 6 and 17, measured withdrawals were 0 and 170 acre-ft, respectively, for an 18-month period of record. At siphon 17, more than 100 acre-ft was siphoned during calendar year 1995; siphon 6 was not used during the 18-month period of record.

The remaining nine metered siphons had 8-month periods of record (table 6). Siphons 11 and 19 had the largest recorded withdrawals. Withdrawals at siphon 11 totaled more than 1,000 acre-ft between June and September 1995, with recorded monthly values of about 440 and 370 acre-ft for July and August 1995, respectively. Siphon 19 had the largest recorded monthly value, about 450 acre-ft, during December 1995; however, this monthly value includes the reading for the first 10 days of January 1996. The December reading was not made until January 9 or 10, 1996. Withdrawals at the nine remaining metered siphons ranged from 0 acre-ft at siphons 2 and 7 to about 180 acre-ft at siphon 8.

LAND USE

Land-use maps for 1968 were digitized and compared with digital land-use maps available for 1991. Changes in crop acreages between 1968 and 1991 were identified, and the crop types were aggregated into the subareas of DWR's delta island consumptive-use model.

Methods

DWR used USGS 7.5-minute topographic quadrangle maps to map land use in the delta in 1968 using their standard mapping methods (California Department of Water Resources, 1971). DWR provided USGS with full-size paper copies of these maps from which land-use coverages were created. USGS digitized the land-use maps, quality assured the data, and aggregated the data into subareas (fig. 6) of DWR's delta island consumptive-use model using ARC/INFO.

Land use during 1991 was mapped and digitized by DWR, and an ARC/INFO coverage was created by the California Department of Pesticide Regulation. These 1991 data were compared with the 1968 data. Delineations of subareas of DWR's delta island consumptive-use model (California Department of Water Resources, 1995) were used to create the coverage of the subareas (fig. 6) used in this study to aggregate land use and drainage returns.

Quality-assurance checks included automated analyses done within ARC/INFO at the time the maps were digitized and visual comparisons between the original copies and the digitized maps. In addition, differences were calculated between the digitized and the actual locations of the corners of the 7.5 minute topographic quadrangle maps to estimate the error introduced in digitizing the paper maps.

The 34 individual land-use coverages for 1968 were combined into a single coverage for the entire study area. The coverages for 1968 and 1991 were combined with the coverage of DWR's delta island consumptive-use model, and land-use acreages were then tabulated by subarea. The land-use attributes used for the 1991 coverage were also used with the 1968 data. The aggregated data are limited because the mapping of the 1968 data was less detailed and less complete than the 1991 data.

Results

The differences among the 34 quadrangles digitized for 1968 land use were, for the most part, within the standard of 0.005, with differences ranging from 0.001 to 0.018. This variability is attributed primarily to the use of paper copies of the maps, which are not scale stable. This degree of variability, however, was acceptable for the purposes of this report

Annual land-use data for 1968 and 1991 were aggregated by subareas of DWR's delta island consumptive-use model for comparison (table 7). The changes in acreage totals for land uses throughout the delta between 1968 and 1991 indicate that native vegetation decreased by 25 percent (39,945 acres), from 159,259 acres to 119,314 acres, and grain and hay crops increased by 340 percent (71,452 acres), from 21,034 acres in 1968 to 92,486 acres in 1991 (table 7). Field-crop acreage on Twitchell Island (subarea 42, fig. 6) increased by 44 percent (782 acres), from 1,787 acres in 1968 to 2,569 acres in 1991, and native vegetation decreased 77 percent (855 acres), from 1,115 to 260 acres between 1968 and 1991 (table 7).

Table 6. Surface-water withdrawals from the 12 metered siphons on Twitchell Island in the Sacramento-San Joaquin Delta, California, measured monthly by the U.S. Geological Survey, March 1994 through January 1996

[Values are in acre-feet. NR, not read; --, no data]

Month	Siphon number and flowmeter number												Partial total for months and years
	No. 2, 95-981-12	No. 3, 95-983-8	No. 4, 94-4586-12	No. 6, 94-5142-08	No. 7, 95-985-16	No. 8 95-980-10	No. 11, 95-987-18	No. 12, 95-982-12	No. 16, 92-1612-7	No. 17, 94-4559-24	No. 19 95-986-16	No. 20, 95-984-16	
1994													
March	--	--	--	--	--	--	--	--	0.01	--	--	--	0.01
April	--	--	--	--	--	--	--	--	3.95	--	--	--	3.95
May	--	--	--	--	--	--	--	--	38.07	--	--	--	38.07
June	--	--	--	--	--	--	--	--	21.82	--	--	--	21.82
July	--	--	--	--	--	--	--	--	88.73	--	--	--	88.73
August	--	--	--	0	--	--	--	--	61.14	52.73	--	--	113.87
September	--	--	--	0	--	--	--	--	14.17	0	--	--	14.17
October	--	--	--	0	--	--	--	--	13.19	0	--	--	13.19
November	--	--	--	0	--	--	--	--	.08	0	--	--	.08
December	--	--	--	0	--	--	--	--	1.64	0	--	--	1.64
Total				0					242.80	52.73			295.53
1995													
January	--	--	--	0	--	--	--	--	0	0	--	--	0
February	--	--	--	0	--	--	--	--	.54	0	--	--	.54
March	--	--	--	0	--	--	--	--	0	0	--	--	0
April	--	--	--	0	--	--	--	--	0	0	--	--	0
May	--	--	--	0	--	--	--	--	0	0	--	--	0
June	[1]0	[1]0	[1]0	0	[1]0	[1]0	[1]163.86	[1]0	31.96	0	[1]0	[1]0.02	195.84
July	0	1.11	.04	0	0	80.77	440.87	.04	57.83	0	95.15	.01	675.82
August	0	102.17	65.29	0	0	79.00	370.81	0	110.80	106.25	126.77	8.53	969.62
September	0	0	0	0	0	16.10	48.05	0	.11	0	0	.11	64.37
October	0	0	0	0	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	[2]450.07	0	450.07
Total	0	103.28	65.33	0	0	175.87	1,023.59	0.04	201.24	106.25	671.99	8.67	2,356.26
1996													
January	0	0	0	0	0	0	0	0	0	11.89	0	0	11.89
TOTAL	0	103.28	65.33	0	0	175.87	1,023.59	0.04	444.04	170.87	671.99	8.67	2,663.68

[1]Indicates incomplete readings for month meter was installed.

[2]December reading includes the first 10 days of January 1996. The total for December 1996 is 50.62 acre-feet larger than total for January 8, 1996, in table 5 because of the 2 added days to the December reading (meter was read by the U.S. Geological Survey January 10, 1996)

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California

[Values are in acres. <, actual value is less than shown]

Land use	Subarea 1		Subarea 2		Subarea 3		Subarea 4		Subarea 5	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	208	513	0	0	1,691	1,904	240	176	238	381
Grain and hay crops	980	675	918	425	0	4,579	<1	546	0	890
Field crops	2,476	3,367	1,953	5,739	7,288	6,471	1,501	890	2,478	846
Truck and berry crops	5,125	2,740	7,353	2,291	2,969	1,849	774	1,716	1,075	777
Pasture	2,450	3,974	2,519	4,403	1,749	1,048	3,076	2,134	242	548
Vineyards	0	0	0	0	0	0	76	0	0	1,093
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	38	0	8	0	0	0	382	0	25
Semiagricultural	28	75	50	77	0	174	<1	108	0	69
Native	502	390	960	809	3,146	778	1,766	819	879	308
Urban	0	10	0	0	85	153	86	1,053	0	23
Undesignated	13	1	2	0	0	0	145	<1	0	3
Total acres	11,782	11,783	13,755	13,752	16,928	16,956	7,664	7,824	4,912	4,963
Double-crop acres	0	0	0	0	0	27	0	159	0	51

