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

MUNICIPAL WATER QUALITY INVESTIGATIONS PROGRAM Annual Report

Water Year 1995

August 1996

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

Pete Wilson
Governor
State of California

David N. Kennedy
Director
Department of Water Resources

Cover photo of City of Sacramento Water Treatment Plant pumping facility with inscription "And Everything Shall Live Whithersoever The River Cometh" Ezekiel XLVII-9 by Dale Kolke, DWR photographer.

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Municipal Water Quality Investigations
1995 Technical Advisory Committee

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Bill Brennan	Central Coast Water Agency
Richard Denton	Contra Costa Water District
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Frank Maitski	Santa Clara Valley Water District
Roy Wolfe	Metropolitan Water District of Southern California
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S. Kusum Perera	California Department of Health Services
Jim Beck	Kern County Water Agency
Russ Fuller	Antelope Valley-East Kern Water Agency
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David Okita	Solano County Water Agency
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1995 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
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 Bernadino Valley Municipal Water District
Santa Clara Valley Water District
Solano County Water Agency
State Water Contractors
U. S. Environmental Protection Agency

Chapter 1. EXECUTIVE SUMMARY

The Sacramento-San Joaquin Delta is the major water supply for two-thirds of the State's population. In 1981, a scientific advisory panel appointed by the Department of Water Resources recommended that the drinking water quality of the Delta must be monitored for the protection of human health. DWR responded by forming the Interagency Delta Health Aspects Monitoring Program in 1982. The Program was renamed to the Municipal Water Quality Investigations Program in 1990.

The monitoring program has achieved major milestones in identifying the sources of contaminants in the Delta and assessing their significance on drinking water quality and water treatment. Through extensive investigations, the Program identified agricultural drainage as a major source of natural organic matter that could hinder water treatment operations in meeting drinking water standards. The monitoring activities have now been reduced in scope with a new emphasis. That emphasis is focusing on studies and activities that would improve source water quality. Through the active guidance of the program advisors, a multitude of studies have been implemented to develop and test possible ways to solve the drinking water problems of the Delta and other watersheds of the State Water Project.

The progress, findings, and status of the studies by the end of Program Year 1995 are summarized below:

<u>DWR/U.S. Geological Survey Delta Island Water Use Study</u>

USGS was unable to consistently relate with accuracy, pumped island drainage volume to electrical power use, and pump test records. Different database formats and billing cycles, outdated pump test data, and inaccurate coding of past electrical power use records from Pacific Gas and Electric Company complicated USGS efforts in identifying metered pump stations and computing monthly pumped drain water volumes. Data from portable flow meters, time totalizers, and electrical power meter readings were used to develop relationships and to compute estimated pumped drainage volume at Twitchell Island.

DWR completed the installation of meters on selected siphon intakes on Twitchell Island and supplemented drain water autosampler collections with periodic water quality sampling at active siphon intakes. These water quality results, coupled with siphon and drain water quality and quantity data, will be examined for relationships to land use on Twitchell Island.

Data collection extended into January 1996. In April 1996, the study was terminated after the year of data showed that USGS results were not able to meet the MWQI Program's goal of obtaining accurate Delta Island drainage volume estimates.

Delta Alternatives Water Treatment and Costs Computer Modeling

A project to estimate the finished water quality and costs of treating Delta waters withdrawn from different Delta locations was desired by the Technical Advisory Committee in 1994. Initial plans were to have DWR's Division of Planning proceed with this study. In the summer of 1995, DOP transferred the responsibilities of managing the study and making contractual arrangements to the MWQI Program. By the time an agreeable scope of work and draft Request For Qualifications announcement were approved, the program year 1995 had ended. Consequently, this study will commence in program year 1996 (July 1996).

This project will use DWR's Delta Trihalomethane Formation Potential and Delta Island Consumptive Use models to establish boundary conditions representing influent water quality to the Environmental Protection Agency model. The EPA model will then be operated to predict the effects of modifying Delta conditions on distribution system water quality. The model WATERCO$T will be used to estimate costs of constructing and operating a water treatment facility. The final results are intended to greatly improve the ability to quantify costs and savings associated with Delta action alternatives, as related to the use of Delta waters for municipal purposes. DOP's staff will work with a retained consultant who will perform this work, with oversight from MWQI Program staff. Malcolm Pirnie, Inc. was awarded the project, which will begin in the summer of 1996.

Treatment of Delta Island Drainage to Reduce Total Organic Carbon Loads

Approval by the MWQI advisors to fund this study did not occur until February 1995. Consequently, the RFQ bid announcement was released in the following year. This study examines the feasibility of treating drain water to reduce TOC on the islands prior to discharge. Jar testing of drain water, a review of currently available wastewater treatment technologies, cost estimates, and the design of a pilot plant study will be performed. The contract was awarded to Brown and Caldwell Engineers in 1996.

Characterization of Dissolved Organic Carbon From Delta Island Soils

USGS will perform extensive chemical and physical characterization of DOC in shallow and deep peat soil layers and drain water during different periods of farm activities. The results may show that DOC or organic trihalomethane precursors can be controlled by adjusting water levels in the drains. These water table adjustments can limit or extend the depth of soil and organic oxidation in the fields. The data will also be useful to the study of treating drain water to reduce TOC loads. The study was delayed due to lengthy contractual negotiations between DWR and USGS and the temporary stoppage of work by federal agencies due to congressional budget debates. Sampling began in early 1996.

Delta Real-Time Monitoring of TOC

Staff evaluated two automated TOC analyzers for future use at DWR remote telemetered water quality monitoring sites in the Delta. Specifications were prepared and submitted, but the bid announcement was not released until May 1996. A Sievers Instruments Model 800 TOC analyzer was received in July 1996. This instrument, which met all specifications and passed the previous year's evaluation, will be pilot tested for a year in the field. A determination to procure additional TOC analyzers to establish a network of real-time TOC monitors will be made in 1997.

Algal Disinfection By-Products Precursors Study

Past MWQI studies have focused on the contribution of organic DBP precursors from Delta island drainage. Information on other sources, such as primary productivity in upstream reservoirs and in the biologically productive Delta, has been lacking. Agricultural interests in the Delta have criticized this lack of information and the MWQI Program's focus on agricultural drainage sources. This study will determine if periods of localized high THMFP concentrations correlate with algal blooms in the Delta.

Historically, the populations of the filamentous diatoms, *Melosira granulata* and *Thalasiosira* spp., increase throughout the Delta in wet years as a result of increased freshwater habitat. *Melosira granulata* blooms peak in May in the lower San Joaquin River. *Thalasiosira* spp. and *Cyclotella* spp. blooms occur during the summer in the southern Delta. At times, the high chlorophyll *a* levels associated with peak blooms have reached over 200 µg/L.

The study was approved by the MWQI TAC Workplan Subcommittee in February 1995. Sampling in the Delta for this study was planned for the spring of 1996. However, in May 1996, a decision was made to postpone the study to 1997 due to other priorities identified by the TAC.

Coliform and Pathogen Sampling and Analysis

A sampling plan to collect pathogen and coliform samples from different types of water and wastewater was developed. Information on EPA-approved equipment to sample for pathogens and coliform bacteria was gathered, and two filtration units for *Giardia* and *Cryptosporidium* sampling were procured. A performance evaluation test for *Giardia* and *Cryptosporidium* detection was made in January 1996. Testing of the IDEXX Colilert Quanti-Tray® system for total and fecal coliform detection began in July 1996.

Rice Field Drainage Study

Staff from DWR's Northern District office and MWQI Program jointly worked on this study to assess the contribution of organic carbon from the Colusa Basin drain, Sutter Bypass, Feather River, and American River to the Sacramento River. Sampling was limited to periods when the Colusa Basin drain and Sutter Bypass were not flooded in early 1995. Over 500,000 acres of rice were farmed in the Sacramento Valley during 1994. Fifty-nine percent of the rice fields was burned and 21 percent was purposely flooded for decomposition. Water from the Feather River, Natomas drains, and Reclamation Districts 70, 108, and 1500 drains was not sampled. These sources included approximately 148,000 rice production acres, of which 34,000 were flooded.

Mass load estimates were made on sample days without flooding (February 23 and 27, 1995 and March 2 and 6, 1995). The organic carbon load from the Colusa Basin and Sutter Bypass drains comprised 7 to 26 percent of the lower Sacramento River's load. Other sources, including the Feather River and some unaccounted rice drains, were estimated to comprise 17 to 63 percent of the downstream load. The American River, which has no rice drain water, contributes 7 to 16 percent of the lower Sacramento River's load. Based on these loading estimates, the agricultural drain loads increased TOC levels at the lower stations by 3 to 22 percent.

The data indicated that drain organic carbon loads affected the Sacramento River's water quality. To augment tracing of organic carbon loads from the drains to downstream stations, three additional upstream stations were added to the second year (1966) of sampling for this study. The second year of sampling, conducted by DWR's Northern District, began in February 1996. Sampling was limited to periods of nonfloodflows, with no weir diversions to Sutter Bypass or Yolo Bypass. Samples were analyzed for TOC, DOC, ultraviolet absorbance, THMFP, alkalinity, and sulfate.

New Parameters Study

The goals of this study are to provide information on newly regulated constituents under U.S. Environmental Protection Agency's Phase II and V rules, and those constituents listed in the Phase VIB rule, which have not yet been promulgated. The results 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, and (3) provide data that may be used to evaluate future best available technology requirements.

The new Phase II and Phase V rules under USEPA's drinking water regulations establish limits for several organic and inorganic chemicals. In addition, California has established new Maximum Contaminant Levels for a number of constituents. The MWQI Program has little or no historical data for many of the newly regulated constituents. The new parameter study is a special investigation for monitoring and analyzing newly regulated or soon to be regulated constituents of concern.

The study was conducted at major sites of diversion from the Sacramento-San Joaquin Delta. Five sites were sampled including: (1) Barker North Bay, (2) Contra Costa Pumping Plant, (3) Delta Mendota Canal, (4) Old River at Bacon Island, and (5) Banks Pumping Plant.

During the 1994/95 water year, two quarterly samplings were completed. Samples were collected during the months of June and September 1995. No obvious trends were detected between the two sampling events. In all cases, organic analytes were either not detectable or detected at concentrations below their respective MCLs. The only organic analytes detected during the study were: 2,4-D; 2,4,5-T; and Diquat. 2,4-D was detected at the Banks Pumping Plant (0.14 µg/L) in June 1995, and at Barker North Bay and Contra Costa Pumping Plants (0.2 µg/L both sites) in September 1995. The EPA MCL for 2,4-D is 0.07 mg/L (70 µg/L) and the California MCL is 0.1 mg/L (100 µg/L). Diquat was detected at Old River at Bacon Island at a concentration of 13 µg/L in September 1995. The EPA and California MCL for Diquat is 0.02 mg/L (20 µg/L). 2,4,5-T was detected at Contra Costa Pumping Plant at 0.1 µg/L in June 1995. No MCL exists for 2,4,5-T. All inorganic constituents were found at concentrations below their respective MCLs.

Upon completion of four quarterly samplings, a summary report will be prepared. Based on the results of the first year of monitoring, the study will be evaluated to determine if any changes in sampling location or frequency are required. The study is scheduled for completion in March 1998. A final report will be completed in June 1998.

Delta Monitoring

The monitoring of drinking water quality in the Delta continues but at fewer stations than in the past. This planned reduction of monitoring stations resulted from staff recommendations made after reviewing *The Five-Year Report of the Municipal Water Quality Investigations Program 1987-1991*. The seasonal and regional patterns in agricultural drain water quality were adequately documented at over 40 island pump stations. DWR staff felt that the continued expense of monitoring all the drainage pump stations would not significantly add to the Department's general knowledge about the expected seasonal and regional changes in water quality at the drains. Therefore, under the new sampling plan, four island drains are now monitored. These four islands are representative of the various soil types in the region. If the data do not fall within the range of past observations, a plan to resume monitoring at more drains will be considered.

In the past, synoptic sampling runs were also performed across the Delta at a frequency of four to six times per year. Over 30 channel stations were sampled during these runs to obtain snapshot observations of drinking water quality across the region. The synoptic runs were suspended and monitoring was returned to a set of key channel stations. The new emphasis is to study the daily variability in water quality by more frequent sampling at fewer stations. The greatest changes typically occur during the wet periods of heavy storms, runoff, and riverflows. Autosamplers have been installed at some locations to obtain multiple samples each week (e.g., twice or three times per week). This higher sampling frequency will provide better mass load estimates of water constituents and improve DWR's computer models.

A new sampling plan was developed. The monitoring data obtained through the MWQI Program are used to: (1) alert water agencies about potential contaminant sources to Delta water supplies; (2) document water quality under a variety of hydrologic conditions for studying water transfer alternatives, water quality standards, and predictive modeling capabilities; (3) determine the influence of sea water intrusion, local and external sources of farm drainage, river input, in-channel processes, weather, and SWP and Central Valley Project operations on Delta drinking water quality; and (4) assist water agencies in planning, protecting, and improving drinking water facilities.

The evaluation of monitoring data enables us to have a better understanding of the shifts in water quality caused by a variety of environmental conditions and water management operations. The data are used for planning and protecting Delta water resources. The value of this data collection effort will increase as different alternatives for storing and transferring water in the Delta are evaluated under the CALFED Program.

Water year 1995 was classified as a wet year. This was the second wettest year on record since 1906. The wettest year was 1993 with 37.7 million acre feet. Two large floods occurred in January and March 1995. During water year 1995, inflows to the Delta were approximately 28 MAF from the Sacramento River, 6.4 MAF from the San Joaquin River, and 10.8 MAF from the Yolo Bypass. The net Delta outflow averaged about 49,600 cubic feet per second and peaked in mid-March 1995 at about 353,000 cfs, as a result of high Delta inflow and precipitation.

Automated sampling devices were installed during the program year at four locations. The locations were (1) Sacramento River at Greenes Landing,

(2) Harvey O. Banks Headworks, (3) Old River at Bacon Island, and (4) Twitchell Island agricultural drainage pump station. Depending upon the season and station, the sampling cycle was two or three times per week. The purpose of using automated samplers was to study the variability of DOC and to determine what sampling frequency should be employed to obtain representative data. Past data have indicated that for some water quality parameters, variability may be less during some months than other time periods. The results showed that collections more than once per week may not be necessary. Sampling for DOC at the Sacramento River at Greenes Landing station during May through September could be reduced to a once per week schedule due to the fairly constant DOC concentrations observed. DOC concentrations were more variable from mid-December 1994 through April 1995. This would suggest that the automated sampling frequency should be increased to daily collections during these months to refine studies on upstream DOC input during the wet season. As more automated samplers are either rotated for installation at other stations or procured for other sites, the additional data will assist in planning a more efficient data collection effort and in refining DWR's Delta computer models.

Observations of other water quality parameters (e.g., electrical conductivity, THMFP) collected during the year supported previous knowledge about the seasonal and regional patterns across the Delta that were reported in past MWQI annual reports.

Quality Assurance/Quality Control.

A data quality review was performed. The review consisted of comparing data from the quality control samples against acceptable control limits. Data that fell outside these control limits were flagged. Two environmental laboratories provided analyses of MWQI water samples during the 1995 water year. DWR's Bryte Chemical Laboratory analyzed water samples for minerals, minor elements, and organics. Bryte took over THMFP analyses for water samples collected after June 1995. Clayton Environmental Consultants, Pleasanton, California, performed THMFP analyses of water samples using EPA Method 502.2. This method has acceptance limits of 80-120 percent (except for chlorine recoveries where Standard Method 4500-Cl-B with control limits of 75-125 percent were used). Clayton performed these analyses through June 1995 when their contract with DWR expired.

All QC data from Clayton were compiled. QC data from Bryte were compiled to achieve at least a 25 percent representation. Bryte is in the process of automating its data reporting procedures to enable easier and more complete access to their QC data. The data quality review of Clayton analyses indicated that the data were acceptable. A minor dibromochloromethane contamination of method blanks occurred in December 1994. The level of contamination was not considered significant.

The available QC data indicated that overall, Bryte's mineral, minor elements, and THMFP results were acceptable. A few duplicate analyses exceeded the control limits, but they were not considered serious enough to have a significant effect on the data quality. Overall, the results of the data quality review showed that data were acceptable.

Sanitary Survey of SWP

The first sanitary survey of SWP was completed in October 1990. The 1996 sanitary survey update report was conducted under the MWQI Program for the State Water Contractors. The report documented the changes in the watersheds of SWP or water quality which have occurred over the five-year period since the initial survey. In addition, the updated report contained a review of the recommendations made in the initial sanitary survey report and provided new recommendations for further action.

In addition to the recommendations from the initial sanitary survey, the 1996 Sanitary Survey had several additional areas of focus. The Department of Health Services requested that greater attention be given to several specific components of SWP. A more detailed investigation of the major reservoir watersheds, which include Del Valle, San Luis, Pyramid, Castaic, Silverwood, and Perris, along with the Barker Slough/North Bay Aqueduct watershed, and the open channel section of the Coastal Aqueduct, was requested. Emphasis was also placed on the occurrence of coliforms and the pathogens *Giardia* and *Cryptosporidium* in the water supply, and any related monitoring efforts. The 1996 Sanitary Survey also covered actual and potential contaminant sources in the watersheds, emergency action plans, and water quality conditions at representative points throughout SWP. Also included is an overview of the water supply system of each study area and of SWP.

Several important characteristics of each watershed related to land use, population, agriculture, grazing, hydrology, surface geology and hydrology, soils, and vegetation were described.

The watersheds for each study area contained a variety of potential sources of contamination. Examples of these sources included: recreational use, highway/road runoff, leaking underground storage tanks, hazardous materials spills, wastewater treatment system spills, livestock grazing, landfill runoff, and agricultural runoff to source waters. The contaminant sources were identified through the use of field surveys, data base searches, existing literature, and interviews. Environmental data bases were searched to identify certain environmental concerns arising from activities in the watersheds and adjacent areas. Checklists of potential contamination sources were prepared and forwarded to DHS during research and preparation of the 1996 Sanitary Survey, in accordance with American Water Works Association guidelines.

Water quality data were reviewed and reported for several important monitoring locations both in the Sacramento-San Joaquin Delta and at various selected points along the California Aqueduct. Water quality parameters reviewed include: coliforms, *Giardia*, *Cryptosporidium*, DBP, organic carbon, bromide, total dissolved solids, chloride, algae and nutrients, metals, and other constituents of concern. The monitoring stations at Greenes Landing on the Sacramento River and Vernalis on the San Joaquin River are intended to provide an indication of the quality of water flowing into the Delta from these two major sources. The majority of these data was obtained from DWR's MWQI Program and from the SWP's Water Quality Monitoring Program, with other external sources used as necessary. Any significant changes or trends in constituent levels were noted and discussed in the report.

Included in the update was a questionnaire sent to the municipal contractors of SWP, inquiring about their projected ability to meet new and proposed drinking water rules. The questionnaire asked for water quality or treatment-related information, which included any difficulties the contractors may have been experiencing treating SWP water for drinking water purposes. It also invited discussion of the agencies' success in handling any problems encountered and how they adapted the treatment system to handle each situation. The contractors were also asked to identify any known or potential threats to SWP water quality.

The 1996 sanitary survey update report, completed and submitted to DHS in December 1995, provided conclusions and recommendations for each of the individual watersheds and/or water quality parameters. It is anticipated that a Sanitary Survey Action Committee will be formed to prioritize and follow through on the recommendations contained in the report. DHS, selected agencies of SWC, and DWR will be among those represented on the committee. Because the State requires sanitary surveys to be conducted every five years, DWR is incorporating this requirement as an ongoing component of the MWQI Program.

<u>MWQI Modeling Support by DWR's DOP</u>.

DOP published in February 1995 a report entitled *Estimation of Delta Island Diversions and Return Flows*. That report documents the DICU model and associated routines. Several areas for future model enhancement were identified, and progress on those and other items were discussed in the 1994 DWR Bay Delta Evaluation Program annual report. DOP Delta modelers have been making improvements to the DICU model and THM predictive formulation of the Delta THMFP model. These models will serve the agency in assessing water quality changes attributed to different water transfer and storage proposals and water quality standards for the Delta.

In summary, the MWQI Program underwent significant changes and restructuring to meet the new identified needs of DWR and the MWQI Program sponsors and advisors.

Chapter 2. INTRODUCTION

> 1995 was a year of transition with new participants, new directions, and new studies in motion.

The 1995 program year (October 1, 1994 - September 30, 1995) was a transitional year for the MWQI Program. There were major changes in the membership of the TAC and in the Program's direction. It was also the first year in which the Program became funded under the new MWQI Program agreement. The agreement set forth reporting schedules for the Department and program funding solely from urban water agencies of the SWC. Additional program sponsorship is provided by Contra Costa Water District.

In earlier years, the primary function of the MWQI Program was to collect water quality data for water resources planning and water treatment research purposes. An extensive Delta water quality monitoring network provided valuable information about regional and seasonal causes of water quality changes in the channels and in agricultural drainage discharges. The MWQI Program is the sole source of long-term information on the drinking water quality of the Delta. As a result, monitoring continues but at a reduced level.

With approval from the TAC's Workplan Subcommittee, new studies were launched to find solutions to water quality problems associated with Delta water and land management practices, and to assess different alternative water transfer and storage facilities in the Delta. The results of these new studies will lead to development and assessment of water resources management alternatives for protecting future drinking water supplies for over 20 million people and in meeting the water needs of other competing beneficial uses.

This annual report summarizes the objectives and progress of the MWQI studies conducted during program year 1995 and those that have been postponed into program years 1996 and 1997. The established program goals were to:

1. ***Evaluate the feasibility of using electrical power records to measure pumped water discharges from Delta islands and estimating historical power consumption and pumped volume in the Delta using historical PG&E database records.*** This effort was conducted in the Delta Island Water Use Study on Twitchell Island.

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 that are used to predict water treatment quality and costs based on source water quality.

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 will be established with an engineering consulting firm to assess currently available technologies and to develop a proposed pilot treatment plant study for possible future testing.

4. ***Identify factors that affect the availability of DOC and DBP precursor formation in soil organic matter and DOC in agricultural drain water.*** 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.

5. ***Develop a real-time monitoring network for TOC/DOC in the Delta.*** Compact state-of-the-art TOC analyzers developed for the NASA Space Station *Freedom* Project 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.

6. ***Assess the relative contribution of DBP precursors from algal productivity in upstream reservoirs and in the Delta.*** The results will determine if algal contribution of DBP precursors needs to be managed by controlling nutrient availability in watersheds.

7. ***Determine the feasibility of using current sampling and laboratory analytical methods for quantification of Giardia cysts and Cryptosporidium oocysts contributed by potential sources in the Delta and watersheds tributary to the Delta.*** This study will also include implementation of total and fecal coliform monitoring in the Delta and other watersheds of SWP.

8. ***Determine the impact of rice field drainage on TOC/DOC concentrations in the Sacramento River above the Delta.*** This two-year study was implemented to assess the significance of increased TOC concentrations in the Sacramento River due to the increased practice of flooding rice fields for decomposition of rice straw.

9. ***Assess the vulnerability of Delta exported and diverted waters used for drinking purposes to contamination by newly regulated contaminants and those proposed to be regulated.*** Quarterly monitoring for these constituents at locations near water intakes and diversions was implemented as the New Parameters Study.

10. ***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.

11. ***Identify and assess the significance of actual or potential sources of contamination in watersheds of SWP.*** This will be accomplished through the completion of the five-year update of the sanitary survey of SWP and ongoing studies and investigations in response to recommendations of the survey.

12. ***Develop tools for understanding water quality mechanisms and evaluating management alternatives in the Delta.*** As an integral part of the MWQI Program, DWR's DOP provides modeling support through improvements and enhancements of models used for simulation of DBP precursors and THM formation in 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) being able to obtain reliable clean water supplies in the future. Each study or activity serves as an important stepping stone towards discovering, testing, and assessing possible solutions to problems in the Delta and other watersheds of SWP, and assuring that future demands for safe potable water supplies can be met.

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 1995 workplan study elements and budget for the period October 1, 1994 - September 30, 1997 is shown in Table 1.

Table 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 not completed until the following program year (1996) or were postponed to program year 1997 due to a reprioritization of tasks by the MWQI TAC. Other studies, such as the Delta Island Water Use Study, that were multiyear contingent upon the first year results, were terminated. Revisions to the workplans were expected due to new and pending drinking water regulations and CALFED Bay Delta Program issues regarding fixes for solving the problems of the Delta. A summary of the revised workplan schedule and budget for April 1, 1996 to September 30, 1997 is shown below:

Table 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	$ 100,000
Pathogen Monitoring	$ 25,000	$ 55,000
North Bay Aqueduct Study	$ 15,000	$ 50,000
Delta Water Quality Monitoring	$ 250,000	$ 250,000
New Parameters Monitoring	$ 50,000	$ 50,000
Delta Island Water Use Study	$ 75,000	$ 0
Water Quality Management Project	$ 350,000	$ 500,000
Rice Field Drainage Study	$ 75,000	$ 50,000
DWR DOP Modeling Support	$ 75,000	$ 75,000
Delta Alternatives Water Treatment & Costs Model	$ 100,000	$ 0
Real-Time DOC Monitoring	$ 50,000	$ 50,000
Undesignated New Studies	$ 100,000	$ 125,000
Contingencies/ Emergency Response	$ 45,000	$ 120,000
Consultant- Technical & Management Support	$ 125,000	$ 75,000
Characterize Soil TOC Study	$ 100,000	$ 0
Treatment to Reduce Ag Drainage TOC Study	$ 50,000	$ 0
Subtotal of Studies	$1,550,000	$1,550,000
Program Management	$ 300,000	$ 300,000
TOTAL	$1,850,000	$1,850,000

The proposed program year 1997 schedule is based on a possible major redirection of work towards SWP Sanitary Survey related studies. However, studies such as the treatment of agricultural drainage to reduce TOC could extend into a second-year pilot treatment plant study if requested by the TAC. Quarterly meetings of the TAC serve as the forum to discuss the results of ongoing work and needed changes to the MWQI Program workplan. Two-year workplans are updated annually.

Chapter 3. DELTA ISLAND WATER USE STUDY

> The study attempts to relate electrical power use to pumped drainage volume as a method to estimate total agricultural drainage volume in the Delta.

The Delta Island Water Use Study is designed to obtain quantitative and qualitative information on Delta island water use on drainage water quality. The study has been a joint study between DWR and USGS. DWR staff have been primarily responsible for determining the water quality of drainage from Twitchell Island. USGS staff have been primarily responsible for obtaining power use data and relating it to water use. In this report, water quality data are presented. Report of the power use data is pending receipt from USGS.

The water quality objectives of the study are:

- To obtain baseline water quality information on water siphoned onto Twitchell Island for irrigation and on agricultural drainage that is 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 into the Delta by the major rivers.

The water quantity objectives of the study are:

- 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 the Department's DICU model (described in chapter 15) 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 in the Delta on water quality of the Delta.

Twitchell Island is located in Sacramento County in the western region of the Sacramento-San Joaquin Delta. The Island contains approximately 3,516 acres, compared to total Delta land acreage of 738,000 acres. Twenty-one siphons supply irrigation water to the Island (see Figure 1). Drainage is pumped off the Island by one agricultural drain with two pumps.

Water quality samples are collected three times a week with an autosampler from the agricultural drain on Twitchell Island. These samples are analyzed for temperature, specific conductance, DOC, and ultraviolet absorbance at 254 nanometer. A grab sample is taken from the agricultural drain and from any siphons that are operating on a weekly basis and analyzed for temperature, specific conductance, pH, dissolved oxygen, turbidity, DOC, ultraviolet absorbance, bromide, and other minerals.

Flow data are collected on a weekly basis from the agricultural drain and from selected siphons on the Island. The agricultural drain has invasive McCrometer in-line flowmeters on both drainage pipes to directly measure the volume of drainage. In addition, digital vibration time totalizers were installed on the two drainage pumps to distribute monthly power consumption data between the two pumps. Twelve of the 21 siphons on Twitchell Island have flowmeters installed.

The results of water quality data analysis are shown in Figures 2 through 10. DOC concentrations and flow are reported for the main agricultural drain and for siphons on Twitchell Island. DOC and flow graphs for the Sacramento River at Greenes Landing are also presented for comparison.

DOC concentrations at the main agricultural drain have ranged from values of less than 10 mg/L to 60 mg/L. Peaks in DOC concentration were seen during the winter months of January through March 1994 and 1995. A somewhat smaller peak was seen in August-September 1994. The fall period of 1995, however, had low DOC values (less than 10 mg/L), corresponding to an extremely dry period (DWR Water Commission Report, December 1995).

The drainage flowing off Twitchell Island had a similar trend to flow in the Sacramento River during the same time period (see Figures 3 and 9). Flow was highest during the months of December 1994 to April 1995. There were also smaller increases in flow during August and September 1994 and 1995.

Mass load for the Twitchell agricultural drain was highest in the winter months of January to March. This time period coincides with both high flows and high DOC concentrations. Smaller peaks of mass loading occurred during the months of August to September in both 1994 and 1995.

Water quality and water quantity data for the siphons on Twitchell Island are shown in Figures 5 through 7. Of the 21 siphons on Twitchell Island, three siphons were metered for flow at the end of 1994 and an additional 9 siphons were metered for flow in June 1995. Water quality samples were taken from any operating siphons at the time of the weekly visits to the Island.

DOC concentrations of water being diverted onto the Island by siphons are shown in Figure 5. DOC concentrations ranged from 1-2 mg/L to almost 40 mg/L. The highest DOC concentrations were seen in April and the lowest concentrations were seen in August and September. These trends are opposite to those found in the Sacramento River, where DOC concentrations were highest in the fall and winter months.

The greatest use of siphons is in the summer months (see Figure 6). Correspondingly, the greatest mass load of DOC onto the islands from siphons occurred in the summer months (see Figure 7).

For comparison purposes, loading in the Sacramento River is presented in Figures 8 through 10. DOC loading in the Sacramento River is greatest in the late winter/early spring months of February to April. This is somewhat later than the greatest loading seen at the Twitchell Island main agricultural drain which occurs during the months of January through March.