Land use	Subarea 6		Subarea 7		Subarea 8		Subarea 9		Subarea 10	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	19	0	0	0	0	0	0	0	13
Deciduous fruits and nuts	46	21	2	0	56	0	153	281	1,055	1,080
Grain and hay crops	0	882	0	441	0	1,732	1,874	1,668	0	181
Field crops	2,665	2,316	2,092	2,605	3,172	6,589	2,116	3,336	892	454
Truck and berry crops	380	1,094	137	0	946	463	3,193	2,061	147	285
Pasture	1,195	1,045	62	0	521	380	1,851	556	270	167
Vineyards	0	202	0	0	0	0	23	1,174	0	153
Rice	0	0	0	0	0	0	26	0	0	0
Idle	0	23	0	38	0	646	34	1	0	1
Semiagricultural	0	34	0	2	0	47	40	128	0	32
Native	1,544	111	1,094	135	2,750	528	332	507	250	245
Urban	0	111	46	213	5	51	279	428	0	5
Undesignated	29	0	0	0	2,986	0	53	0	0	0
Total acres	5,859	5,858	3,433	3,434	10,436	10,436	9,974	10,140	2,614	2,616
Double-crop acres	0	0	0	0	0	0	0	165	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 11		12		13		14		15	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	20	0	0
Deciduous fruits and nuts	0	0	0	0	203	115	172	420	166	49
Grain and hay crops	0	358	<1	0	0	357	0	3,263	1,381	1,306
Field crops	0	0	0	0	655	889	6,832	3,879	1,670	3,424
Truck and berry crops	0	0	84	0	53	0	2,173	2,126	2,499	3,049
Pasture	0	0	22	78	151	0	551	1,170	5,049	3,134
Vineyards	0	0	0	0	0	0	0	537	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	0	0	0	0	3	0	23	0	33
Semiagricultural	0	0	0	174	0	12	0	80	63	148
Native	31	444	650	350	492	165	2,250	440	293	251
Urban	1,529	836	1,925	2,079	174	188	<1	9	381	585
Undesignated	78	0	<1	0	0	0	0	13	477	0
Total acres	1,638	1,638	2,681	2,681	1,728	1,729	11,978	11,980	11,979	11,979
Double-crop acres	0	0	0	0	0	0	0	0	0	0
Land use	**Subarea 16**		**17**		**18**		**19**		**20**	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	41	211	0	0	1,541	1,509
Grain and hay crops	0	347	0	127	12	1,473	1,573	3,299	424	871
Field crops	1,389	1,551	3	39	0	1,944	4,870	5,211	3,529	2,537
Truck and berry crops	647	0	0	0	143	1,054	3,574	357	1,270	1,952
Pasture	317	1,100	<1	22	167	2,790	<1	1,039	1,793	332
Vineyards	0	0	0	0	0	122	0	191	81	1,003
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	1,373	0	67	0	20	95	134	0	267
Semiagricultural	0	14	0	0	<1	80	7	52	80	139
Native	3,198	1,149	569	243	128	266	779	954	103	126
Urban	0	16	0	72	0	0	68	39	0	84
Undesignated	0	0	0	0	7,224	0	75	0	0	0
Total acres	5,551	5,550	572	570	7,715	7,960	11,041	11,276	8,821	8,820
Double-crop acres	0	0	0	0	0	245	0	235	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 21		Subarea 22		Subarea 23		Subarea 24		Subarea 25	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	28	<1	423	435	250	275	8	0	28	14
Grain and hay crops	0	147	0	586	0	2,665	0	0	2,027	2,830
Field crops	166	0	988	705	5,422	4,922	625	0	3,939	2,688
Truck and berry crops	97	0	412	234	509	199	525	7	3,839	3,136
Pasture	0	179	143	218	91	351	470	0	508	1,534
Vineyards	0	0	0	21	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	9	0	0	0	0	0	0	0	214
Semiagricultural	0	4	0	28	0	40	0	124	60	114
Native	123	42	445	190	2,642	446	293	366	859	779
Urban	88	122	21	17	23	39	37	2,759	219	272
Undesignated	0	0	0	0	0	0	1,299	0	101	0
Total acres	502	503	2,432	2,434	8,937	8,937	3,257	3,256	11,580	11,581
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Land use	Subarea 26		Subarea 27		Subarea 28		Subarea 29		Subarea 30	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	106	118	118	0	357	338	0	0	0	0
Grain and hay crops	0	290	0	0	0	0	0	1,993	0	228
Field crops	655	628	<1	0	0	0	4,299	3,396	621	201
Truck and berry crops	412	233	4	0	49	0	856	0	0	366
Pasture	96	162	0	0	<1	0	76	0	299	413
Vineyards	0	0	0	112	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	0	0	0	0	45	0	4	0	0
Semiagricultural	0	39	0	8	0	6	0	18	0	6
Native	322	122	8	10	16	36	1,673	1,340	386	130
Urban	0	0	0	0	3	0	11	165	0	29
Undesignated	0	0	0	0	0	0	0	0	65	0
Total acres	1,591	1,592	130	130	425	425	6,915	6,916	1,371	1,373
Double-crop acres	0	0	0	0	0	0	0	0	0	0

14-25

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea									
	31		32		33		34		35	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	62	53	23	0	0	0	0	0	139	162
Grain and hay crops	0	261	0	157	513	804	0	0	147	115
Field crops	1,066	743	0	0	2,391	732	297	540	938	675
Truck and berry crops	2,400	2,976	0	0	1,710	1,205	195	0	239	240
Pasture	2,491	2,242	1,864	1,652	1,206	1,091	37	0	610	101
Vineyards	0	0	0	0	0	0	0	0	0	782
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	37	0	433	0	69	2,533	13	0	25
Semiagricultural	0	24	47	52	0	12	8	6	0	15
Native	838	475	1,206	769	344	1,231	322	2,869	88	49
Urban	0	25	256	332	192	1,227	0	0	0	0
Undesignated	0	22	0	0	15	0	35	0	0	0
Total acres	6,857	6,858	3,396	3,395	6,371	6,371	3,427	3,428	2,161	2,164
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Land use	Subarea									
	36		37		38		39		40	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	94	13	75	180	132
Grain and hay crops	0	0	0	0	0	1,190	0	6,089	686	932
Field crops	0	0	571	0	0	2,815	11,658	8,281	2,331	2,195
Truck and berry crops	0	0	0	0	0	249	4,771	4,217	250	475
Pasture	0	0	2,355	2,805	0	600	5,287	4,444	2,558	2,033
Vineyards	0	0	0	0	0	53	0	716	0	310
Rice	0	0	0	0	0	0	0	0	325	0
Idle	0	0	0	16	0	422	0	381	51	0
Semiagricultural	0	0	0	9	0	192	10	377	36	63
Native	0	87	626	729	0	1,002	3,780	1,319	141	348
Urban	772	685	8	0	0	4,360	153	245	0	71
Undesignated	0	0	0	0	10,976	1	159	3	0	0
Total acres	772	772	3,560	3,559	10,976	10,978	25,831	26,147	6,558	6,559
Double-crop acres	0	0	0	0	0	0	0	316	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 41		Subarea 42		Subarea 43		Subarea 44		Subarea 45	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	23	28	0	0	0	0	0	0	0	0
Grain and hay crops	0	665	0	189	151	0	102	167	1	0
Field crops	1,495	1,511	1,787	2,569	105	0	201	768	<1	0
Truck and berry crops	1,906	1,027	597	242	222	0	385	307	0	0
Pasture	3,538	3,911	133	320	0	0	259	185	0	0
Vineyards	0	0	0	0	0	0	0	213	0	0
Rice	0	0	0	0	0	0	600	0	0	0
Idle	0	235	0	25	0	0	0	0	0	0
Semiagricultural	0	272	0	15	0	14	10	9	0	0
Native	2,069	501	1,115	260	183	129	203	99	33	149
Urban	578	1,569	0	10	301	828	0	0	2,025	1,911
Undesignated	0	25	0	0	9	<1	9	23	0	0
Total acres	9,609	9,744	3,632	3,630	971	971	1,769	1,771	2,059	2,060
Double-crop acres	0	134	0	0	0	0	0	0	0	0

Land use	Subarea 46		Subarea 47		Subarea 48		Subarea 49		Subarea 50	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	0	0	0	0
Grain and hay crops	0	390	0	0	0	1,146	0	172	0	2,926
Field crops	716	613	759	0	2,232	1,575	929	438	1,730	63
Truck and berry crops	471	254	0	0	306	0	837	1,147	434	0
Pasture	0	0	0	0	0	0	180	381	689	304
Vineyards	0	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	0	0	0	0	0	0	32	0	481
Semiagricultural	0	<1	0	0	0	4	0	32	63	14
Native	1,165	1,089	545	1,304	2,039	1,851	479	214	1,315	442
Urban	0	0	0	0	0	<1	0	9	0	0
Undesignated	0	7	0	0	0	0	0	0	0	0
Total acres	2,352	2,353	1,304	1,304	4,577	4,576	2,425	2,425	4,231	4,230
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea									
	51		52		53		54		55	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	32	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	3	1	0	0	0	0	0	0
Grain and hay crops	0	1,334	0	401	0	0	0	1,344	0	643
Field crops	4,074	3,464	1,216	2,916	402	2,215	2,638	1,982	1,083	1,001
Truck and berry crops	26	0	2,932	1,017	4,422	2,908	605	123	1,896	863
Pasture	0	0	0	6	0	0	0	0	0	389
Vineyards	0	0	238	475	0	57	0	0	12	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	46	0	50	0	29	0	0	0	139
Semiagricultural	0	25	0	32	0	36	0	11	0	17
Native	1,347	581	3,385	2,843	1,780	1,407	1,190	967	730	604
Urban	0	0	0	1	0	25	0	7	0	66
Undesignated	3	0	0	0	73	0	0	0	2	0
Total acres	5,450	5,450	7,774	7,774	6,677	6,677	4,433	4,434	3,723	3,722
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Land use	Subarea									
	56		57		58		59		60	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	3	0	0	0	0	0	0	0	0
Grain and hay crops	767	596	0	1,309	71	712	922	1,756	765	1,073
Field crops	1,600	2,217	1,752	574	3,678	4,535	2,611	930	4,205	2,169
Truck and berry crops	623	405	0	15	2,549	1,025	798	2,582	1,068	1,952
Pasture	1,729	691	22	292	105	19	1,229	0	0	685
Vineyards	0	511	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	146	0	81	0	133	0	267	0	0
Semiagricultural	0	25	0	3	0	32	0	32	0	13
Native	323	488	791	289	644	670	391	311	800	834
Urban	0	0	0	0	0	0	0	82	0	112
Undesignated	37	0	0	0	80	0	0	0	0	0
Total acres	5,079	5,082	2,565	2,563	7,127	7,126	5,951	5,960	6,838	6,838
Double-crop acres	0	0	0	0	0	0	0	8	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 61		62		63		64		65	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	0	0	36	7
Grain and hay crops	0	1,318	0	134	755	446	0	1,890	0	85
Field crops	6,760	934	521	952	623	152	1,493	931	582	1,067
Truck and berry crops	118	3,238	0	0	591	192	1,245	512	1,636	1,346
Pasture	0	1,481	0	0	0	1,276	0	0	2,013	1,977
Vineyards	0	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	0	0	0	67	0	0	0	0	68
Semiagricultural	0	11	0	0	0	4	0	4	0	99
Native	901	798	1,280	702	236	184	1,111	735	607	191
Urban	0	79	0	22	0	18	11	29	0	78
Undesignated	0	0	9	0	0	0	0	0	43	0
Total acres	7,779	7,859	1,810	1,810	2,272	2,272	3,860	4,101	4,917	4,918
Double-crop acres	0	79	0	0	0	0	0	241	0	0