A complete listing of sample results for this study can be found in:

Table 3:	Field Parameters (Siphons)
Table 4:	THMFP Data (Siphons)
Table 5:	Mineral Data (Siphons)
Table 6:	Field Parameters (Agricultural Drain)
Table 7:	THMFP Data (Agricultural Drain)
Table 8:	Mineral Data (Agricultural Drain)

In general, there is an increase in organic carbon concentration in Delta island drainage when water is diverted onto the island for irrigation or leaching. The increase is dependent upon the source of Twitchell Island siphon water (e.g., TOC of channel water withdrawn) and often is a concentration increase of 10-20 mg/L DOC. The quantity data for this study are limited to flowmeter data that are available. Using water quality and flowmeter data, mass loads have been calculated for the Twitchell Island main agricultural drain and for the Sacramento River at Greenes Landing. Peak loading on Twitchell Island was seen during the months of January through March while peak loading in the Sacramento River was seen somewhat later during the months of February to April.

This study was discontinued in April 1996. A major objective for this study was to use PG&E electrical power data to extrapolate drainage from Twitchell Island to other islands in the Delta. However, it was determined that this objective could not be met due to (1) the inability to obtain adequate PG&E database records for estimating historical power consumption or pumped volume in the Delta, and (2) the finding that it was not feasible to use electrical power records to measure pumped water discharges from Delta islands.

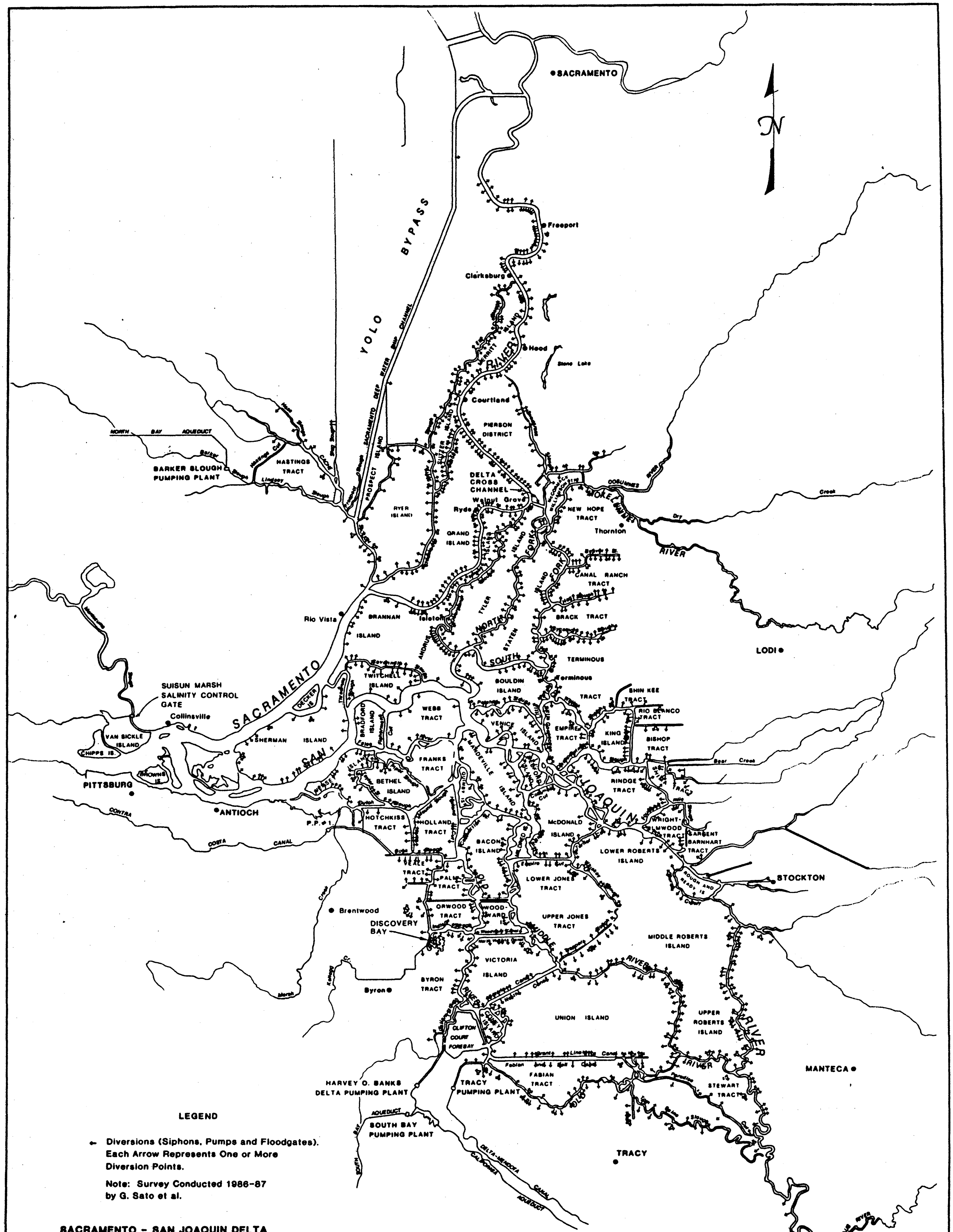


Figure 1.