Land use	Subarea 66		67		68		69		70	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	7	0	0	0	0	0	170	123	0	0
Grain and hay crops	0	84	0	0	0	292	0	693	0	0
Field crops	622	809	1,097	0	2,431	1,586	1,234	356	110	242
Truck and berry crops	680	518	0	0	1,491	517	618	1,215	351	260
Pasture	2,004	1,576	99	637	2,317	2,257	1,450	1,454	304	328
Vineyards	0	0	0	0	0	29	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	32	0	1,287	0	1,664	0	0	0	50
Semiagricultural	19	116	0	9	0	37	0	7	13	24
Native	582	342	964	206	1,236	1,094	692	360	291	167
Urban	186	624	15	35	0	0	0	28	21	20
Undesignated	0	0	0	0	0	0	73	0	0	0
Total acres	4,100	4,101	2,175	2,174	7,475	7,476	4,237	4,236	1,090	1,091
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea									
	71		72		73		74		75	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	192	165	0	0	0	0	0	0
Grain and hay crops	0	882	0	1,530	0	3,297	0	899	429	210
Field crops	752	0	3,393	5,084	1,438	2,672	429	0	356	30
Truck and berry crops	153	0	360	25	488	62	612	749	361	0
Pasture	169	74	573	63	8,493	3,910	0	0	0	188
Vineyards	0	0	0	103	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	257	0	45	0	2,255	0	40	0	80
Semiagricultural	0	0	0	33	0	56	0	5	0	6
Native	286	148	3,211	546	2,848	993	1,117	453	190	149
Urban	0	0	15	151	43	143	0	13	<1	674
Undesignated	0	0	0	0	0	<1	0	0	0	0
Total acres	1,360	1,361	7,744	7,745	13,310	13,388	2,158	2,159	1,336	1,337
Double-crop acres	0	0	0	0	0	79	0	0	0	0

Land use	Subarea									
	76		77		78		79		80	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	1	0	0	0
Grain and hay crops	0	120	0	1,548	0	<1	0	79	1,374	456
Field crops	311	458	3,419	3,365	1,148	1,657	470	292	893	1,835
Truck and berry crops	399	321	470	192	455	283	540	203	181	412
Pasture	887	895	4,507	1,455	495	560	324	1,418	285	114
Vineyards	0	0	0	0	0	0	0	0	0	0
Rice	0	0	458	0	0	0	0	0	0	0
Idle	0	23	0	6,195	0	98	0	97	119	0
Semiagricultural	0	13	0	20	0	0	0	26	10	11
Native	263	47	10,998	7,058	710	208	887	103	252	300
Urban	0	<1	0	0	0	0	249	252	0	0
Undesignated	17	0	0	1	0	0	0	<1	15	0
Total acres	1,877	1,877	19,852	19,834	2,808	2,806	2,471	2,470	3,129	3,128
Double-crop acres	0	0	18	0	0	0	0	0	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 81		Subarea 82		Subarea 83		Subarea 84		Subarea 85	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	2	5	31	40
Grain and hay crops	0	0	88	130	0	2,537	0	72	0	233
Field crops	0	56	139	212	2,357	1,231	432	438	703	1,604
Truck and berry crops	64	0	223	0	1,152	265	337	346	2,805	1,459
Pasture	95	61	236	308	0	0	15	192	1,049	1,943
Vineyards	0	50	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	0	0	0	0	26	0	13	0	39
Semiagricultural	0	0	0	3	0	221	0	8	10	70
Native	0	0	58	90	1,089	319	533	247	1,394	360
Urban	0	0	0	0	0	0	0	0	156	412
Undesignated	7	0	0	0	0	0	0	0	12	0
Total acres	166	167	744	743	4,598	4,599	1,319	1,321	6,160	6,160
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Land use	Subarea 86		Subarea 87		Subarea 88		Subarea 89		Subarea 90	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	0	0	17	6
Grain and hay crops	0	0	0	0	0	795	0	0	0	68
Field crops	0	0	1,113	225	0	220	355	73	76	0
Truck and berry crops	47	51	112	582	0	0	0	0	5	98
Pasture	7	0	211	1,616	790	0	987	955	238	258
Vineyards	0	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	8	0	659	0	0	0	328	0	0
Semiagricultural	0	0	0	54	0	0	0	0	0	0
Native	107	87	2,039	350	1,320	1,096	173	159	127	14
Urban	54	69	11	0	0	0	0	0	5	92
Undesignated	0	0	0	0	0	0	0	0	0	0
Total acres	215	215	3,486	3,486	2,110	2,111	1,515	1,515	468	536
Double-crop acres	0	0	0	0	0	0	0	0	0	68

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 91 1968	91 1991	92 1968	92 1991	93 1968	93 1991	94 1968	94 1991	95 1968	95 1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	273	222	0	0	0	0	0	79
Grain and hay crops	0	24	16	91	0	268	29	0	259	571
Field crops	176	0	349	192	561	784	250	168	545	1,193
Truck and berry crops	219	44	15	8	304	16	190	159	267	190
Pasture	132	514	151	59	601	217	0	171	2,264	685
Vineyards	0	0	<1	64	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	31	0
Idle	0	0	0	<1	0	107	0	0	18	71
Semiagricultural	0	16	2	13	<1	75	0	1	0	22
Native	395	275	7,684	15,036	3,918	3,255	64	34	860	1,428
Urban	9	58	19	152	1,656	2,839	0	0	0	25
Undesignated	0	0	7,328	0	519	<1	0	0	21	<1
Total acres	931	931	15,837	15,837	7,559	7,561	533	533	4,265	4,264
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Land use	Subarea 96 1968	96 1991	97 1968	97 1991	98 1968	98 1991	99 1968	99 1991	100 1968	100 1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	5	0	0	0	76	89	0	0
Grain and hay crops	0	0	73	0	0	0	0	0	383	181
Field crops	189	0	87	0	35	30	52	0	611	1,067
Truck and berry crops	0	190	1	0	0	0	0	0	369	276
Pasture	0	0	2	79	0	0	0	92	129	0
Vineyards	0	0	0	10	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	0	0	14	0	0	0	54	0	0
Semiagricultural	0	0	9	2	0	0	0	3	0	3
Native	38	36	32	90	11	3	600	490	90	60
Urban	0	0	45	55	13	27	24	24	0	3
Undesignated	0	0	0	0	0	0	0	0	7	0
Total acres	227	226	254	250	59	60	752	752	1,589	1,590
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 101		Subarea 102		Subarea 103		Subarea 104		Subarea 105	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	187	269	5,309	5,505	0	0	0	0
Grain and hay crops	452	269	352	20	645	2,429	0	0	224	0
Field crops	1,060	1,924	551	0	6,008	12,112	0	0	5	0
Truck and berry crops	22	130	479	251	14,308	4,654	0	0	90	0
Pasture	2,676	1,293	421	14	16,390	11,368	0	0	<1	0
Vineyards	0	303	0	167	0	470	0	0	0	0
Rice	69	0	0	0	98	0	0	0	0	0
Idle	0	57	0	190	0	1,751	0	0	0	296
Semiagricultural	0	59	17	147	406	939	0	0	0	0
Native	747	938	781	847	5,326	2,802	89	89	59	82
Urban	1	96	452	1,340	6,154	13,078	0	0	0	0
Undesignated	42	0	3	0	184	69	0	0	0	0
Total acres	5,069	5,069	3,243	3,245	54,828	55,177	89	89	378	378
Double-crop acres	0	0	0	0	0	348	0	0	0	0