Irrigation Diversions

Figure 2. DOC Concentrations at Twitchell Island Main Agricultural Drain

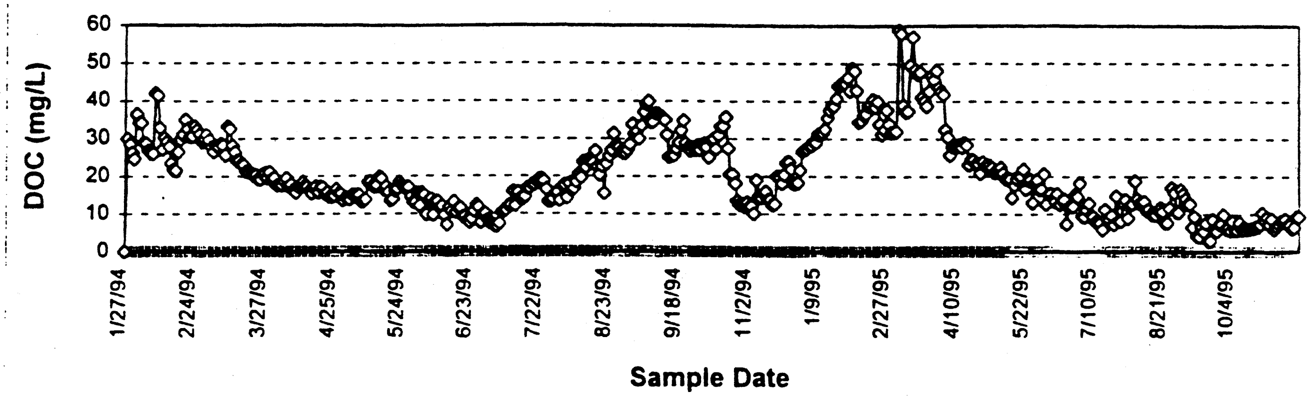


Figure 3. Drainage Flow at Twitchell Island Agricultural Drain

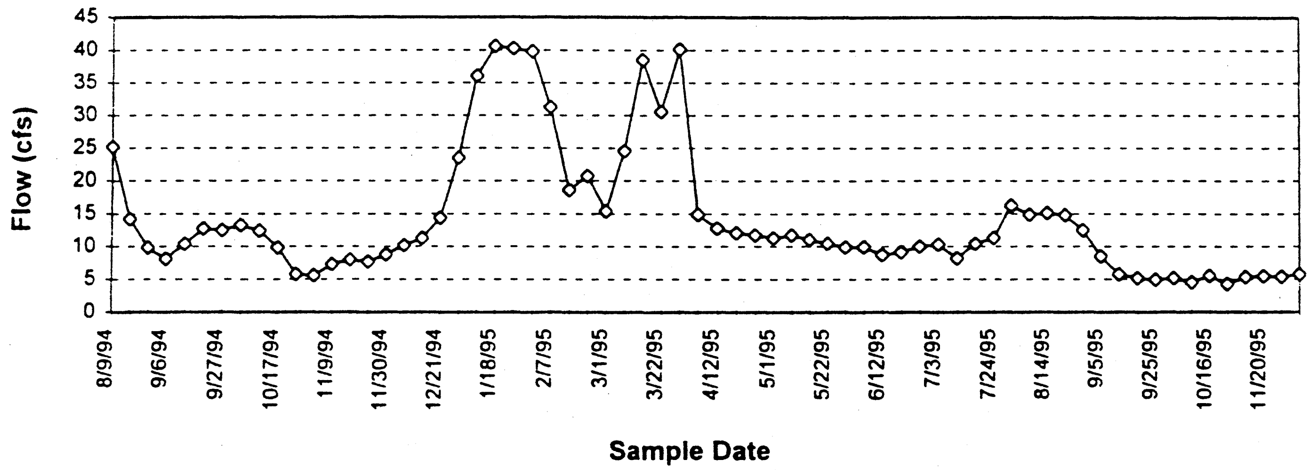


Figure 4. Mass Load of DOC at Twitchell Agricultural Drain

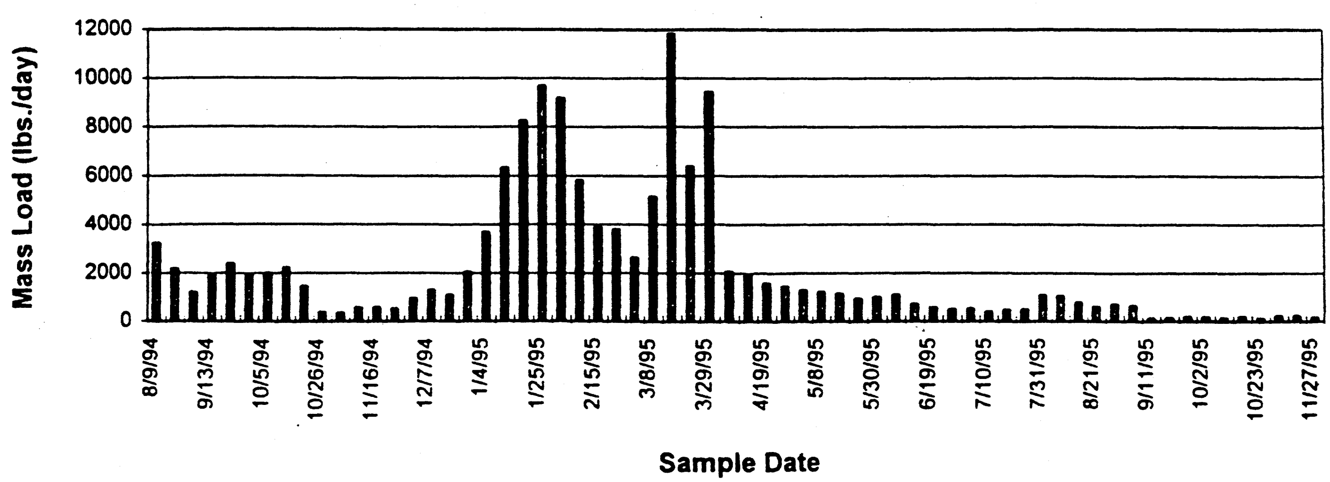


Figure 5. DOC Concentrations for Twitchell Island Siphons

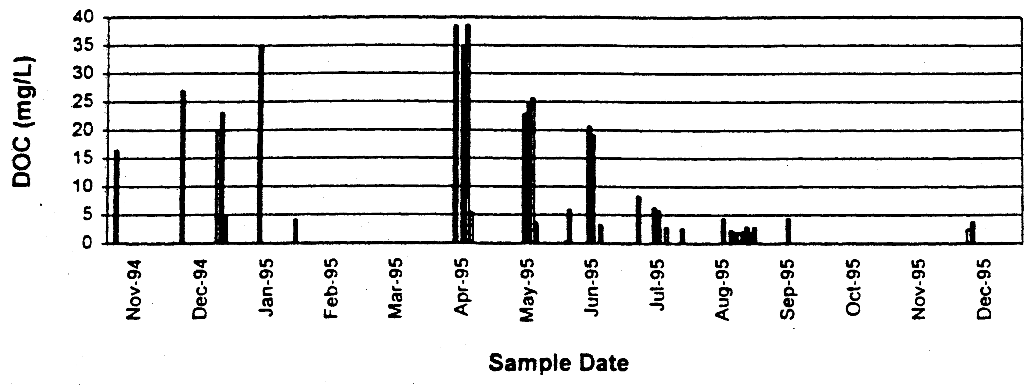


Figure 6. Flow (Delta Diversion) for Siphons on Twitchell Island

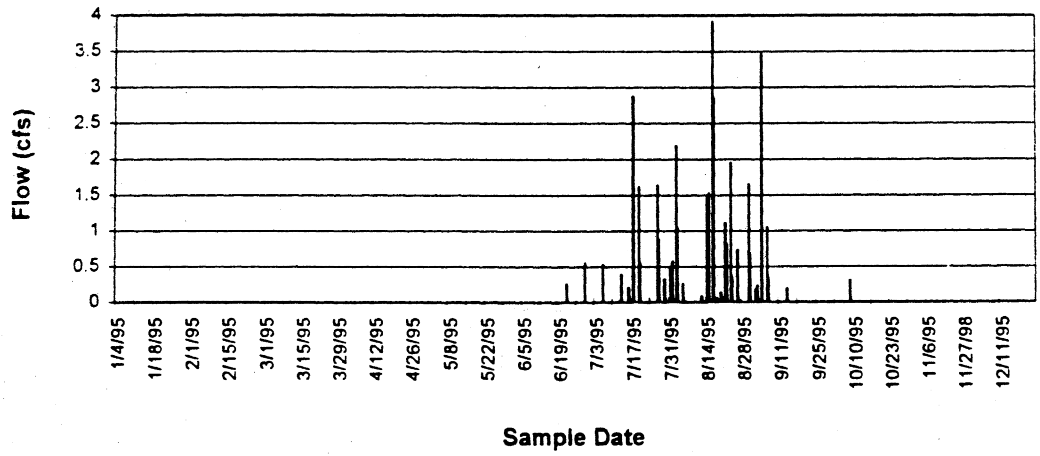


Figure 7. Mass Load of DOC from Siphons

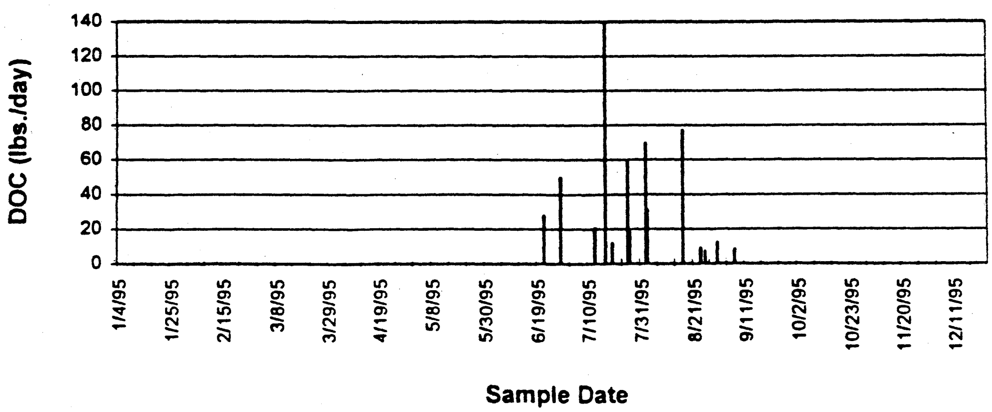


Figure 8. DOC Concentrations in the Sacramento River at Greenes Landing

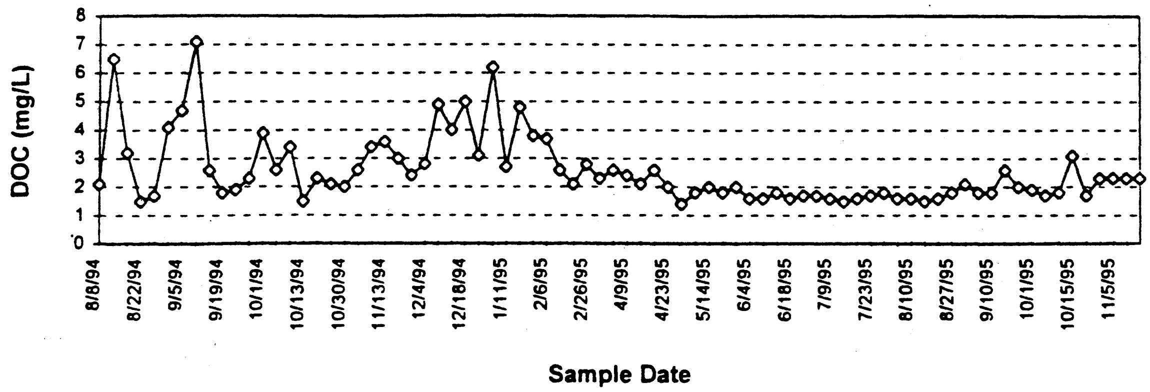


Figure 9. Sacramento River Flow at Freeport

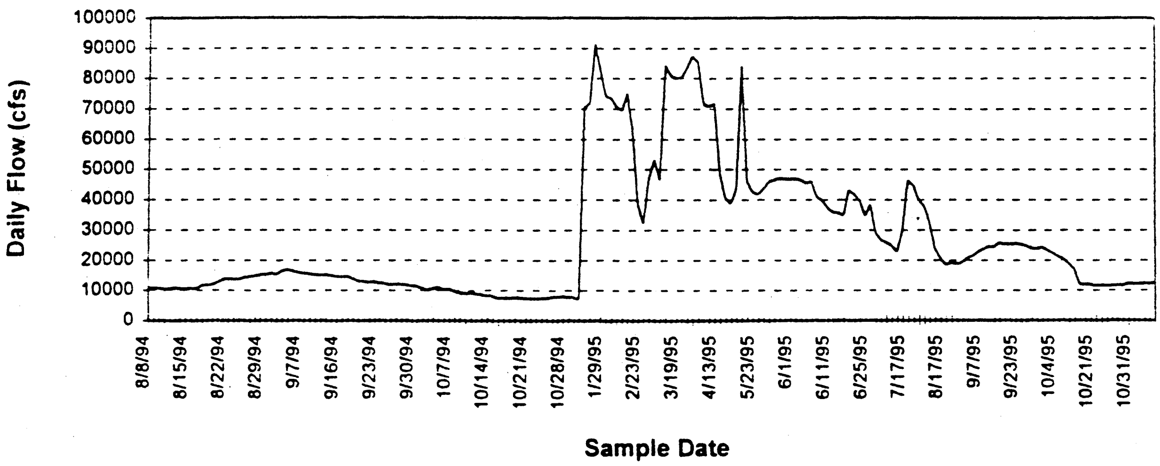


Figure 10. Mass Load of DOC in Sacramento River at Greenes Landing

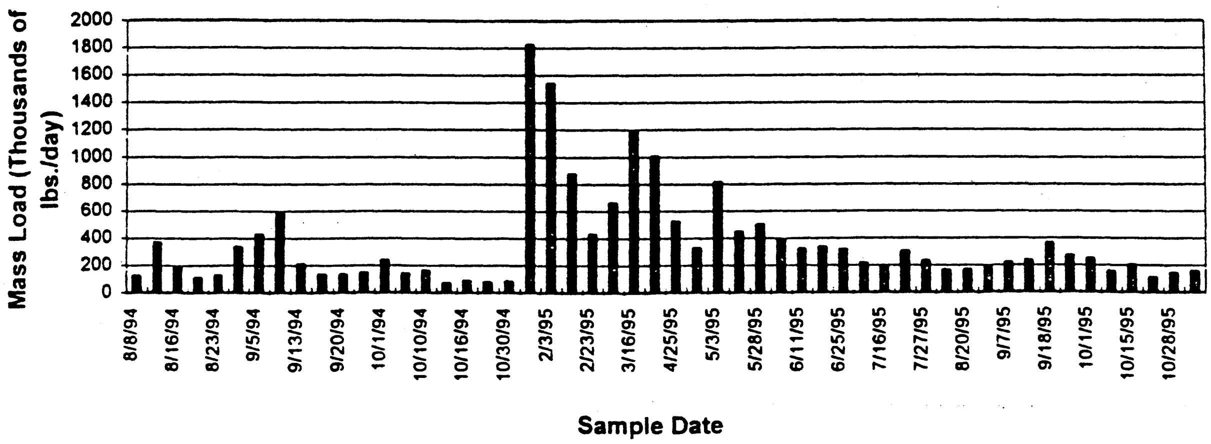


Table 3. Field Parameters (Siphons)

Blank cells indicate that the parameter was not analyzed.

Station Name	Sample No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
SIPH01	C951880	7/31/95	10:01 AM	6.2		189	23.9	6
SIPH03	C942207	11/23/94	10:45 AM	6.5	8.2	558	11.1	8
SIPH03	C942377	12/21/94	9:40 AM	7.0	6.2	714	10.2	6
SIPH03	C951784	7/17/95	11:50 AM	7.2	6.4	311	22.7	9
SIPH03	C951832	7/24/95	11:36 AM	7.5	7.3	254	22.3	12
SIPH04	C952942	12/6/95	10:05 AM	7.6	6.1	5831	15.1	
SIPH05	C952943	12/6/95	9:45 AM	7.1	6.3	285	13.7	
SIPH06	C950129	1/18/95	9:55 AM	7.4	6.7	1118	11.3	14
SIPH06	C950897	4/19/95	11:10 AM	7.9	8.5	1321	15.5	4
SIPH08	C951340	5/30/95	10:35 AM	8.0	8.6	927	20.8	3
SIPH08	C951477	6/12/95	10:23 AM	8.1	7.9	862	21.0	3
SIPH08	C951528	6/19/95	10:15 AM	7.5	8.4	794	20.0	3
SIPH08	C951837	7/24/95	11:50 AM	7.4	8.6	195	22.6	8
SIPH08	C951887	7/31/95	12:15 PM	6.4	6.4	176	24.5	6
SIPH11	C950912	4/26/95	9:35 AM	7.9	9.1	1263	17.3	4
SIPH11	C951150	5/8/95	9:17 AM	8.0	8.7	1036	18.0	5
SIPH11	C951284	5/22/95	10:20 AM	8.0	9.5	951	18.9	6
SIPH11	C951343	5/30/95	10:15 AM	7.7	8.6	924	20.6	3
SIPH11	C951416	6/5/95	12:06 PM	7.8	7.9	866	20.6	3
SIPH11	C951531	6/19/95	9:55 AM	8.1	8.8	789	20.0	3
SIPH11	C951593	6/26/95	11:15 AM	7.2		742	22.8	3
SIPH11	C951741	7/10/95	10:06 AM	7.5	8.2	350	21.6	10
SIPH11	C951792	7/17/95	1:17 AM	7.2	7.6	176	23.3	6
SIPH11	C951840	7/24/95	10:35 AM	7.3	8.0	155	22.0	6
SIPH11	C951890	7/31/95	11:56 AM	6.7	5.4	168	24.8	6
SIPH11	C951989	8/14/95	10:50 AM	7.4	7.6	160	24.0	14
SIPH11	C952037	8/21/95	10:00 AM	7.4	9.9	156	22.5	8
SIPH11	C952099	8/28/95	9:00 AM	7.7	7.9	143	22.8	5
SIPH11	C952201	9/5/95	11:50 AM	7.3	7.9	180	22.8	5
SIPH12	C950899	4/19/95	10:55 AM	7.6	10.7	1293	16.0	4
SIPH12	C951151	5/8/95	9:00 AM	7.8	7.7	944	18.4	2
SIPH13	C950898	4/19/95	10:40 AM	7.6	10.1	217	13.6	11
SIPH13	C950913	4/26/95	10:45 AM	7.7	10.0	199	16.6	8
SIPH13	C951200	5/15/95	9:30 AM	6.7	8.3	144	15.6	7
SIPH13	C951286	5/22/95	12:33 PM	6.9	8.0	141	19.6	9
SIPH13	C951345	5/30/95	10:00 AM	7.6	8.9	130	21.2	9
SIPH13	C951418	6/5/95	11:47 AM	7.7	9.2	134	19.4	13
SIPH13	C951482	6/12/95	10:00 AM	7.8	8.4	116	19.7	6
SIPH13	C951533	6/19/95	9:40 AM	7.5	9.2	124	18.2	7
SIPH13	C951595	6/26/95	10:50 AM	7.2		132	24.1	6
SIPH13	C951743	7/10/95	9:31 AM	7.1	6.2	118	20.8	6
SIPH13	C951892	7/31/95	11:25 AM	6.5	6.5	116	25.0	4
SIPH13	C951991	8/14/95	10:25 AM	7.5	8.4	133	24.1	3
SIPH14	C952102	8/28/95	8:32 AM	7.6	8.2	132	21.5	10
SIPH16	C942167	11/16/94	12:15 PM	7.0	6.5	593	12.7	4
SIPH16	C942296	12/7/94	1:11 PM	6.9	6.0	657	11.9	5
SIPH16	C951994	8/14/95	10:09 AM	7.3	7.4	126	24.3	20
SIPH17	C942297	12/7/94	1:46 PM	6.8	6.1	673	10.9	7
SIPH17	C951944	8/7/95	1:55 PM	6.8	7.8	123	24.4	35
SIPH17	C952043	8/21/95	9:30 AM	7.2	10.7	129	22.5	12
SIPH17	C952105	8/28/95	8:17 AM	7.5	8.1	137	21.2	10
SIPH17	C952132	8/7/95	1:55 PM	6.8	7.8	123	24.4	
SIPH18	C942378	12/21/94	11:10 AM	7.3		594	9.4	8
SIPH18	C951799	7/17/95	10:00 AM	7.3	8.0	131	23.0	9
SIPH18	C951945	8/7/95	12:25 PM	6.9	7.3	126	25.4	13
SIPH18	C951996	8/14/95	9:15 AM	7.1	6.8	127	24.0	14
SIPH18	C952133	8/7/95	12:25 PM	6.9	6.9	126	25.4	
SIPH19	C950012	1/4/95	9:40 AM	7.8	11.6	1052	10.2	12
SIPH19	C952045	8/21/95	8:45 AM	6.8	11.8	129	22.6	12
SIPH20	C951947	8/7/95	10:45 AM	7.0	6.8	119	23.5	31

Table 4. THMFP Data (Siphons)

Blank cells indicate that the parameter was not analyzed.

Station	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turb. NTU	UVA
SIPH01	C951880	7/31/95	51	<10	700	<10	74	750	121	5.9	6	0.284
SIPH03	C942207	11/23/94	170	<10	2100	15	230	2300	342	16.4	8	0.832
SIPH03	C942377	12/21/94	270	<10	1500	30	170	1800	460	26.9	6	1.130
SIPH03	C951784	7/17/95	88	<10	980	<10	110	1100	192	9.0	9	0.398
SIPH03	C951832	7/24/95	68	<10	820	<10	87	890	150	7.7	12	0.359
SIPH04	C952942	12/6/95							3140	2.5	13	0.063
SIPH05	C952943	12/6/95							162	3.8	22	0.113
SIPH06	C950129	1/18/95	130	<10	2000	<10	210	2100	738	35.0	14	1.400
SIPH06	C950897	4/19/95	220	<10	3100	<10	330	3300	919	38.5	4	1.430
SIPH08	C951340	5/30/95	200	<10	2300	14	250	2500	593	22.8	3	0.890
SIPH08	C951477	6/12/95							536	21.1	3	0.838
SIPH08	C951528	6/19/95	190	<10	1900	18	210	2100	525	20.1	3	0.776
SIPH08	C951837	7/24/95	48	<10	680	<10	72	730	126	6.6	8	0.276
SIPH08	C951887	7/31/95	40	<10	700	<10	73	740	112	5.9	6	0.291
SIPH11	C950912	4/26/95	240	<10	3200	<10	340	3400	883	34.8	4	1.310
SIPH11	C951150	5/8/95	210	<10	2500	10	270	2700	701	27.0	5	1.030
SIPH11	C951284	5/22/95	200	<10	2300	14	250	2500	595	24.3	6	0.931
SIPH11	C951343	5/30/95	190	<10	2000	12	220	2200	595	22.6	3	0.889
SIPH11	C951416	6/5/95	170	<10	1900	13	200	2100	509	21.1	3	0.798
SIPH11	C951531	6/19/95	190	<10	1900	17	210	2100	499	19.7	3	0.758
SIPH11	C951593	6/26/95	180	<10	1900	18	210	2100	438	16.6	3	0.698
SIPH11	C951741	7/10/95	110	<10	910	<10	100	1000	216	9.7	10	0.384
SIPH11	C951792	7/17/95	37	<10	510	<10	54	550	107	4.0	6	0.166
SIPH11	C951840	7/24/95	30	<10	500	<10	52	530	99	4.0	6	0.179
SIPH11	C951890	7/31/95	35	<10	670	<10	70	710	111	5.6	6	0.265
SIPH11	C951989	8/14/95	31	<10	630	<10	66	661	108	5.0	8	0.242
SIPH11	C952037	8/21/95	27	<10	590	<10	61	617	100	4.7	4	0.205
SIPH11	C952099	8/28/95	20	<10	380	<10	40	400	95	3.4	5	0.135
SIPH11	C952201	9/5/95	33	<10	510	<10	54	543	106	4.4	5	0.181
SIPH12	C950899	4/19/95	190	<10	2800	<10	300	3000	901	38.6	4	1.410
SIPH12	C951151	5/8/95	180	<10	2000	<10	210	2200	660	25.6	2	0.967
SIPH13	C950898	4/19/95	38	<10	580	<10	61	620	157	6.0	11	0.211
SIPH13	C950913	4/26/95	35	<10	460	<10	49	500	121	4.8	8	0.160
SIPH13	C951200	5/15/95	23	<10	370	<10	39	390	94	3.5	7	0.124
SIPH13	C951286	5/22/95	23	<10	370	<10	39	390	87	3.3	9	0.110
SIPH13	C951345	5/30/95	23	<10	420	<10	44	440	92	4.2	9	0.122
SIPH13	C951418	6/5/95	25	<10	400	<10	42	430	79	4.1	13	0.134
SIPH13	C951482	6/12/95	21	<10	330	<10	35	350	73	2.8	6	0.102
SIPH13	C951533	6/19/95	26	<10	310	<10	33	340	82	3.0	7	0.100
SIPH13	C951595	6/26/95	25	<10	360	<10	38	390	82	3.3	6	0.115
SIPH13	C951743	7/10/95	15	<10	340	<10	35	360	80	2.9	6	0.114
SIPH13	C951892	7/31/95	16	<10	320	<10	33	340	79	2.7	4	0.093
SIPH13	C951991	8/14/95	11	<10	280	<10	29	291	85	2.3	5	0.082
SIPH14	C952102	8/28/95	13	<10	210	<10	22	223	88	1.9	10	0.068
SIPH16	C942167	11/16/94	220	<10	1600	25	180	1800	344		4	0.703
SIPH16	C942296	12/7/94	160	<10	1400	15	150	1600	394	19.9	5	0.809
SIPH16	C951994	8/14/95	12	<10	240	<10	25	252	80	1.9	35	0.067
SIPH17	C942297	12/7/94	150	<10	1600	11	170	1800	412	23.0	7	0.930
SIPH17	C951944	8/7/95	16	<10	360	<10	37	376	88	2.5	18	0.077
SIPH17	C952043	8/21/95	<10	<10	220	<10	22	220	88	1.9	12	0.067
SIPH17	C952105	8/28/95	14	<10	210	<10	22	224	86	1.9	10	0.068
SIPH18	C942378	12/21/94	130	<10	240	61	37	430	320	4.7	8	0.146
SIPH18	C951799	7/17/95	18	<10	330	<10	35	350	83	2.6	9	0.070
SIPH18	C951945	8/7/95	13	<10	520	<10	53	533	82	3.8	8	0.078
SIPH18	C951996	8/14/95	14	<10	320	<10	33	334	82	2.2	14	0.070
SIPH19	C950012	1/4/95	160	25	170	140	38	500	549	4.2	12	0.129
SIPH19	C952045	8/21/95	13	<10	220	<10	23	233	85	1.9	8	0.068
SIPH20	C951947	8/7/95	10	<10	330	<10	34	340	82	2.8	22	0.091