Land use	Subarea 106		Subarea 107		Subarea 108		Subarea 109		Subarea 110	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	0	0	0	0
Grain and hay crops	1	0	734	0	0	711	0	0	0	0
Field crops	15	0	813	739	402	0	0	0	0	0
Truck and berry crops	<1	0	1,536	1,711	397	60	0	0	0	0
Pasture	0	0	2	563	0	0	0	0	0	0
Vineyards	0	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	19	0	0	0	0	0	0	0	0
Semiagricultural	0	0	0	12	0	0	0	0	0	0
Native	90	84	153	267	85	112	130	130	195	195
Urban	0	0	0	0	0	0	0	0	0	0
Undesignated	0	4	55	0	0	0	0	0	0	0
Total acres	106	107	3,293	3,292	884	883	130	130	195	195
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 111		112		113		114		115	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	0	0	0	0
Grain and hay crops	0	273	0	0	69	126	0	0	254	351
Field crops	477	0	0	0	586	682	0	0	169	55
Truck and berry crops	1,329	1,533	0	0	926	85	0	0	214	0
Pasture	0	171	0	0	544	1,182	0	0	0	222
Vineyards	138	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	397	0	0	0	45	0	0	0	0
Semiagricultural	0	57	0	0	18	43	0	0	0	7
Native	926	436	248	250	111	58	87	87	92	93
Urban	19	22	0	0	0	39	0	0	0	0
Undesignated	0	0	2	0	6	0	0	0	0	0
Total acres	2,889	2,889	250	250	2,260	2,260	87	87	729	728
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Land use	Subarea 116		117		118		119		120	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	209	0	0	0	0	0	0	0	0
Grain and hay crops	718	264	370	320	0	0	0	3,208	118	529
Field crops	366	178	118	342	0	0	6,407	5,204	249	731
Truck and berry crops	561	266	523	148	0	0	0	337	746	83
Pasture	65	785	0	194	0	0	165	0	0	0
Vineyards	0	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	18	0	0
Idle	0	8	0	0	0	0	0	0	0	0
Semiagricultural	0	6	0	<1	0	0	0	17	0	20
Native	230	209	85	92	182	182	3,276	1,055	260	254
Urban	0	17	0	0	0	0	0	9	106	0
Undesignated	<1	0	0	0	0	0	0	0	6	<1
Total acres	1,940	1,942	1,096	1,096	182	182	9,848	9,848	1,485	1,617
Double-crop acres	0	0	0	0	0	0	0	0	0	133

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 121		122		123		124		125	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	<1	0	0	0	0	0	0	0	<1	0
Grain and hay crops	0	67	0	651	0	0	0	177	0	0
Field crops	29	59	613	323	0	0	244	108	<1	0
Truck and berry crops	2	<1	411	0	0	0	127	177	1	0
Pasture	256	252	1,139	952	0	0	0	0	<1	0
Vineyards	0	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0
Idle	0	7	0	893	0	0	0	0	0	0
Semiagricultural	0	11	0	28	0	0	0	0	0	0
Native	5,313	6,112	6,690	5,185	636	636	181	90	803	1,123
Urban	21	19	103	402	0	0	0	0	<1	1
Undesignated	924	19	0	522	0	0	0	0	321	<1
Total acres	6,545	6,546	8,956	8,956	636	636	552	552	1,125	1,124
Double-crop acres	0	0	0	0	0	0	0	0	0	0

Land use	Subarea 126		127		128		129		130	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	7	0	0	0	0	68	23	13,611	6,045
Grain and hay crops	0	2,811	0	0	0	219	0	531	8	3,415
Field crops	581	6,597	1,357	0	787	0	549	552	1,681	2,244
Truck and berry crops	2,780	2,217	0	0	0	0	591	182	6,409	6,176
Pasture	1,215	1,039	0	0	1,450	2,330	1,157	924	3,176	3,018
Vineyards	0	0	0	0	0	0	59	46	145	255
Rice	696	0	0	0	0	0	0	0	0	0
Idle	0	387	0	0	0	558	0	438	208	3,338
Semiagricultural	0	32	0	0	0	26	83	64	6	571
Native	1,612	1,567	890	2,247	2,303	1,390	3,402	2,605	6,641	3,650
Urban	3	189	0	0	41	155	114	599	891	4,152
Undesignated	7,768	13	0	0	111	15	4	0	3	7
Total acres	14,655	14,859	2,247	2,247	4,692	4,693	6,027	5,964	32,779	32,871
Double-crop acres	0	204	0	0	0	0	64	<1	8	99

Table 7. Land use in 1968 and 1991 for subareas of the California Department of Water Resources' delta island consumptive-use model of the Sacramento-San Joaquin Delta, California—Continued

Land use	Subarea 131		132		133		134		135		136		137	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deciduous fruits and nuts	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grain and hay crops	0	0	369	348	0	0	0	0	0	0	0	0	0	0
Field crops	0	0	0	526	0	0	0	0	1	0	0	0	27	0
Truck and berry crops	0	0	545	31	0	0	0	0	0	0	0	0	0	0
Pasture	1,066	8	0	0	1	0	<1	0	0	0	0	0	0	0
Vineyards	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rice	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Idle	0	2,488	0	0	0	0	0	0	0	0	0	0	0	0
Semiagricultural	70	137	0	3	0	0	0	0	0	0	0	0	0	0
Native	1,908	346	302	304	333	359	1,354	1,365	122	123	3,602	3,602	1,505	1,533
Urban	458	524	0	8	26	<1	12	<1	0	0	0	0	0	0
Undesignated	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Total acres	3,502	3,503	1,220	1,220	360	359	1,366	1,365	123	123	3,602	3,602	1,532	1,533
Double-crop acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Land use	Subarea 138		139		140		141		142		Total	
	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991	1968	1991
Subtropical fruits	0	0	0	0	0	0	0	0	0	0	0	84
Deciduous fruits and nuts	0	0	0	0	0	0	0	0	0	0	27,558	21,184
Grain and hay crops	0	304	0	0	0	0	0	0	0	0	21,034	92,486
Field crops	632	0	0	0	21	0	0	0	0	0	174,621	172,439
Truck and berry crops	0	0	0	0	0	0	0	0	0	0	117,743	80,988
Pasture	0	0	0	0	0	0	0	0	<1	0	108,510	100,056
Vineyards	0	0	0	0	0	0	0	0	0	0	772	9,222
Rice	0	0	0	0	0	0	0	0	0	0	2,303	18
Idle	0	298	0	0	0	0	0	0	0	<1	3,125	31,094
Semiagricultural	0	0	0	0	0	0	0	0	0	0	1,165	6,319
Native	174	204	86	86	2,124	2,145	403	1,604	174	174	159,259	119,314
Urban	0	0	0	0	<1	<1	0	<1	0	<1	20,198	47,495
Undesignated	<1	0	0	0	0	0	1,201	0	0	0	42,630	748
Total acres	806	806	86	86	2,145	2,145	1,664	1,604	174	174	678,918	681,447
Double-crop acres	0	0	0	0	0	0	0	0	0	0	90	2,591

SUMMARY

Partial data on drainage returns and surface-water withdrawals from March 1994 through January 8, 1996, are presented for areas of the Sacramento-San Joaquin Delta.These areas cover most of the delta. Measurements were made using flowmeters installed in drain pipes and siphons, and estimates were made using electric power-consumption data with pump-efficiency-test data. In 1995, measured drainage returns for Twitchell Island totaled about 11,200 acre-feet, whereas estimated drainage returns calculated from power-consumption data totaled about 10,600 acre-feet. Drainage-return estimates for most of the delta totaled about 430,000 acre-feet for 1995. Surface-water withdrawals onto Twitchell Island measured for 12 of 21 siphons totaled about 2,400 acre-feet for 1995.

Data on changes in delta land use between 1968 and 1991 are also presented. Maps of land use in 1968 were digitized and stored in a geographic information system (ARC/INFO) and compared with digital land-use information for 1991. Between 1968 and 1991, native vegetation in the delta decreased by 25 percent (about 40,000 acres), and grain and hay crops increased by 340 percent (about 71,000 acres). For Twitchell Island, native vegetation decreased about 77 percent (about 850 acres), while field-crop acreage increased by about 44 percent (about 780 acres).

REFERENCES CITED

California Department of Water Resources, 1956, Quantity and quality of waters applied to and drained from the delta lowlands: California Department of Water Resources Investigation of the Sacramento-San Joaquin Delta Report no. 4, 30 p.

______ 1971, Land use in California: Bulletin 176, 16 p.

______ 1993, Sacramento-San Joaquin Delta Atlas: Division of Planning, 121 p.

______ 1995, Estimation of delta island diversions and return flows: California Department of Water Resources, Division of Planning, 134 p.

Diamond, Jonathan, and Williamson, A.K., 1983, A summary of ground water pumpage in the Central Valley, California: 1961-77: U.S. Geological Survey Water-Resources Investigations Report 83-4037, 70 p.

Ogilbee, William, and Mitten, H.T., 1970, A continuing program for estimating ground-water pumpage in California: U.S. Geological Survey Open-File Report, 22 p.

Schwankl, L.J., and Hanson, B.R., 1993, Flow meter performance: California Committee on the Relation of Energy to Agriculture, CREA Report no. 92-02. 30 p.

☆U.S. GOVERNMENT PRINTING OFFICE: 1997-585-582/79157

References

Amy, G.L., and others. 1990. "Evaluation of THM Precursor Contributions from Agricultural Drains." *Journal of the American Water Works Association*. pp. 57-64.

California Department of Water Resources. 1956. *Quantity and Quality of Waters Applied to and Drained from the Delta Lowlands*. Department of Water Resources Report No. 4.

________. 1990. *Delta Island Drainage Investigation Report*. Interagency Delta Health Aspects Monitoring Program.

________. 1994. *California Water Plan*. Bulletin 160-93.

________. 1994. *Five-Year Report of the Municipal Water Quality Investigations Program*.

________. May 1996. *California State Water Project Sanitary Survey Update Report 1996*.

________. April 1997. *Water Conditions in California*. Bulletin 120-97.

Eaton, A. D., L. S. Clesceri, and A. E. Greenberg, eds. 1995. 9221-Multiple-Tube Fermentation Technique for Members of the Coliform Group. *In Standard Methods for the Examination of Water and Wastewater*. 19th Edition. Washington D. C.: American Public Health Association.

Edwards, M., 1997. "Predicting DOC Removal During Enhanced Coagulation." *Journal of the American Water Works Association*, 89:5:78-89.

Foster and others. The Sedimentary Data Base: An Appraisal of Lake and Reservoir Sediment Based Studies of Sediment Yield in *Erosion, Transport and Deposition Processes* (Proceedings of the Jerusalem Workshop, March-April 1987). IAHS No. 189, 1990.

Korshin, G.V., and others. 1996. "Use of UV Spectroscopy to Study Chlorination of Natural Organic Matter," in *Water Disinfection and Natural Organic Matter*, R.A. Minear and G.L. Amy, editors.

Krasner, Stuart W., and others. 1996. "Regulatory Impact Analysis of the Disinfectants-Disinfection Byproducts Rule," in *Water Disinfection and Natural Organic Matter*, R.A. Minear and G.L. Amy, editors.

LeChevallier, M.W., and W. D. Norton. 1995. "*Giardia* and *Cryptosporidium* in Raw and Finished Water." *Journal of the American Water Works Association*. 87:(9).

Shum, K.T., and B. Sundby. 1995. Organic Matter Processing in Continental Shelf Sediments--the Subtidal Pump Revisited. *Marine Chemistry*. 53:81-87.

U.S. Department of Agriculture. Soil Conservation Service. 1977. *Soil Survey of Contra Costa County, California*.

________. Soil Conservation Service. 1992. *Soil Survey of San Joaquin County, California*.

U.S. Environmental Protection Agency. April 1996. ICR Membrane Filter Method for C. Perfringens, *Section XI, (EPA/600/R-95/178).*

________. April 1996. ICR Protozoan Method For Detecting *Giardia* Cysts and *Cryptosporidium* Oocysts in Water by a Fluorescent Antibody Procedure, *Section VII, EPA/600/R-95/178.*

Appendix A

Removal of Selected Important Water Quality Parameters

Table A-1. Removal of Important Selected Water Quality Parameters from Twitchell Island Drainage, Sampling Event 2

Parameter[a]	Raw water concentration	Alum treated: Treated water concentration	Alum treated: Percent removal	Ferric chloride treated: Treated water concentration	Ferric chloride treated: Percent removal
TOC	24.4	--	--	--	--
DOC	21.1	5.7	76	4.5	79
UVA_{254}	0.948	0.161	83	0.147	84
THFMP (DWR modified), µg/L					
$CHCl_3$	1900	560	70	390	79
BDCM	340	250	26	220	35
DBCM	45	110	(140)	110	(140)
$CHBr_3$	<20	<10	--	12	--
TTHM	2285	920	60	732	68
THMFP (reactivity based), µg/L					
$CHCl_3$	1400	330	76	220	84
BDCM	340	220	35	180	47
DBCM	<50	130	--	150	--
$CHBr_3$	<50	18	--	31	--
$TTHM_{(R)}$	1740	698	60	581	67
HAAFP (reactivity based), µg/L					
BAA	<10	5.5	--	2.8	--
BCAA	100	41	59	36	64
CAA	<10	<1	--	<1	--
DBAA	<10	22	--	22	--
DCAA	480	67	86	46	90
TCAA	660	43	93	30	95
THAA6	1240	178.5	86	136.8	89

Table A-1 (continued)

Parameter[a]	Raw water concentration	Alum treated: Treated water concentration	Alum treated: Percent removal	Ferric chloride treated: Treated water concentration	Ferric chloride treated: Percent removal
Sulfate	76				
Chloride	158	*	*	*	*
TDS	530				
Bromide	0.5				

[a]All concentrates in mg/L unless otherwise noted.
[b]( ) signifies negative percentage removal; i.e., treatment causes an increase in concentration.
*Note: not enough sample volume returned to run these analyses; see Table A-2 for typical analytical results.

Table A-2. Removal of Important Selected Water Quality Parameters from Bacon Island Drainage, Sampling Event 1

Parameter[a]	Raw water concentration	Alum treated: Treated water concentration	Alum treated: Percent removal	Ferric chloride treated: Treated water concentration	Ferric chloride treated: Percent removal
TOC	26.2	---	---	---	---
DOC	24.2	11.6	52	9.0	63
UVA_{254}	0.997	0.304	70	0.281	72
THFMP (DWR modified), µg/L					
$CHCl_3$	2400	1200	50	980	59
BDCM	150	130	13	110	27
DBCM	<20	<10	---	<10	---
$CHBr_3$	<20	<10	---	<10	---
TTHM	2550	1330	48	1090	57
THMFP (reactivity based), µg/L					
$CHCl_3$	1800	790	73	670	63
BDCM	150	130	13	130	13
DBCM	<50	<20	---	<20	---
$CHBr_3$	<50	<20	---	<20	---
$TTHM_{(R)}$	1960	920	53	800	59
HAAFP (reactivity based), µg/L					
BAA	<10	<4	---	<4	---
BCAA	46	36	22	38	17
CAA	<10	<4	---	<4	---
DBAA	<10	<4	---	<4	---
DCAA	650	240	63	210	68
TCAA	1000	280	72	220	78
THAA6	1696	566	71	468	72

Table A-2 (continued)

Parameter[a]	Raw water concentration	Alum treated		Ferric chloride treated	
		Treated water concentration	Percent removal	Treated water concentration	Percent removal
Sulfate	284	345	(21)	310	(9)
Chloride	98	96	2	131	(34)
TDS	708	747	(6)	727	(3)
Bromide	0.15	0.16	(7)	0.16	(7)

[a]All concentrates in mg/L unless otherwise noted.
[b]( ) signifies negative percentage removal; i.e., treatment causes an increase in concentration.

Table A-3. Removal of Important Selected Water Quality Parameters from Bacon Island Drainage, Sampling Event 2

Parameter[a]	Raw water concentration	Alum treated: Treated water concentration	Alum treated: Percent removal	Ferric chloride treated: Treated water concentration	Ferric chloride treated: Percent removal
TOC	14	--	--	--	--
DOC	11.4	2.8	75	2.3	80
UVA_{254}	0.502	0.097	81	0.080	84
THFMP (DWR modified), µg/L					
$CHCl_3$	1200	340	72	260	78
BDCM	130	100	23	94	28
DBCM	<20	21	--	27	--
$CHBr_3$	<20	<10	--	<10	--
TTHM	1330	461	65	381	71
THMFP (reactivity based), µg/L					
$CHCl_3$	880	190	78	120	86
BDCM	130	92	29	80	38
DBCM	<30	40	--	40	--
$CHBr_3$	<30	<10	--	<10	--
$TTHM_{(R)}$	1010	322	68	240	76
HAAFP (reactivity based), µg/L					
BAA	<6	2.4	--	<1	--
BCAA	38	23	39	18	53
CAA	<6	<1	--	<1	--
DBAA	<6	5.4	--	5.4	--
DCAA	310	51	84	35	89
TCAA	480	43	91	19	96
THAA6	828	124.8	85	77.4	91

Table A-3 (continued)

Parameter[a]	Raw water concentration	Alum treated: Treated water concentration	Alum treated: Percent removal	Ferric chloride treated: Treated water concentration	Ferric chloride treated: Percent removal
Sulfate	34				
Chloride	58	*	*	*	*
TDS	293				
Bromide	0.18				

[a]All concentrates in mg/L unless otherwise noted.
[b]( ) signifies negative percentage removal; i.e., treatment causes an increase in concentration.
*Note: not enough sample volume returned to run these analyses; see Table A-2 for typical analytical results.