Table 5. Mineral Data (Siphons)

Blank cells indicate that the parameter was not analyzed.

Station	Samp. No.	SampDate	Alk. mg/L	B mg/L	Br mg/L	Ca mg/L	Cl mg/L	TDS mg/L	Hardness mg/L	Mg mg/L	P mg/L	Na mg/L	EC umhos/cm	SO4 mg/L
SIPH01	C951880	7/31/95	50	<0.1	0.05	12	16	121	59	7	1.2	15	195	17
SIPH03	C942207	11/23/94	100	0.2	0.20	27	70	342	150	20	2.3	55	550	56
SIPH03	C942377	12/21/94	117	0.3	0.16	39	76	460	217	29	3.2	62	703	101
SIPH03	C951784	7/17/95	68	0.1	0.09	18	32	192	94	12	1.4	26	308	31
SIPH03	C951832	7/24/95	58	<0.1	0.07	14	23	150	72	9	1.4	20	246	23
SIPH04	C952942	12/6/95	60	0.4	6.13	46	1660	3140	630	125	38.0	964	5860	220
SIPH05	C952943	12/6/95	82	0.1	0.04	15	19	162	87	12	1.3	21	285	22
SIPH06	C950129	1/18/95	165	0.3	0.18	69	133	738	390	53	3.7	103	1130	179
SIPH06	C950897	4/19/95	168	0.3	0.17	84	150	919	473	64	3.0	110	1340	261
SIPH08	C951340	5/30/95	151	0.2	0.24	55	111	593	310	42	2.4	86	928	138
SIPH08	C951477	6/12/95	145	0.2	0.21	52	103	536	286	38	2.5	80	844	115
SIPH08	C951528	6/19/95	142	0.2	0.24	45	94	525	252	34	2.2	73	804	106
SIPH08	C951837	7/24/95	49	<0.1	0.05	12	16	126	59	7	1.4	15	199	21
SIPH08	C951887	7/31/95	46	<0.1	0.04	11	13	112	56	7	1.2	13	175	15
SIPH11	C950912	4/26/95	193	0.3	0.22	82	147	883	456	61	3.7	112	1270	228
SIPH11	C951150	5/8/95	154	0.2	0.23	64	126	701	357	48	2.5	93	1080	182
SIPH11	C951284	5/22/95	142	0.2	0.22	52	106	595	303	42	2.1	81	918	141
SIPH11	C951343	5/30/95	149	0.2	0.22	56	108	595	317	43	2.4	86	929	138
SIPH11	C951416	6/5/95	134	0.2	0.21	49	93	509	266	35	2.3	73	805	117
SIPH11	C951531	6/19/95	133	0.2	0.23	44	90	499	246	33	2.2	72	774	102
SIPH11	C951593	6/26/95	125	0.2	0.22	40	80	438	224	30	2.3	64	702	89
SIPH11	C951741	7/10/95	75	0.1	0.10	20	37	216	108	14	1.8	29	349	35
SIPH11	C951792	7/17/95	43	<0.1	0.04	11	14	107	52	6	1.2	13	172	15
SIPH11	C951840	7/24/95	39	<0.1	0.03	10	12	99	46	5	1.1	12	153	15
SIPH11	C951890	7/31/95	44	<0.1	0.04	11	12	111	52	6	1.3	12	168	15
SIPH11	C951989	8/14/95	50	<0.1	0.03	11	9	108	52	6	1.1	10	162	11
SIPH11	C952037	8/21/95	51	<0.1	0.03	10	9	100	50	6	1.2	11	160	9
SIPH11	C952099	8/28/95	50	<1.0	0.02	10	8	95	50	6	1.1	9	149	8
SIPH11	C952201	9/5/95	55	<0.1	0.04	12	11	106	59	7	1.1	12	175	11
SIPH12	C950899	4/19/95	162	0.3	0.17	82	144	901	464	63	3.1	102	1260	246
SIPH12	C951151	5/8/95	146	0.2	0.22	60	118	660	339	46	2.4	88	1020	179
SIPH13	C950898	4/19/95	50	0.1	0.10	14	25	157	68	8	1.5	17	259	29
SIPH13	C950913	4/26/95	48	<0.1	0.09	13	16	121	62	7	1.5	15	199	20
SIPH13	C951200	5/15/95	39	<0.1	0.03	9	10	94	43	5	1.2	10	142	11
SIPH13	C951286	5/22/95	36	<0.1	0.03	9	10	87	39	4	1.2	10	140	11
SIPH13	C951345	5/30/95	36	<0.1	0.04	9	12	92	39	4	1.4	10	149	12
SIPH13	C951418	6/5/95	33	<0.1	0.03	8	10	79	36	4	1.2	10	132	10
SIPH13	C951482	6/12/95	34	<0.1	0.02	9	8	73	39	4	1.1	8	127	9
SIPH13	C951533	6/19/95	33	<0.1	0.03	9	9	82	39	4	1.0	9	136	10
SIPH13	C951595	6/26/95	34	<0.1	0.03	9	9	82	39	4	1.4	10	128	9
SIPH13	C951743	7/10/95	36	<0.1	0.04	8	7	80	36	4	1.0	8	116	8
SIPH13	C951892	7/31/95	38	<0.1	0.02	8	8	79	36	4	1.0	8	123	10
SIPH13	C951991	8/14/95	46	<0.1	0.02	9	6	85	43	5	1.0	8	133	7
SIPH14	C952102	8/28/95	48	<0.1	0.02	9	7	88	47	6	1.0	9	137	7
SIPH16	C942167	11/16/94	95	0.2	0.31	24	90	344	138	19	2.9	65	581	46
SIPH16	C942296	12/7/94	101	0.2	0.25	30	86	394	170	23	3.6	66	640	65
SIPH16	C951994	8/14/95	42	<0.1	0.02	9	6	80	43	5	1.0	8	125	7
SIPH17	C942297	12/7/94	105	0.2	0.22	32	83	412	183	25	3.7	64	654	76
SIPH17	C951944	8/7/95	41	<0.1	0.02	9	8	88	43	5	1.1	9	137	5
SIPH17	C952043	8/21/95	45	<0.1	0.02	9	8	88	43	5	1.0	8	129	5
SIPH17	C952105	8/28/95	46	<0.1	0.02	9	8	86	43	5	1.0	9	138	7
SIPH18	C942378	12/21/94	69	0.1	0.38	17	113	320	109	16	4.7	70	588	29
SIPH18	C951799	7/17/95	35	<0.1	0.03	9	9	83	39	4	1.2	9	131	10
SIPH18	C951945	8/7/95	42	<0.1	0.02	9	3	82	43	5	1.5	8	124	8
SIPH18	C951996	8/14/95	42	<0.1	0.02	9	7	82	43	5	1.2	9	130	7
SIPH19	C950012	1/4/95	77	0.1	0.76	21	239	549	160	26	7.2	140	1030	47
SIPH19	C952045	8/21/95	45	<0.1	0.02	9	8	85	43	5	1.0	9	136	8
SIPH20	C951947	8/7/95	41	<0.1	0.02	9	6	82	43	5	1.2	8	122	7

Table 6. Field Parameters (Agricultural Drain)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C940239	1/27/94	9:08 AM			1208	5.4	
TWITCHELLPP01	C940240	1/28/94	9:08 AM			1143	4.4	
TWITCHELLPP01	C940241	1/29/94	9:08 AM			1076	4.3	
TWITCHELLPP01	C940242	1/30/94	9:08 AM			1067	5.0	
TWITCHELLPP01	C940243	1/31/94	9:08 AM			1284	6.2	
TWITCHELLPP01	C940266	2/1/94	2:00 PM			1327	10.2	
TWITCHELLPP01	C940267	2/2/94	2:00 PM			1356	10.1	
TWITCHELLPP01	C940268	2/3/94	2:00 PM			1348	10.1	
TWITCHELLPP01	C940269	2/4/94	2:00 PM			1320	9.9	
TWITCHELLPP01	C940270	2/5/94	2:00 PM			1338	9.8	
TWITCHELLPP01	C940271	2/6/94	2:00 PM			1303	9.8	
TWITCHELLPP01	C940307	2/8/94	1:20 PM			1634	11.3	
TWITCHELLPP01	C940308	2/9/94	1:20 PM			1589	10.0	
TWITCHELLPP01	C940309	2/10/94	1:20 PM			1474	10.2	
TWITCHELLPP01	C940310	2/11/94	1:20 PM			1472	9.8	
TWITCHELLPP01	C940311	2/12/94	1:20 PM			1463	9.6	
TWITCHELLPP01	C940312	2/13/94	1:20 PM			1446	9.6	
TWITCHELLPP01	C940313	2/14/94	1:20 PM			1395	9.9	
TWITCHELLPP01	C940347	2/15/94	1:27 PM			1289	9.8	
TWITCHELLPP01	C940348	2/16/94	1:27 PM			1225	8.8	
TWITCHELLPP01	C940349	2/17/94	1:27 PM			1120	8.4	
TWITCHELLPP01	C940350	2/18/94	1:27 PM			1142	8.2	
TWITCHELLPP01	C940351	2/19/94	1:27 PM			1251	8.2	
TWITCHELLPP01	C940352	2/20/94	1:27 PM			1464	8.1	
TWITCHELLPP01	C940353	2/21/94	1:27 PM			1518	8.1	
TWITCHELLPP01	C940391	2/22/94	10:00 AM			1455	13.6	
TWITCHELLPP01	C940392	2/23/94	10:00 AM			1464	13.4	
TWITCHELLPP01	C940393	2/24/94	10:00 AM			1483	13.4	
TWITCHELLPP01	C940394	2/25/94	10:00 AM			1515	13.0	
TWITCHELLPP01	C940395	2/26/94	10:00 AM			1473	12.6	
TWITCHELLPP01	C940396	2/27/94	10:00 AM			1465	12.6	
TWITCHELLPP01	C940397	2/28/94	10:00 AM			1459	12.4	
TWITCHELLPP01	C940420	3/1/94	12:16 PM			1476	14.3	
TWITCHELLPP01	C940421	3/2/94	12:16 PM			1432	14.2	
TWITCHELLPP01	C940422	3/3/94	12:16 PM			1398	14.3	
TWITCHELLPP01	C940423	3/4/94	12:16 PM			1411	13.8	
TWITCHELLPP01	C940424	3/5/94	12:16 PM			1401	13.1	
TWITCHELLPP01	C940425	3/6/94	12:16 PM			1388	12.6	
TWITCHELLPP01	C940426	3/7/94	12:16 PM			1298	12.6	
TWITCHELLPP01	C940459	3/8/94	11:40 AM			1212	16.7	
TWITCHELLPP01	C940460	3/9/94	11:40 AM			1279	16.7	
TWITCHELLPP01	C940461	3/10/94	11:40 AM			1230	16.7	
TWITCHELLPP01	C940462	3/11/94	11:40 AM			1253	16.7	
TWITCHELLPP01	C940463	3/12/94	11:40 AM			1253	16.7	
TWITCHELLPP01	C940488	3/15/94	1:28 PM			1137	12.4	
TWITCHELLPP01	C940489	3/16/94	1:28 PM			1140	11.6	
TWITCHELLPP01	C940490	3/17/94	1:28 PM			1095	11.6	
TWITCHELLPP01	C940491	3/18/94	1:28 PM			1128	11.5	
TWITCHELLPP01	C940492	3/19/94	1:28 PM			1067	11.2	
TWITCHELLPP01	C940493	3/20/94	1:28 PM			1022	11.0	
TWITCHELLPP01	C940494	3/21/94	1:28 PM			987	10.7	
TWITCHELLPP01	C940528	3/22/94	1:28 PM			978	15.8	
TWITCHELLPP01	C940529	3/23/94	1:28 PM			940	15.3	
TWITCHELLPP01	C940530	3/24/94	1:28 PM			892	15.4	
TWITCHELLPP01	C940531	3/25/94	1:28 PM			935	15.2	
TWITCHELLPP01	C940532	3/26/94	1:28 PM			917	15.2	
TWITCHELLPP01	C940533	3/27/94	1:28 PM			944	15.0	
TWITCHELLPP01	C940534	3/28/94	1:28 PM			950	15.0	
TWITCHELLPP01	C940562	3/29/94	12:08 PM			898	16.7	