Appendix B

Workplan for the Barker Slough Watershed

WORKPLAN FOR THE BARKER SLOUGH WATERSHED
Municipal Water Quality Investigations Program
Version: September 25, 1996

Introduction

The California State Water Project Sanitary Survey Update, 1996 report identified the North Bay Aqueduct as having several water quality issues which concern the SWC by using it as a source of drinking water. Several water quality issues have been identified which require additional work to characterize the nature and extent of the problem and means of addressing them. These water quality issues include elevated levels of organic carbon, trihalomethane formation potential, metals, and coliforms in the Barker Slough watershed. This workplan was developed to investigate these problems, identify their sources, and to identify practices to improve water quality in the watershed.

This workplan has been revised to incorporate elements of proposal by NBA contractors. The concepts of dividing the workplan into two phases and specifying two elements of monitoring as suggested by the NBA contractors have been adopted. Efforts were made to sample at the frequency suggested by the NBA contractors within the budget set by the SWC.

Study Objectives

The Study's objectives are to determine the magnitude of the water quality problems in the watershed, to isolate sources of problem water quality constituents within the watershed, and to suggest management practices to improve water quality within the watershed.

The following questions are to be addressed:

- What is the seasonal variability in water quality of water sources flowing into Barker Slough?
- What are or might be the causes of these changes and do they relate to upstream or nearby land uses or sea water intrusion?
- How does the water quality of Calhoun Cut, Barker Slough, and Lindsay Slough affect the water quality at the Barker Slough Pumping Plant?
- Are there serious concerns about the water quality at the Barker Slough Pumping Plant with respect to treating water to meet new drinking water standards?

- What actions could be taken to protect and improve the water quality of the North Bay Aqueduct?

Scope of Work

This Study was designed to begin July 1, 1996 and to continue until June 30, 1997. A progress report was produced six months after the Study began. This progress report included an analysis of at least two months of water quality monitoring data.

The work was divided into two phases. The first phase quantified water quality constituents at the macro level and the second phase will identify specific pollutants and will look at mitigation measures for those pollutants.

The frequency of sampling was the same for dry and wet weather seasons. Wet weather sampling was conducted in conjunction with storm events. It replaced one of the scheduled sampling collections during selected rain and runoff events, where possible. The dry weather season is defined from April 16 through October 15. The wet weather season is defined as October 15 through April 15. At least two months of dry weather sampling was obtained.

The work was divided into general classes of pollutants. Within each class of pollutants, grab sample data (Element 1) and grab sample data (Element 2) are defined as specified below.

Element 1 near real-time water quality data was continuously monitored at Barker Slough Pumping Plant and is available on the Bulletin Board. This information can be used by the NBA water treatment plants for operational purposes.

Element 2 comprises the database of constituents monitored for long-term water quality improvements. The Phase I sample locations initially identified are:
(1) upstream of Barker Slough Pumping Plant (Cook Lane); (2) Barker Slough Pumping Plant; (3) Calhoun Cut; and (4) Lindsey Slough, west of the juncture with Cache Slough. The data are not real-time and include, coliforms, dissolved organic, TOC, EC, turbidity, pH, alkalinity, metals (Al, Fe, Mn), pesticides and organic compounds. This information is useful for diagnosis purposes and for trending. Upon evaluation of the macro data collected at these locations, a second set of sample locations were identified. Sampling duration, prior to evaluation of the data, is two months. Additionally, tidal influence was logged during sample collection for evaluative purposes in regard to grab samples.

Phase I

Phase 1 identified water quality constituents by quantification and analyzed the impacts. Water quality sampling are summarized in Table B-1. Analytical and staff costs are summarized in Table B-2.

Dissolved Organic Carbon, Total Organic Carbon, and Trihalomethane Formation Potential

Monitoring data collected for the 1996 Sanitary Survey Update indicated that the NBA had higher levels of DOC, TOC, and THMFP than were seen in other parts of the SWP. These elevated levels appear to occur more frequently during the wet winter months.

I. Element 1

  a. Samples were collected by grab and analyzed for the constituents: DOC, EC and turbidity.

  b. A TOC autoanalyzer was not used.

I. Element 2

  a. Grab samples were collected from the following stations (see Table B-1 and B-2, and Figure 7-1 in Chapter 7) and analyzed for THMFP, DOC, EC, turbidity, pH, dissolved oxygen, and temperature.

    1. Upstream of Barker Slough Pumping Plant (Cook Lane)
    2. Barker Slough Pumping Plant
    3. Calhoun Cut
    4. Lindsey Slough

  b. Sample Frequency

    1. See Tables B-1 and B-2.

In addition, DWR's O&M collected samples at Barker Slough Pumping Plant on a monthly basis and analyzed those samples for THMFP and TOC.

<u>Turbidity</u>

Turbidity was identified in the Sanitary Survey as a parameter of concern in the Barker Slough watershed. Elevated turbidity is seen most often during the winter months.

Table B-1. Water Quality Sampling Summary

Parameter	Sampler	Frequency	Sample Sites
Element 1: Grab Sample Monitoring			
TOC	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
EC	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
Turbidity	O&M	daily	PP
Alkalinity	O&M	weekly	PP
Element 2: Grab Sample Monitoring			
THMFP	O&M	monthly	PP
TOC	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
DOC	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
EC	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
Turbidity	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
pH	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
UVA	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
Suspended Solids	O&M	quarterly	PP
Metals (Al/Fe/Mn)	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP
Pesticides and other Organics	MWQI / O&M	see Table 7-2	UpPP, CC, LS / PP,
Coliforms	MWQI / O&M	weekly / weekly	UpPP, CC, LS / PP

PP- Barker Slough Pumping Plant, UpPP- Upstream of Barker Slough Pumping Plant at Cook Lane, CC- Calhoun Cut, LS- Lindsey Slough, west of the juncture with Cache Slough

TABLE B-2. Cost of MWQI Analyses and Staff Time

Laboratory Analysis	Number of Stations	Freqency D/W	Samples per Month	Sampling Period	Number of Samples	Lab	Cost per Sample($)	Total Cost ($)
Coliform-Fecal	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	25	5,200.00
THMFP	1	monthly	1 O&M	1 year	12	Bryte	120	1,440.00
TOC	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	35	7,280.00
DOC	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	35	7,280.00
Alkalinity	1	weekly	4 O&M	52 weeks	52	Bryte	12	624.00
UVA	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	12	2,496.00
Pesticides and Other Organics	6	4-Sept 4-first event 4-Mar 2 Causeway 4-Jun	3/DLA-1O&M* 3/DLA-1O&M 5-DLA,1-O&M 3-DLA-1-O&M	1 year	14	BSK Bryte	1000	14,000.00
Metals Al, Fe, Mn	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	69	14,352.00
Turbidity	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	INC	0
pH	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	INC	0
EC	4	weekly	12 DLA 4 O&M	52 weeks	208	Bryte	INC	0
Total Cost of Analyses								**$ 52,672.00**
Staff Time	**Number of Staff**	**Duration**		**Frequency**	**Total Hours**		**Fraction of a PY**	**Total Cost ($)**
Field Preparation	1	2 hrs/week		52 weeks	104		0.06	$ 6,000.00
Sampling	2	8 hrs/week		52 weeks	832		0.47	$ 47,000.00
Mapping	1	8 hrs week		4 weeks	32		0.02	$ 2,000.00
Data Mgmt	1	8 hrs week		4 weeks	32		0.02	$ 2,000.00
Report Writing	1	8 hrs week		8 weeks	64		0.03	$ 3,000.00
Publication	1	8 hrs week		4 weeks	32		0.02	$ 2,000.00
Project Management	1	4 hrs week		52 weeks	208		0.1	$ 10,000.00
Total Staff					1304		0.72	**$ 72,000.00**
Total								**$ 124,672.00**

Note: D/W refers to Dry season/Wet season
INC: Include with staff time costs
* Routine monitoring under other programs

I. Element 1

DWR's O&M has an automated turbidity meter installed at the Barker Slough Pumping Plant and collected samples daily.

II. Element 2

a. Grab samples were taken from the following stations and analyzed for turbidity.

1. Upstream of Barker Slough Pumping Plant (Cook Lane)
2. Barker Slough Pumping Plant
3. Calhoun Cut
4. Lindsey Slough

b. Sample Frequency

1. See Tables B-1 and B-2.

<u>pH and Alkalinity</u>

I. Element 1

Samples were collected by grab at Barker Slough Pumping Plant for alkalinity analysis. The samples were not analyzed for pH due to possible changes in pH as the samples were held in the autosampler before sample retrieval.

II. Element 2

a. Grab samples were taken from the following stations and analyzed for pH.

1. Upstream of Barker Slough Pumping Plant (Cook Lane)
2. Barker Slough Pumping Plant
3. Calhoun Cut
4. Lindsey Slough

b. Sample Frequency

1. See Tables B-1 and B-2.

Metals

In the Sanitary Survey Report, aluminum (Al), iron (Fe), and manganese (Mn) were found to exceed secondary maximum contaminant levels on an infrequent basis. The exceedances occurred only during the heavy runoff in the winter months. Identification of the source(s) of metals primarily aluminum, iron, and manganese are of long-term importance to the NBA users.

I. Element 1

Not applicable.

II. Element 2

a. Grab samples were collected at the following stations and analyzed for the metals aluminum, iron and manganese.

1. Upstream of Barker Slough Pumping Plant (Cook Lane)
2. Barker Slough Pumping Plant
3. Calhoun Cut
4. Lindsey Slough

b. Sample Frequency

1. See Tables B-1 and B-2.

Pesticides and Organic Compounds

I. Element 1

Not applicable.

II. Element 2

a. Grab samples were collected at the following stations and analyzed for nitrogen and phosphorus pesticides, chlorinated pesticides, volatile organics, carbamates and solvents.

1. Upstream of Barker Slough Pumping Plant (Cook Lane)
2. Barker Slough Pumping Plant
3. Calhoun Cut
4. Lindsey Slough
5. Yolo Causeway

B. Sample Frequency

1. Samples were collected during March, June, September, and December. Wet weather samples (March and December) were obtained approximately after a 36-hour rain event or after 1-inch of rainfall. Single samples were collected during the dry weather season (June and September). Tidal action was logged during both wet and dry weather sampling.

2. See Tables B-1 and B-2.

<u>*Giardia* and *Cryptosporidum*</u>

Giardia and *Cryptosporidium* sampling are Phase II activities.

<u>Coliforms</u>

Enumeration of coliforms is important to the NBA water users.

I. Element 1

Not applicable

II. Element 2

a. Samples were collected with the use of a Colilert sampling system at the following stations.

1. Upstream of Barker Slough Pumping Plant (Cook Lane)
2. Barker Slough Pumping Plant
3. Calhoun Cut
4. Lindsey Slough

b. Sample Frequency

1. See Tables B-1 and B-2.

<u>Summary of Water Quality Sampling and Cost Analysis</u>

Table B-1 summarizes the water quality sampling that was conducted for Phase 1 of this Study. Table B-2 presented the analytical and staff costs for the Study.

Phase 2:

Based on the evaluation of information from Phase 1 and consultation with the NBA contractors, further characterization and identification of problem water quality constituents sources will be conducted. This may include a survey of land use practices, further physical reconnaissance, watershed mapping, consultation with local agencies for additional information and monitoring data, and a review of best management practices. The following water quality constituents will be evaluated based on their effects on water quality.

DOC, TOC, THMFP and Turbidity

Land use practices and other contamination sources will be identified. This may include source identification sampling on the upstream segments and tributaries of Barker Slough. Estimating livestock grazing may occur. Applicable best management practices will be reviewed. Special studies examining reducing the levels of these problem water quality constituents may be initiated.

Metals

Sources of metals will be evaluated and mitigation measures identified.

Pesticides and Organic Compounds

In order to determine problem water quality constituent sources, organics analyses to distinguish between natural and synthetic organic substances may be performed.

Giardia and *Cryptosporidium*

Sampling for *Giardia* and *Cryptosporidium* may be initiated during Phase II in the Barker Slough watershed dependent upon consultation with the Sanitary Survey Action Committee.

Coliforms

Land use in the watershed that may contribute to high coliform will be investigated. Best management practices that would lead to reductions in coliform counts will be reviewed.

Study Coordination:

There will be coordination meetings between DWR and the NBA contractors. In addition, progress reports will be delivered to the MWQI Technical Advisory Committee at the quarterly meetings and at meetings of the SWP Sanitary Survey Action Committee.

Reports:

A progress report from the Study was prepared on December 30, 1996 and a final report from the Study was prepared on November 30, 1997.

Data Availability:

Data from the Study will be stored at DWR Headquarters in the Water Quality Assessment database. The data will be available to NBA contractors, Sanitary Survey Action Committee members and MWQI Technical Advisory Committee members through the MWQI Bulletin Board System. Data that are put on the Bulletin Board System may be preliminary subject to change upon further quality review. Preliminary data should not be published but should be used for internal purposes only.

Appendix C

USEPA Information Collection Rule Performance Evaluation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

Office of Ground Water and Drinking Water
Technical Support Center

October 7, 1996

RECEIVED OCT 1 1 1996

Rick Danielson
BioVir Laboratories
685 Stone Road
Benicia, CA 94510

Dear Dr. Danielson:

Your response addressing actions taken to correct deviations found during the on-site audit of your laboratory for analysis of protozoa for the Information Collection Rule (ICR) has been received and is complete. Laboratory approval is based on acceptance of the ICR application and satisfactory completion of the PE samples and on-site evaluation. Approval of your laboratory now awaits only the determination of principal analyst approval based on the protozoa performance evaluation samples. You will be notified when this process is complete.

If you have any questions, please contact me by phone at 513.569.7944, FAX at 513.569.7191 or e-mail at feige.maryann@epamail.epa.gov.

Sincerely,

Mary Ann Feige

Mary Ann Feige, ICR Microbiology
Laboratory Coordinator

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

Office of Ground Water and Drinking Water
Technical Support Center
January 21, 1997

Richard Danielson
BioVir Laboratories, Inc.
685 Stone Rd
Benicia, CA 94510-

Subject: ICR Coliform Laboratory Approval for **ICRCA083**

Dear Richard Danielson:

Your application submitted to EPA seeking ICR coliform laboratory approval has been reviewed and approved. Your laboratory's ICR identification number is listed above. If your laboratory has applied to perform chemical analysis for the ICR, you will note that the same ID number is or will be assigned for ICR chemistry lab approval.

Laboratories are reminded that when a utility must sample both source water and finished water, the coliform methods used for each sample type should be identical. All samples (source and finished) must be analyzed quantitatively in order to determine the level of organisms in each sample.

If Colilert values are reported using the ICR water utility software for total coliform and Escherichia coli, they must be quantitative numbers and reported on the software data base under "Multiple Tube Fermentation Technique" since the Colilert values are estimated using Most Probable Number (MPN) tables as are the MTF values.

Your approval status and ICR number have been forwarded to the Safe Drinking Water Hotline (800/426-4791) for inclusion into their list of ICR approved laboratories. Your approval status will be maintained during the ICR by your laboratory's continued certification for coliform analysis by your state, etc.

If you wish to comment or have questions on this determination, please write to:

ICR Laboratory Coordinator (Coliform)
U. S. EPA
Technical Support Center (MS-140)
26 W. Martin Luther King Drive
Cincinnati, OH 45268

Sincerely,

James J. Westrick

James J. Westrick,
Chief

Appendix D

California Department of Health Services Certification for Microbiological Testing

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY PETE WILSON, Governor

DEPARTMENT OF HEALTH SERVICES
2151 BERKELEY WAY
BERKELEY, CA 94704-1011
(510)540-2800

November 21, 1996

Richard E. Danielson, Ph.D.
Biovir Laboratories, Inc.
685 Stone Road
Benicia, CA 94510

Certificate No.: 1795

Dear Dr. Danielson:

This is to advise you that the laboratory named above has been certified as an environmental testing laboratory pursuant to the provisions of the California Environmental Laboratory Improvement Act of 1988 (Health and Safety Code, Division 1, Part 2, Chapter 7.5, commencing with Section 100825).

The fields of testing for which this laboratory has been certified under this Act are indicated in the enclosed "List of Approved Fields of Testing and Analytes." Certification shall remain in effect until August 31, 1998 unless revoked. This certificate is subject to an **annual fee** as prescribed by Section 100860(a), Health and Safety Code, **on the anniversary date of the certificate**. Your application for renewal must be received 90 days before the expiration of your certificate to remain in force according to the California Code of Regulations, Title 22, Division 4, Chapter 19, Sections 64801 through 64827.

Please note that your laboratory is required to notify the Environmental Laboratory Accreditation Program of any major changes in the laboratory such as the transfer of ownership, change of laboratory director, change in location, or structural alterations which may affect adversely the quality of analyses (Section 100845(b)(d), California Health & Safety Code).

Your continued cooperation is essential in order to establish a reputation for the high quality of the data produced by environmental laboratories certified by the State of California.

If you have additional questions, please contact Riz Parangalan at (510) 540-2800.