Table 6. Field Parameters (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C940563	3/30/94	12:08 PM			967	16.1	
TWITCHELLPP01	C940564	3/31/94	12:08 PM			860	16.4	
TWITCHELLPP01	C940565	4/1/94	12:08 PM			840	16.5	
TWITCHELLPP01	C940566	4/2/94	12:08 PM			820	16.9	
TWITCHELLPP01	C940567	4/3/94	12:08 PM			823	16.3	
TWITCHELLPP01	C940568	4/4/94	12:08 PM			921	16.0	
TWITCHELLPP01	C940591	4/5/94	11:59 AM			841	16.7	
TWITCHELLPP01	C940592	4/6/94	11:59 AM			857	16.5	
TWITCHELLPP01	C940593	4/7/94	11:59 AM			762	16.6	
TWITCHELLPP01	C940594	4/8/94	11:59 AM			806	16.4	
TWITCHELLPP01	C940595	4/9/94	11:59 AM			762	16.1	
TWITCHELLPP01	C940596	4/10/94	11:59 AM			847	15.5	
TWITCHELLPP01	C940597	4/11/94	11:59 AM			864	15.4	
TWITCHELLPP01	C940701	4/12/94	10:59 AM			918	15.9	
TWITCHELLPP01	C940702	4/13/94	10:59 AM			827	15.9	
TWITCHELLPP01	C940703	4/14/94	10:59 AM			794	16.1	
TWITCHELLPP01	C940704	4/15/94	10:59 AM			843	16.2	
TWITCHELLPP01	C940705	4/16/94	10:59 AM			831	16.2	
TWITCHELLPP01	C940706	4/17/94	10:59 AM			899	16.1	
TWITCHELLPP01	C940707	4/18/94	10:59 AM			889	15.6	
TWITCHELLPP01	C940730	4/19/94	11:00 AM			848	14.6	
TWITCHELLPP01	C940731	4/20/94	11:00 AM			805	13.1	
TWITCHELLPP01	C940732	4/21/94	11:00 AM			867	12.6	
TWITCHELLPP01	C940733	4/22/94	11:00 AM			743	12.3	
TWITCHELLPP01	C940734	4/23/94	11:00 AM			776	11.9	
TWITCHELLPP01	C940735	4/24/94	11:00 AM			776	12.0	
TWITCHELLPP01	C940736	4/25/94	11:00 AM			918	12.1	
TWITCHELLPP01	C940767	4/26/94	1:00 PM			912	15.9	
TWITCHELLPP01	C940768	4/27/94	1:00 PM			926	15.8	
TWITCHELLPP01	C940769	4/28/94	1:00 PM			756	15.8	
TWITCHELLPP01	C940770	4/29/94	1:00 PM			802	15.7	
TWITCHELLPP01	C940771	4/30/94	1:00 PM			743	15.6	
TWITCHELLPP01	C940772	5/1/94	1:00 PM			779	15.5	
TWITCHELLPP01	C940773	5/2/94	1:00 PM			780	15.5	
TWITCHELLPP01	C940785	5/3/94	10:00 AM			735	18.0	
TWITCHELLPP01	C940807	5/3/94	10:00 AM			735	18.0	
TWITCHELLPP01	C940808	5/4/94	10:00 AM			721	17.5	
TWITCHELLPP01	C940809	5/5/94	10:00 AM			773	17.8	
TWITCHELLPP01	C940810	5/6/94	10:00 AM			780	17.6	
TWITCHELLPP01	C940811	5/7/94	10:00 AM			871	17.4	
TWITCHELLPP01	C940812	5/8/94	10:00 AM			893	17.1	
TWITCHELLPP01	C940813	5/9/94	10:00 AM			906	17.1	
TWITCHELLPP01	C940847	5/10/94	12:00 PM			939	14.9	
TWITCHELLPP01	C940848	5/11/94	12:00 PM			897	13.9	
TWITCHELLPP01	C940849	5/12/94	12:00 PM			903	13.9	
TWITCHELLPP01	C940850	5/13/94	12:00 PM			1020	13.7	
TWITCHELLPP01	C940851	5/14/94	12:00 PM			991	13.6	
TWITCHELLPP01	C940852	5/15/94	12:00 PM			956	13.5	
TWITCHELLPP01	C940853	5/16/94	12:00 PM			951	13.6	
TWITCHELLPP01	C940887	5/17/94	12:48 PM			877	21.8	
TWITCHELLPP01	C940888	5/18/94	12:48 PM			960	20.7	
TWITCHELLPP01	C940889	5/19/94	12:48 PM			923	20.5	
TWITCHELLPP01	C940890	5/20/94	12:48 PM			909	20.3	
TWITCHELLPP01	C940891	5/21/94	12:48 PM			887	20.0	
TWITCHELLPP01	C940892	5/22/94	12:48 PM			913	19.8	
TWITCHELLPP01	C940893	5/23/94	12:48 PM			938	19.7	
TWITCHELLPP01	C940916	5/24/94	12:31 PM			900	19.8	
TWITCHELLPP01	C940917	5/25/94	12:31 PM			914	19.7	
TWITCHELLPP01	C940918	5/26/94	12:31 PM			768	19.7	

Table 6. Field Parameters (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C940919	5/27/94	12:31 PM			1041	20.0	
TWITCHELLPP01	C940920	5/28/94	12:31 PM			932	19.9	
TWITCHELLPP01	C940921	5/29/94	12:31 PM			873	19.5	
TWITCHELLPP01	C940922	5/30/94	12:31 PM			806	19.4	
TWITCHELLPP01	C941014	5/31/94	11:59 AM			856	18.2	
TWITCHELLPP01	C941015	6/1/94	11:59 AM			848	18.2	
TWITCHELLPP01	C941016	6/2/94	11:59 AM			854	18.2	
TWITCHELLPP01	C941017	6/3/94	11:59 AM			768	18.2	
TWITCHELLPP01	C941018	6/4/94	11:59 AM			753	18.2	
TWITCHELLPP01	C941019	6/5/94	11:59 AM			745	18.2	
TWITCHELLPP01	C941020	6/6/94	11:59 AM			700	18.2	
TWITCHELLPP01	C941054	6/7/94	12:32 PM			722	18.8	
TWITCHELLPP01	C941055	6/8/94	12:32 PM			633	18.3	
TWITCHELLPP01	C941056	6/9/94	12:32 PM			663	18.4	
TWITCHELLPP01	C941057	6/10/94	12:32 PM			674	18.3	
TWITCHELLPP01	C941058	6/11/94	12:32 PM			731	18.2	
TWITCHELLPP01	C941059	6/12/94	12:32 PM			678	18.0	
TWITCHELLPP01	C941060	6/13/94	12:32 PM			621	17.9	
TWITCHELLPP01	C941154	6/14/94	11:23 AM			638	18.9	
TWITCHELLPP01	C941155	6/15/94	11:23 AM			659	18.7	
TWITCHELLPP01	C941156	6/16/94	11:23 AM			702	18.5	
TWITCHELLPP01	C941157	6/17/94	11:23 AM			659	18.3	
TWITCHELLPP01	C941158	6/18/94	11:23 AM			603	18.2	
TWITCHELLPP01	C941159	6/19/94	11:23 AM			670	18.3	
TWITCHELLPP01	C941160	6/20/94	11:23 AM			664	18.4	
TWITCHELLPP01	C941226	6/21/94	11:59 AM			711	22.4	
TWITCHELLPP01	C941227	6/22/94	11:59 AM			678	22.2	
TWITCHELLPP01	C941228	6/23/94	11:59 AM			623	22.4	
TWITCHELLPP01	C941229	6/24/94	11:59 AM			586	22.4	
TWITCHELLPP01	C941230	6/25/94	11:59 AM			580	22.3	
TWITCHELLPP01	C941231	6/26/94	11:59 AM			547	22.0	
TWITCHELLPP01	C941232	6/27/94	11:59 AM			631	21.8	
TWITCHELLPP01	C941250	6/28/94	12:23 PM			646	19.2	
TWITCHELLPP01	C941272	6/28/94	12:23 PM			646	19.2	
TWITCHELLPP01	C941273	6/29/94	12:23 PM			679	19.2	
TWITCHELLPP01	C941274	6/30/94	12:23 PM			692	19.3	
TWITCHELLPP01	C941275	7/1/94	12:23 PM			665	19.2	
TWITCHELLPP01	C941276	7/2/94	12:23 PM			624	19.1	
TWITCHELLPP01	C941277	7/3/94	12:23 PM			686	18.8	
TWITCHELLPP01	C941278	7/4/94	12:23 PM			673	18.7	
TWITCHELLPP01	C941308	7/5/94	11:13 AM			575	22.7	
TWITCHELLPP01	C941309	7/6/94	11:13 AM			727	20.7	
TWITCHELLPP01	C941310	7/7/94	11:13 AM			710	20.5	
TWITCHELLPP01	C941311	7/8/94	11:13 AM			741	20.3	
TWITCHELLPP01	C941312	7/9/94	11:13 AM			767	20.3	
TWITCHELLPP01	C941313	7/10/94	11:13 AM			787	19.8	
TWITCHELLPP01	C941314	7/11/94	11:13 AM			752	19.6	
TWITCHELLPP01	C941426	7/12/94	11:13 AM			801	18.7	
TWITCHELLPP01	C941427	7/13/94	11:13 AM			795	18.5	
TWITCHELLPP01	C941428	7/14/94	11:13 AM			751	18.6	
TWITCHELLPP01	C941429	7/15/94	11:13 AM			762	18.6	
TWITCHELLPP01	C941430	7/16/94	11:13 AM			779	18.6	
TWITCHELLPP01	C941431	7/17/94	11:13 AM			848	18.3	
TWITCHELLPP01	C941432	7/18/94	11:13 AM			830	18.1	
TWITCHELLPP01	C941462	7/19/94	10:51 AM			737	23.3	
TWITCHELLPP01	C941463	7/20/94	10:51 AM			731	22.6	
TWITCHELLPP01	C941464	7/21/94	10:51 AM			726	22.7	
TWITCHELLPP01	C941465	7/22/94	10:51 AM			788	22.9	
TWITCHELLPP01	C941466	7/23/94	10:51 AM			855	23.0	

Table 6. Field Parameters (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C941467	7/24/94	10:51 AM			822	22.8	
TWITCHELLPP01	C941468	7/25/94	10:51 AM			776	22.6	
TWITCHELLPP01	C941548	7/26/94	11:00 AM			821	19.3	
TWITCHELLPP01	C941549	7/27/94	11:00 AM			749	18.6	
TWITCHELLPP01	C941550	7/28/94	11:00 AM			714	18.7	
TWITCHELLPP01	C941551	7/29/94	11:00 AM			699	18.8	
TWITCHELLPP01	C941552	7/30/94	11:00 AM			699	18.8	
TWITCHELLPP01	C941553	7/31/94	11:00 AM			693	18.7	
TWITCHELLPP01	C941554	8/1/94	11:00 AM			689	18.6	
TWITCHELLPP01	C941630	8/2/94	10:04 AM			750	19.9	
TWITCHELLPP01	C941631	8/3/94	10:04 AM			685	20.2	
TWITCHELLPP01	C941632	8/4/94	10:04 AM			731	20.4	
TWITCHELLPP01	C941633	8/5/94	10:04 AM			742	20.5	
TWITCHELLPP01	C941634	8/6/94	10:04 AM			677	20.4	
TWITCHELLPP01	C941635	8/7/94	10:04 AM			884	20.3	
TWITCHELLPP01	C941636	8/8/94	10:04 AM			841	19.9	
TWITCHELLPP01	C941666	8/9/94	10:00 AM			794	25.3	
TWITCHELLPP01	C941667	8/10/94	10:00 AM			812	25.0	
TWITCHELLPP01	C941668	8/11/94	10:00 AM			920	24.8	
TWITCHELLPP01	C941669	8/12/94	10:00 AM			909	24.8	
TWITCHELLPP01	C941670	8/13/94	10:00 AM			873	24.4	
TWITCHELLPP01	C941671	8/14/94	10:00 AM			873	24.3	
TWITCHELLPP01	C941672	8/15/94	10:00 AM			866	23.9	
TWITCHELLPP01	C941711	8/16/94	12:00 AM			866	19.9	
TWITCHELLPP01	C941712	8/17/94	12:00 AM			875	20.0	
TWITCHELLPP01	C941713	8/18/94	12:00 AM			834	20.2	
TWITCHELLPP01	C941714	8/19/94	12:00 AM			874	20.2	
TWITCHELLPP01	C941715	8/20/94	12:00 AM			826	20.1	
TWITCHELLPP01	C941716	8/21/94	12:00 AM			915	19.7	
TWITCHELLPP01	C941717	8/22/94	12:00 AM			1002	19.5	
TWITCHELLPP01	C941725	8/23/94	10:25 AM			1013	21.1	
TWITCHELLPP01	C941740	9/6/94	10:25 AM			1013	21.1	
TWITCHELLPP01	C941741	9/7/94	10:25 AM			974	21.1	
TWITCHELLPP01	C941742	9/8/94	10:25 AM			954	21.3	
TWITCHELLPP01	C941743	9/9/94	10:25 AM			941	21.5	
TWITCHELLPP01	C941744	9/10/94	10:25 AM			908	21.5	
TWITCHELLPP01	C941745	9/11/94	10:25 AM			956	21.1	
TWITCHELLPP01	C941746	9/12/94	10:25 AM			999	20.8	
TWITCHELLPP01	C941811	8/30/94	10:30 AM			1006	23.1	
TWITCHELLPP01	C941812	8/31/94	10:30 AM			991	22.5	
TWITCHELLPP01	C941813	9/1/94	10:30 AM			963	22.8	
TWITCHELLPP01	C941814	9/2/94	10:30 AM			995	22.9	
TWITCHELLPP01	C941815	9/3/94	10:30 AM			1004	22.6	
TWITCHELLPP01	C941816	9/4/94	10:30 AM			1007	22.1	
TWITCHELLPP01	C941817	9/5/94	10:30 AM			1001	21.8	
TWITCHELLPP01	C941840	9/6/94	11:00 AM			999	18.7	
TWITCHELLPP01	C941841	9/7/94	11:00 AM			994	18.0	
TWITCHELLPP01	C941842	9/8/94	11:00 AM			939	18.8	
TWITCHELLPP01	C941843	9/9/94	11:00 AM			924	18.7	
TWITCHELLPP01	C941844	9/10/94	11:00 AM			896	18.4	
TWITCHELLPP01	C941845	9/11/94	11:00 AM			892	18.1	
TWITCHELLPP01	C941846	9/12/94	11:00 AM			840	17.9	
TWITCHELLPP01	C941880	9/13/94	11:03 AM			780	20.4	
TWITCHELLPP01	C941881	9/14/94	11:03 AM			703	20.4	
TWITCHELLPP01	C941882	9/15/94	11:03 AM			805	20.7	
TWITCHELLPP01	C941883	9/16/94	11:03 AM			813	20.3	
TWITCHELLPP01	C941884	9/17/94	11:03 AM			803	20.6	
TWITCHELLPP01	C941885	9/18/94	11:03 AM			802	20.1	
TWITCHELLPP01	C941886	9/19/94	11:03 AM			831	19.8	