Sincerely,

George C. Kulasingam

George C. Kulasingam, Ph.D., Manager
Environmental Laboratory
Accreditation Program

Enclosure

CALIFORNIA DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL LABORATORY ACCREDITATION
List of Approved Fields of Testing and Analytes

Biovir Laboratories, Inc.
685 Stone Road
Benicia, CA

TELEPHONE No: (707) 747-5906
CALIFORNIA COUNTY: Solano

CERTIFICATE NUMBER: 1795
EXPIRATION DATE: 08/31/98

---

1 **Microbiology of Drinking Water and Wastewater**

1.1 Total Coliforms in Drinking Water by Multiple Tube Fermentation
Fecal Coliforms/E. Coli in Drinking Water by Multiple Tube Fermentation
1.2 Total Coliforms in Drinking Water by Membrane Filteration
Fecal Coliforms/E. Coli in Drinking Water by Membrane Filteration
1.3 Total Coliforms and E. Coli in Drinking Water by MMO-MUG
1.4 Total Coliforms in Drinking Water by Clark's Presence/Absence
Fecal Coliforms/E. Coli in Drinking Water by Clark's Presence/Absence
1.5 Heterotrophic Plate Count
1.6 Total Coliforms in Wastewater by Multiple Tube Fermentation
1.7 Fecal Coliforms in Wastewater by Multiple Tube Fermentation
1.8 Total Coliforms in Wastewater by Membrane Filteration
1.9 Fecal Coliforms in Wastewater by Membrane Filteration
1.10 Fecal Streptococci or Enterococci by Multiple Tube Fermentation
1.11 Fecal Streptococci or Enterococci by Membrane Filteration
1.12 Drinking Water Source Enumeration

****

(112196)

Appendix E

Total/fecal coliforms, *Clostridium perfringens*, and *E. coli* Quality Control Results

Total/fecal Coliforms/*E. coli* and *Clostridium perfringins*
Quality Control Results

DWR QC					COLIFORMS						
	DWR #	BV#	Media Exp.	Media pH	Media Sterility	Media Growth Controls			35 C Incb	44.5C WB	
						LTB *1*	BGB *2*	EC-MUG *3*			
	D61016	B960744E	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61017	B960744F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61019	B960744G	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61018	B960744H	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61020	B960746C	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61021	B960746D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	PP1	B960749D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	PP2	B960749E	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	PP3	B960749F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61106	B960800D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61107	B960800E	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61108	B960800F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962224	B960805F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962225	B960805G	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962226	B960805H	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962227	B960805I	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962228	B960805J	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61118	B960816B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61119	B960822E	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61120	B960822F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61121	B960822G	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61122	B960822H	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12016	B960827B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12018	B960827D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12020	B960828B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12022	B960828D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	L17311-7	B960893B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	

Total/fecal Coliforms/*E. coli* and *Clostridium perfringins*
Quality Control Results
continued

	D61210	B960897E	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61211	B960897F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61212	B960897G	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D61213	B960897H	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12038	B960910B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962361	B960911E	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962362	B960911F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962363	B960911G	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962364	B960911H	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	NA(MWD)	B960919B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12040	B960921B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962365	B960922B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D70101	B970011C	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D70100	B970011D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962504	B970024F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962505	B970024G	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962506	B970024H	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962507	B970024I	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962508	B970024J	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	NP	B970028D	NP	NP	NP	NP	NP	NP	NP	NP	
	NP	B970028E	NP	NP	NP	NP	NP	NP	NP	NP	
	NP	B970038F	NP	NP	NP	NP	NP	NP	NP	NP	
	C970004	B970039A	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970007	B970039B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12061	B970045C	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12062	B970045D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970012	B970061A	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970013	B970061B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970015	B970061C	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	

Total/fecal Coliforms/*E. coli* and *Clostridium perfringins*
Quality Control Results
continued

	SJ-1462	B970070B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970020	B970075A	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970021	B970075B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D70121	B970084D	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D70122	B970084E	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D70123	B970084F	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	D70124	B970091C	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962476	B970096K	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962477	B970096L	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962478	B970096M	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962479	B970096N	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C962480	B970096O	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
NWP	L18110-1	B970073C	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12079	B970137K	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12080	B970137L	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12082	B970137M	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12081	B970137N	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	S12083	B970137O	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970091	B970160K	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970093	B970160L	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970089	B970160M	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970090	B970160N	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	C970092	B970160O	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
	SJ-1480	B970183B	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	

Quality Control Results
continued

Coliform Legend:

Media Exp.: (+) Media did not exceed recommended holding times; (-) Expiration exceeded.

Media pH: (+) Media met pH criteria; (-) Media did not meet pH critieria.

Media Sterility: (+) Media passed sterility checks; (-) Media failed sterility checks.

Media LTB: (+) Positive and negative growth controls acceptable; (-) growth controls unacceptable.

Media BGB: (+) Positive and negative growth controls acceptable; (-) growth controls unacceptable.

Media EC-MUG: (+) Positive and negative growth controls acceptable; (-) growth controls unacceptable.

35C Incb: (+) temperatures within acceptable range, 35C $\pm$ 0.5 C.

44.5C WB: (+) temperatures within acceptable range, 44.5C $\pm$ 0.2 C.

NP: Work not performed

Total/fecal Coliforms/*E. coli* and *Clostridium perfringins*
Quality Control Results
continued

DWR QC					CLOSTRIDIUM			
	DWR #	BV #	Media Exp.	Media pH	Media Sterility	MF Controls	Media Growth Controls 1	Milk Media
	L17311-7B	B960893C	(+)	(+)	(+)	(+)	(+)	(+)
	D61210	B960897I	(+)	(+)	(+)	(+)	(+)	(+)
	D61211	B960897J	(+)	(+)	(+)	(+)	(+)	(+)
	D61212	B960897K	(+)	(+)	(+)	(+)	(+)	(+)
	D61213	B960897L	(+)	(+)	(+)	(+)	(+)	(+)
	S12038	B960910C	(+)	(+)	(+)	(+)	(+)	(+)
	C962361	B960911E	(+)	(+)	(+)	(+)	(+)	(+)
	C962362	B960911F	(+)	(+)	(+)	(+)	(+)	(+)
	C962363	B960911G	(+)	(+)	(+)	(+)	(+)	(+)
	C962364	B960911H	(+)	(+)	(+)	(+)	(+)	(+)
	NP (MWD)	B960919C	NP	NP	NP	NP	NP	NP
	S12040	B960921C	(+)	(+)	(+)	(+)	(+)	(+)
	C962365	B960922C	(+)	(+)	(+)	(+)	(+)	(+)
	D70100	B970011E	(+)	(+)	(+)	(+)	(+)	(+)
	D70101	B970011F	(+)	(+)	(+)	(+)	(+)	(+)
	C962504	B970024K	(+)	(+)	(+)	(+)	(+)	(+)
	C962505	B970024L	(+)	(+)	(+)	(+)	(+)	(+)
	C962506	B970024M	(+)	(+)	(+)	(+)	(+)	(+)
	C962507	B970024N	(+)	(+)	(+)	(+)	(+)	(+)
	C962508	B970024O	(+)	(+)	(+)	(+)	(+)	(+)
	C970003	B970036A	(+)	(+)	(+)	(+)	(+)	(+)
	C970002	B970036B	(+)	(+)	(+)	(+)	(+)	(+)
	C970005	B970036C	(+)	(+)	(+)	(+)	(+)	(+)
	S12061	B970045E	(+)	(+)	(+)	(+)	(+)	(+)
	S12062	B970045F	(+)	(+)	(+)	(+)	(+)	(+)
	ST-1462	B970070C	(+)	(+)	(+)	(+)	(+)	(+)
	D70121	B970084G	(+)	(+)	(+)	(+)	(+)	(+)
	D70122	B970084H	(+)	(+)	(+)	(+)	(+)	(+)

Quality Control Results
continued

	D70123	B970094I	(+)	(+)	(+)	(+)	(+)	(+)
	D70124	B970091B	(+)	(+)	(+)	(+)	(+)	(+)
NWP	L18112-5	B970073B	(+)	(+)	(+)	(+)	(+)	(+)
	C962476	B970096F	(+)	(+)	(+)	(+)	(+)	(+)
	C962477	B970096G	(+)	(+)	(+)	(+)	(+)	(+)
	C962478	B970096H	(+)	(+)	(+)	(+)	(+)	(+)
	C962479	B970096I	(+)	(+)	(+)	(+)	(+)	(+)
	C962480	B970096J	(+)	(+)	(+)	(+)	(+)	(+)
	S12079	B970137F	(+)	(+)	(+)	(+)	(+)	(+)
	S12080	B970137G	(+)	(+)	(+)	(+)	(+)	(+)
	S12082	B970137H	(+)	(+)	(+)	(+)	(+)	(+)
	S12081	B970137I	(+)	(+)	(+)	(+)	(+)	(+)
	S12083	B970137J	(+)	(+)	(+)	(+)	(+)	(+)
	C970091	B970160F	(+)	(+)	(+)	(+)	(+)	(+)
	C970093	B970160G	(+)	(+)	(+)	(+)	(+)	(+)
	C970089	B970160H	(+)	(+)	(+)	(+)	(+)	(+)
	C970090	B970160I	(+)	(+)	(+)	(+)	(+)	(+)
	C970092	B970160J	(+)	(+)	(+)	(+)	(+)	(+)
	SJ-1481	B970183C	(+)	(+)	(+)	(+)	(+)	(+)

Legend:
Media Exp.: (+) Media did not exceed recommended holding times; (-) Expiration exceeded.
Media pH: (+) Media met pH criteria; (-) Media did not meet pH critieria.
Media Sterility: (+) Media passed sterility checks; (-) Media failed sterility checks.
MF Controls: Membrane filter controls for diluent and post run carry-over.
Media Growth Controls: (+) Clostridium growth support; (-) No Clostridium growth.
Milk Media: (+) Stormy fermentation with control within 2 hours; (-) No fermentation
NP: Work not performed