Table 6. Field Parameters (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C941998	9/27/94	10:30 AM			789	17.2	
TWITCHELLPP01	C941999	9/28/94	10:30 AM			764	17.3	
TWITCHELLPP01	C942000	9/29/94	10:30 AM			771	17.4	
TWITCHELLPP01	C942001	9/30/94	10:30 AM			765	17.1	
TWITCHELLPP01	C942002	10/1/94	10:30 AM			754	17.3	
TWITCHELLPP01	C942003	10/2/94	10:30 AM			750	17.3	
TWITCHELLPP01	C942004	10/3/94	10:30 AM			771	17.1	
TWITCHELLPP01	C942027	10/4/94	11:20 AM			776	17.4	
TWITCHELLPP01	C942028	10/5/94	11:20 AM			830	17.1	
TWITCHELLPP01	C942029	10/6/94	11:20 AM			830	17.4	
TWITCHELLPP01	C942030	10/7/94	11:20 AM			836	17.5	
TWITCHELLPP01	C942031	10/8/94	11:20 AM			816	17.2	
TWITCHELLPP01	C942032	10/9/94	11:20 AM			826	16.5	
TWITCHELLPP01	C942033	10/10/94	11:20 AM			825	16.3	
TWITCHELLPP01	C942061	10/12/94	10:00 AM			809	15.2	
TWITCHELLPP01	C942062	10/14/94	8:00 PM			776	15.2	
TWITCHELLPP01	C942063	10/17/94	6:00 AM					25
TWITCHELLPP01	C942088	10/19/94	12:00 PM			967	16.0	
TWITCHELLPP01	C942089	10/19/94	12:00 PM			967	16.0	
TWITCHELLPP01	C942090	10/21/94	10:00 PM			965	15.3	
TWITCHELLPP01	C942091	10/24/94	8:00 AM			908	15.0	23
TWITCHELLPP01	C942106	10/26/94	12:00 PM			921	12.7	
TWITCHELLPP01	C942107	10/28/94	10:00 PM			915	12.4	
TWITCHELLPP01	C942108	10/31/94	8:00 AM			925	11.5	28
TWITCHELLPP01	C942123	11/2/94	12:00 PM			897	12.2	
TWITCHELLPP01	C942124	11/4/94	10:00 PM			897	12.4	
TWITCHELLPP01	C942125	11/7/94	8:00 AM			1325	12.3	18
TWITCHELLPP01	C942163	11/9/94	12:00 PM			1144	7.3	
TWITCHELLPP01	C942164	11/11/94	10:00 PM			1107	6.8	
TWITCHELLPP01	C942165	11/16/94	8:00 AM	7	6.9	1045	6.8	24
TWITCHELLPP01	C942204	11/16/94	12:00 PM			1024	10.0	
TWITCHELLPP01	C942205	11/18/94	10:00 PM			1037	8.2	
TWITCHELLPP01	C942206	11/21/94	8:00 AM	6.8	8.5	1029	6.9	18
TWITCHELLPP01	C942292	11/30/94	11:07 AM			1201	8.4	
TWITCHELLPP01	C942293	12/2/94	11:07 AM			1214	9.2	
TWITCHELLPP01	C942294	12/5/94	11:07 AM			1336	7.7	16
TWITCHELLPP01	C942338	12/7/94	11:00 AM			1309	6.3	
TWITCHELLPP01	C942339	12/9/94	7:00 PM			1286	6.0	
TWITCHELLPP01	C942340	12/12/94	7:00 AM			1266	5.9	22
TWITCHELLPP01	C942374	12/14/94	12:00 PM			1292	7.9	
TWITCHELLPP01	C942375	12/16/94	10:00 PM			1383	7.1	
TWITCHELLPP01	C942376	12/19/94	8:00 AM			1230	7.0	10
TWITCHELLPP01	C950009	12/28/94	12:00 PM			1365	9.3	
TWITCHELLPP01	C950010	12/30/94	10:00 PM			1280	8.9	
TWITCHELLPP01	C950011	1/4/95	8:00 AM			1215	8.8	105
TWITCHELLPP01	C950051	1/4/95	12:00 PM			1262	11.5	
TWITCHELLPP01	C950052	1/6/95	10:00 PM			1460	11.4	
TWITCHELLPP01	C950053	1/9/95	8:00 AM			1336	11.5	25
TWITCHELLPP01	C950126	1/11/95	12:00 PM			1120	7.9	
TWITCHELLPP01	C950127	1/13/95	10:00 PM			1372	7.9	
TWITCHELLPP01	C950128	1/18/95	8:00 AM			1525	7.6	13
TWITCHELLPP01	C950168	1/18/95	12:00 PM			1656	11.7	
TWITCHELLPP01	C950169	1/20/95	10:00 PM			1835	11.5	
TWITCHELLPP01	C950170	1/23/95	8:00 AM			1889	11.2	9
TWITCHELLPP01	C950276	1/25/95	11:00 AM			1856	13.9	
TWITCHELLPP01	C950277	1/27/95	9:00 PM			1649	13.7	
TWITCHELLPP01	C950278	1/30/95	7:00 AM	6.4	4.6	1764	14.4	8
TWITCHELLPP01	C950328	2/1/95	12:00 PM			1915	10.7	
TWITCHELLPP01	C950329	2/3/95	10:00 PM			1980	10.6	

Table 6. Field Parameters (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C950330	2/6/95	8:00 AM			1933	10.7	15
TWITCHELLPP01	C950368	2/8/95	12:00 PM			1430	8.5	
TWITCHELLPP01	C950369	2/10/95	10:00 PM			1588	8.9	
TWITCHELLPP01	C950370	2/13/95	8:00 AM			1863	8.8	
TWITCHELLPP01	C950431	2/15/95	12:00 PM			1374	12.7	
TWITCHELLPP01	C950432	2/17/95	10:00 PM			1346	12.5	
TWITCHELLPP01	C950433	2/20/95	8:00 AM			1716	12.5	
TWITCHELLPP01	C950506	2/15/95	10:40 AM	6.3	7.5	1328	12.3	13
TWITCHELLPP01	C950507	2/22/95	11:30 AM	6.5	4.8	16	13.8	19
TWITCHELLPP01	C950509	2/22/95	12:00 PM			1648	14.6	
TWITCHELLPP01	C950510	2/24/95	10:00 PM			1552	13.7	
TWITCHELLPP01	C950511	2/27/95	8:00 AM			1646	13.2	
TWITCHELLPP01	C950512	3/1/95	11:50 AM	6.6	5.6	1576	15.4	30
TWITCHELLPP01	C950594	3/1/95	12:15 PM			1599	12.5	
TWITCHELLPP01	C950595	3/3/95	10:15 PM			1808	12.3	
TWITCHELLPP01	C950596	3/5/95	8:15 AM			1842	12.2	
TWITCHELLPP01	C950597	3/8/95	8:31 AM	6.2	4.6	1820	13.1	25
TWITCHELLPP01	C950660	3/8/95	12:00 PM			1453	13.2	
TWITCHELLPP01	C950661	3/8/95	12:00 PM			1453	13.2	
TWITCHELLPP01	C950662	3/10/95	10:00 PM			1523	12.7	
TWITCHELLPP01	C950664	3/15/95	9:35 AM	6.3	4.9	1760	13.7	13
TWITCHELLPP01	C950707	3/15/95	12:00 PM			1764	9.0	
TWITCHELLPP01	C950708	3/17/95	10:00 PM			1919	8.8	
TWITCHELLPP01	C950709	3/20/95	8:00 AM			1807	8.7	
TWITCHELLPP01	C950710	3/22/95	10:08 AM	6.4	7.6	1406	13.6	28
TWITCHELLPP01	C950728	3/22/95	12:00 PM			1690	12.2	
TWITCHELLPP01	C950729	3/22/95	12:00 PM			1690	12.2	
TWITCHELLPP01	C950730	3/24/95	10:00 PM			1460	12.3	
TWITCHELLPP01	C950731	3/27/95	8:00 AM			1694	12.0	
TWITCHELLPP01	C950732	3/29/95	11:15 AM	6.2	8.5	1851	14.0	19
TWITCHELLPP01	C950777	3/29/95	12:00 PM			1846	16.4	
TWITCHELLPP01	C950778	3/31/95	10:00 PM			1541	16.4	
TWITCHELLPP01	C950779	4/3/95	8:00 AM			1492	16.4	
TWITCHELLPP01	C950780	4/5/95	10:00 AM	6.2	5.1	1346	18.2	29
TWITCHELLPP01	C950819	4/5/95	12:00 PM			1374	16.3	
TWITCHELLPP01	C950820	4/7/95	10:00 PM			1347	15.7	
TWITCHELLPP01	C950821	4/10/95	8:00 AM			1339	15.5	
TWITCHELLPP01	C950822	4/12/95	8:54 AM	6.7	17.2	1246	16.7	28
TWITCHELLPP01	C950893	4/12/95	12:00 PM			1282	11.8	
TWITCHELLPP01	C950894	4/14/95	10:00 PM			1179	11.8	
TWITCHELLPP01	C950895	4/17/95	8:00 AM			1154	11.3	
TWITCHELLPP01	C950896	4/19/95	10:00 AM	6.7	8.5	1046	12.6	26
TWITCHELLPP01	C950908	4/19/95	12:00 PM			1029	14.9	
TWITCHELLPP01	C950909	4/21/95	10:00 PM			1059	15.0	
TWITCHELLPP01	C950910	4/24/95	8:00 AM			1050	14.8	
TWITCHELLPP01	C950911	4/26/95	10:10 AM	7	7.3	1066	14.7	28
TWITCHELLPP01	C951103	4/26/95	12:00 PM			1083	17.6	
TWITCHELLPP01	C951104	4/28/95	10:00 PM			1060	17.1	
TWITCHELLPP01	C951106	5/1/95	8:00 AM	6.8	5.3	1013	17.2	31
TWITCHELLPP01	C951136	5/1/95	12:00 PM			1017	13.8	
TWITCHELLPP01	C951137	5/3/95	10:00 PM			1075	13.8	
TWITCHELLPP01	C951138	5/6/95	8:00 AM			991	13.5	
TWITCHELLPP01	C951139	5/8/95	8:17 AM	7	6	907	16.4	29
TWITCHELLPP01	C951184	5/8/95	12:00 PM			930	14.0	
TWITCHELLPP01	C951185	5/10/95	10:00 PM			824	13.8	
TWITCHELLPP01	C951186	5/13/95	8:00 AM			854	13.7	
TWITCHELLPP01	C951270	5/15/95	12:00 PM			913	16.4	
TWITCHELLPP01	C951271	5/17/95	10:00 PM			986	15.8	
TWITCHELLPP01	C951272	5/20/95	8:00 AM			1002	15.6	

Table 6. Field Parameters (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C951273	5/22/95	11:56 AM	6.7	5.7	868	18.5	35
TWITCHELLPP01	C951329	5/22/95	12:00 PM			955	19.3	
TWITCHELLPP01	C951330	5/24/95	10:00 PM			783	19.5	
TWITCHELLPP01	C951331	5/27/95	8:00 AM			895	18.9	
TWITCHELLPP01	C951332	5/30/95	9:30 AM	7.2	4	932	20.5	28
TWITCHELLPP01	C951403	5/31/95	10:00 PM			847	16.9	
TWITCHELLPP01	C951404	6/5/95	8:00 AM			884	17.1	
TWITCHELLPP01	C951405	6/5/95	10:56 AM	7	5	510	19.1	36
TWITCHELLPP01	C951466	6/5/95	12:00 PM			741	17.7	
TWITCHELLPP01	C951467	6/7/95	10:00 PM			774	16.9	
TWITCHELLPP01	C951468	6/10/95	8:00 AM			763	16.9	
TWITCHELLPP01	C951469	6/12/95	9:23 AM	7.2	5	762	20.0	24
TWITCHELLPP01	C951517	6/12/95	12:00 PM			789	15.1	
TWITCHELLPP01	C951518	6/14/95	10:00 PM			740	15.1	
TWITCHELLPP01	C951519	6/17/95	8:00 AM			817	14.9	
TWITCHELLPP01	C951520	6/19/95	9:00 AM	7	5.9	677	18.3	34
TWITCHELLPP01	C951579	6/19/95	12:00 PM			716	26.4	
TWITCHELLPP01	C951580	6/21/95	10:00 PM			879	26.9	
TWITCHELLPP01	C951581	6/24/95	8:00 AM			782	26.8	
TWITCHELLPP01	C951582	6/26/95	10:13 AM	7.1		785	23.5	31
TWITCHELLPP01	C951691	6/26/95	12:00 PM			785	17.8	
TWITCHELLPP01	C951692	6/28/95	10:00 PM			720	17.9	
TWITCHELLPP01	C951693	7/1/95	8:00 AM			674	17.8	
TWITCHELLPP01	C951694	7/3/95	9:07 AM	6.8	5.8	657	19.4	38
TWITCHELLPP01	C951730	7/10/95	10:40 AM	7.7	5.8	627	20.8	27
TWITCHELLPP01	C951778	7/10/95	12:00 PM			632	22.1	
TWITCHELLPP01	C951779	7/12/95	10:00 PM			364	22.2	
TWITCHELLPP01	C951780	7/15/95	8:00 AM			607	22.1	
TWITCHELLPP01	C951781	7/17/95	10:30 AM	7.1	5.4	523	20.9	29
TWITCHELLPP01	C951826	7/17/95	12:00 PM			563	19.7	
TWITCHELLPP01	C951827	7/19/95	10:00 PM			528	19.3	
TWITCHELLPP01	C951828	7/22/95	8:00 AM			622	18.9	
TWITCHELLPP01	C951829	7/24/95	9:45 AM	6.7	5.4	588	19.9	22
TWITCHELLPP01	C951876	7/24/95	12:00 PM			635	24.2	
TWITCHELLPP01	C951877	7/26/95	10:00 PM			463	24.3	
TWITCHELLPP01	C951878	7/29/95	8:00 AM			503	24.8	
TWITCHELLPP01	C951879	7/31/95	10:36 AM	5.8	4.5	337	23.5	22
TWITCHELLPP01	C951924	7/31/95	12:00 PM			430	22.5	
TWITCHELLPP01	C951925	8/2/95	10:00 PM			532	22.5	
TWITCHELLPP01	C951926	8/5/95	8:00 AM			549	22.1	
TWITCHELLPP01	C951927	8/7/95	12:39 PM	6.9	4.6	535	22.4	
TWITCHELLPP01	C951975	8/7/95	11:58 AM			531	24.3	
TWITCHELLPP01	C951976	8/9/95	9:52 PM			451	24.0	
TWITCHELLPP01	C951977	8/12/95	7:52 AM			457	24.2	
TWITCHELLPP01	C951978	8/14/95	9:40 AM	6.8	4.1	413	22.2	
TWITCHELLPP01	C952023	8/14/95	12:00 PM			415	20.9	
TWITCHELLPP01	C952024	8/16/95	10:00 PM			414	21.0	
TWITCHELLPP01	C952025	8/19/95	8:00 AM			381	21.0	
TWITCHELLPP01	C952026	8/21/95	9:10 AM	6.6	6.8	406	20.8	
TWITCHELLPP01	C952085	8/21/95	12:00 PM			580	18.5	
TWITCHELLPP01	C952086	8/23/95	10:00 PM			485	18.8	
TWITCHELLPP01	C952087	8/26/95	8:00 AM			539	18.9	
TWITCHELLPP01	C952088	8/28/95	7:51 AM	6.6	5.1	450	19.2	19
TWITCHELLPP01	C952131	8/7/95	12:39 PM	6.9	4.6	535	22.4	
TWITCHELLPP01	C952187	8/28/95	12:00 PM			633	21.6	
TWITCHELLPP01	C952188	8/30/95	10:00 PM			474	20.3	
TWITCHELLPP01	C952189	9/2/95	8:00 AM			629	20.3	
TWITCHELLPP01	C952190	9/5/95	10:30 AM	6.9	7	668	23.3	23
TWITCHELLPP01	C952238	9/6/95	10:00 PM			652	19.3	

Table 6. Field Parameters (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
TWITCHELLPP01	C952239	9/9/95	8:00 AM			663	18.7	
TWITCHELLPP01	C952241	9/11/95	11:59 AM	6.6	4.6	583	19.5	24
TWITCHELLPP01	C952320	9/11/95	12:00 PM			631	21.0	
TWITCHELLPP01	C952321	9/13/95	10:00 PM			622	20.7	
TWITCHELLPP01	C952323	9/18/95	8:23 AM	7.2	4.3	665	20.3	28
TWITCHELLPP01	C952367	9/18/95	12:00 PM			657	18.8	
TWITCHELLPP01	C952368	9/18/95	12:00 PM			658	18.9	
TWITCHELLPP01	C952369	9/20/95	10:00 PM			716	19.0	
TWITCHELLPP01	C952370	9/23/95	8:00 AM			640	19.0	
TWITCHELLPP01	C952371	9/25/95	9:05 AM	6.6	4.6	648	18.6	
TWITCHELLPP01	C952454	9/25/95	12:00 PM			711	20.0	
TWITCHELLPP01	C952455	9/27/95	10:00 PM			702	20.5	
TWITCHELLPP01	C952456	9/30/95	8:00 AM			577	20.0	
TWITCHELLPP01	C952457	10/2/95	10:37 AM	6.7	4.4	655	16.9	
TWITCHELLPP01	C952720	10/30/95	12:00 PM			540	13.8	
TWITCHELLPP01	C952721	11/1/95	10:00 PM			560	13.2	
TWITCHELLPP01	C952722	11/4/95	8:00 AM			540	12.9	
TWITCHELLPP01	C952723	11/6/95	9:54 AM	6.7	5.9	550	13.7	
TWITCHELLPP01	C952772	11/8/95	10:00 PM			743	17.8	
TWITCHELLPP01	C952773	11/11/95	8:00 AM			737	16.8	
TWITCHELLPP01	C952774	11/13/95	1:23 PM					
TWITCHELLPP01	C952819	11/15/95	12:00 PM			744	13.8	
TWITCHELLPP01	C952820	11/17/95	10:00 PM			749	13.0	
TWITCHELLPP01	C952822	11/20/95	9:25 AM		5.3	738	15.4	
TWITCHELLPP01	C952855	11/20/95	12:00 PM			741	14.9	
TWITCHELLPP01	C952856	11/22/95	10:00 PM			744	14.2	
TWITCHELLPP01	C952857	11/25/95	8:00 AM			755	13.9	
TWITCHELLPP01	C952858	11/27/95	12:30 PM	6.6	4.8	681	14.2	
TWITCHELLPP01	C952935	11/27/95	12:30 PM			555	14.0	
TWITCHELLPP01	C952936	11/29/95	10:30 PM			572	13.6	
TWITCHELLPP01	C952937	12/2/95	8:30 AM			575	13.5	
TWITCHELLPP01	C952938	12/4/95	12:30 PM	6.6	5	533	14.4	
TWITCHELLPP01	C89568	7/19/89	10:34 AM	6	4.1	387	22.1	44
TWITCHELLPP01	C952502	10/2/95	8:22 AM			648	16.6	
TWITCHELLPP01	C952503	10/4/95	8:22 AM			749	17.2	
TWITCHELLPP01	C952504	10/7/95	8:22 AM			675	16.9	
TWITCHELLPP01	C952505	10/10/95	8:22 AM	6.4	4.3	680	17.0	
TWITCHELLPP01	C952554	10/11/95	10:00 PM			732	16.9	
TWITCHELLPP01	C952555	10/14/95	8:00 AM			694	16.7	
TWITCHELLPP01	C952556	10/16/95	9:24 AM	6.6	5.8	692	16.8	
TWITCHELLPP01	C952604	10/23/95	8:35 AM	7.1	5.4	710	13.6	
TWITCHELLPP01	C952649	10/23/95	12:00 PM			722	16.3	
TWITCHELLPP01	C952650	10/25/95	10:00 PM			735	16.1	
TWITCHELLPP01	C952651	10/28/95	8:00 AM			705	15.6	
TWITCHELLPP01	C952652	10/30/95	10:09 AM	6.9	6	710	15.9	

Table 7. THMFP Data (Agricultural Drain)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C940239	1/27/94								30.0		1.260
TWITCHELLPP01	C940240	1/28/94								28.6		1.210
TWITCHELLPP01	C940241	1/29/94								26.3		1.110
TWITCHELLPP01	C940242	1/30/94								24.7		1.070
TWITCHELLPP01	C940243	1/31/94	370	<10	3700	30	401	4100		36.5		1.590
TWITCHELLPP01	C940244	2/1/94								34.2		1.600
TWITCHELLPP01	C940266	2/1/94								34.2		1.560
TWITCHELLPP01	C940267	2/2/94								29.0		1.370
TWITCHELLPP01	C940268	2/3/94								28.7		1.310
TWITCHELLPP01	C940269	2/4/94								26.9		1.220
TWITCHELLPP01	C940270	2/5/94								26.3		1.210
TWITCHELLPP01	C940271	2/6/94								26.0		1.180
TWITCHELLPP01	C940285	2/8/94								42.0		1.840
TWITCHELLPP01	C940307	2/8/94								41.5		1.840
TWITCHELLPP01	C940308	2/9/94								33.0		1.520
TWITCHELLPP01	C940309	2/10/94								27.3		1.310
TWITCHELLPP01	C940310	2/11/94								30.3		1.360
TWITCHELLPP01	C940311	2/12/94								29.2		1.290
TWITCHELLPP01	C940312	2/13/94								28.0		1.230
TWITCHELLPP01	C940313	2/14/94	430	<10	2300	70	267	2800		23.6		1.110
TWITCHELLPP01	C940347	2/15/94								21.9		0.912
TWITCHELLPP01	C940348	2/16/94								21.6		0.946
TWITCHELLPP01	C940349	2/17/94								26.5		1.170
TWITCHELLPP01	C940350	2/18/94								29.8		1.340
TWITCHELLPP01	C940351	2/19/94								31.2		1.400
TWITCHELLPP01	C940352	2/20/94								35.1		1.540
TWITCHELLPP01	C940353	2/21/94	390	<10	3000	60	334	3450		32.6		1.360
TWITCHELLPP01	C940369	2/22/94								30.5		1.400
TWITCHELLPP01	C940391	2/22/94								30.7		1.230
TWITCHELLPP01	C940392	2/23/94								33.3		1.290
TWITCHELLPP01	C940393	2/24/94								32.3		1.380
TWITCHELLPP01	C940394	2/25/94								31.2		1.360
TWITCHELLPP01	C940395	2/26/94								29.2		1.260
TWITCHELLPP01	C940396	2/27/94								30.0		1.310
TWITCHELLPP01	C940397	2/28/94	390	<10	2900	50	323	3340		31.1		1.370
TWITCHELLPP01	C940420	3/1/94								29.7		1.250
TWITCHELLPP01	C940421	3/2/94								27.9		1.180
TWITCHELLPP01	C940422	3/3/94								26.6		1.120
TWITCHELLPP01	C940423	3/4/94								28.1		1.180
TWITCHELLPP01	C940424	3/5/94								28.0		1.210
TWITCHELLPP01	C940425	3/6/94								28.7		1.250
TWITCHELLPP01	C940426	3/7/94	460	<10	2600	60	298	3120		28.2		1.260
TWITCHELLPP01	C940459	3/8/94								25.7		1.110
TWITCHELLPP01	C940460	3/9/94								33.3		1.520
TWITCHELLPP01	C940461	3/10/94								32.6		1.570
TWITCHELLPP01	C940462	3/11/94								28.1		1.260
TWITCHELLPP01	C940463	3/12/94	360	<10	2300	40	260	2700		26.4		1.140
TWITCHELLPP01	C940488	3/15/94								24.2		1.050
TWITCHELLPP01	C940489	3/16/94								24.2		1.070
TWITCHELLPP01	C940490	3/17/94								23.3		1.040
TWITCHELLPP01	C940491	3/18/94								23.1		1.050
TWITCHELLPP01	C940492	3/19/94								21.4		0.995
TWITCHELLPP01	C940493	3/20/94								21.7		0.977
TWITCHELLPP01	C940494	3/21/94	300	<10	1800	34	205	2134		21.0		0.926
TWITCHELLPP01	C940506	3/22/94								20.3		0.965
TWITCHELLPP01	C940528	3/22/94								20.4		0.967
TWITCHELLPP01	C940529	3/23/94								19.4		0.940
TWITCHELLPP01	C940530	3/24/94								19.2		0.849
TWITCHELLPP01	C940531	3/25/94								20.7		0.915
TWITCHELLPP01	C940532	3/26/94								20.9		0.769
TWITCHELLPP01	C940533	3/27/94								19.7		0.939
TWITCHELLPP01	C940534	3/28/94	180	<10	1200	30	136	1410		21.2		0.996

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C940562	3/29/94								19.4		0.849
TWITCHELLPP01	C940563	3/30/94								19.6		0.899
TWITCHELLPP01	C940564	3/31/94								17.6		0.851
TWITCHELLPP01	C940565	4/1/94								17.9		0.790
TWITCHELLPP01	C940566	4/2/94								17.7		0.806
TWITCHELLPP01	C940567	4/3/94								18.8		0.810
TWITCHELLPP01	C940568	4/4/94	460	<10	2400	70	279	2930		19.6		0.905
TWITCHELLPP01	C940591	4/5/94								17.4		0.752
TWITCHELLPP01	C940592	4/6/94								18.0		0.808
TWITCHELLPP01	C940593	4/7/94								16.4		0.739
TWITCHELLPP01	C940594	4/8/94								15.7		0.745
TWITCHELLPP01	C940595	4/9/94								17.3		0.795
TWITCHELLPP01	C940596	4/10/94								17.9		0.829
TWITCHELLPP01	C940597	4/11/94	230	<10	1400	29	159	1659		18.6		0.855
TWITCHELLPP01	C940701	4/12/94								17.6		0.780
TWITCHELLPP01	C940702	4/13/94								17.2		0.797
TWITCHELLPP01	C940703	4/14/94								16.3		0.744
TWITCHELLPP01	C940704	4/15/94								15.4		0.759
TWITCHELLPP01	C940705	4/16/94								16.8		0.776
TWITCHELLPP01	C940706	4/17/94								17.3		0.787
TWITCHELLPP01	C940707	4/18/94	320	<10	1500	46	177	1866		15.8		0.743
TWITCHELLPP01	C940708	4/19/94								17.1		0.751
TWITCHELLPP01	C940730	4/19/94								17.1		0.727
TWITCHELLPP01	C940731	4/20/94								15.3		0.685
TWITCHELLPP01	C940732	4/21/94								15.8		0.750
TWITCHELLPP01	C940733	4/22/94								14.6		0.659
TWITCHELLPP01	C940734	4/23/94								14.5		0.631
TWITCHELLPP01	C940735	4/24/94								14.8		0.660
TWITCHELLPP01	C940736	4/25/94	280	<10	1400	59	165	1739		16.6		0.734
TWITCHELLPP01	C940767	4/26/94								15.5		0.748
TWITCHELLPP01	C940768	4/27/94								15.3		0.777
TWITCHELLPP01	C940769	4/28/94								13.6		0.651
TWITCHELLPP01	C940770	4/29/94								14.4		0.700
TWITCHELLPP01	C940771	4/30/94								14.2		0.694
TWITCHELLPP01	C940772	5/1/94								13.8		0.638
TWITCHELLPP01	C940773	5/2/94	300	<10	1500	40	175	1840		15.0		0.764
TWITCHELLPP01	C940785	5/3/94								14.9		0.693
TWITCHELLPP01	C940807	5/3/94								15.1		0.698
TWITCHELLPP01	C940808	5/4/94								15.0		0.695
TWITCHELLPP01	C940809	5/5/94								13.2		0.632
TWITCHELLPP01	C940810	5/6/94								13.3		0.593
TWITCHELLPP01	C940811	5/7/94								13.8		0.607
TWITCHELLPP01	C940812	5/8/94								18.4		0.795
TWITCHELLPP01	C940813	5/9/94	300	<10	1600	57	186	1957		18.6		0.858
TWITCHELLPP01	C940847	5/10/94								17.5		0.726
TWITCHELLPP01	C940848	5/11/94								17.1		0.741
TWITCHELLPP01	C940849	5/12/94								17.6		0.763
TWITCHELLPP01	C940850	5/13/94								19.8		0.845
TWITCHELLPP01	C940851	5/14/94								19.4		0.862
TWITCHELLPP01	C940852	5/15/94								16.4		0.761
TWITCHELLPP01	C940853	5/16/94	360	<10	1500	95	183	1955		17.3		0.827
TWITCHELLPP01	C940887	5/17/94								15.8		0.680
TWITCHELLPP01	C940888	5/18/94								13.6		0.635
TWITCHELLPP01	C940889	5/19/94								13.9		0.622
TWITCHELLPP01	C940890	5/20/94								16.1		0.727
TWITCHELLPP01	C940891	5/21/94								16.7		0.777
TWITCHELLPP01	C940892	5/22/94								18.4		0.869
TWITCHELLPP01	C940893	5/23/94	420	<10	1600	100	197	2120		17.6		0.872
TWITCHELLPP01	C940894	5/24/94								16.9		0.829
TWITCHELLPP01	C940916	5/24/94								17.0		0.798
TWITCHELLPP01	C940917	5/25/94								17.2		0.857
TWITCHELLPP01	C940918	5/26/94								14.6		0.739

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C940919	5/27/94								13.2		0.517
TWITCHELLPP01	C940920	5/28/94								13.2		0.555
TWITCHELLPP01	C940921	5/29/94								15.6		0.740
TWITCHELLPP01	C940922	5/30/94	290	<10	1100	86	137	1476		12.2		0.618
TWITCHELLPP01	C941014	5/31/94								15.7		0.670
TWITCHELLPP01	C941015	6/1/94								15.0		0.739
TWITCHELLPP01	C941016	6/2/94								9.8		0.468
TWITCHELLPP01	C941017	6/3/94								13.6		0.666
TWITCHELLPP01	C941018	6/4/94								14.0		0.694
TWITCHELLPP01	C941019	6/5/94								9.7		0.521
TWITCHELLPP01	C941020	6/6/94	270	<10	1300	64	154	1634		13.4		0.672
TWITCHELLPP01	C941054	6/7/94								13.2		0.643
TWITCHELLPP01	C941055	6/8/94								11.7		0.601
TWITCHELLPP01	C941056	6/9/94								12.0		0.621
TWITCHELLPP01	C941057	6/10/94								9.5		0.516
TWITCHELLPP01	C941058	6/11/94								7.1		0.386
TWITCHELLPP01	C941059	6/12/94								11.6		0.634
TWITCHELLPP01	C941060	6/13/94	250	<10	1100	50	132	1400		10.7		0.594
TWITCHELLPP01	C941154	6/14/94								13.2		0.679
TWITCHELLPP01	C941155	6/15/94								10.4		0.544
TWITCHELLPP01	C941156	6/16/94								11.4		0.527
TWITCHELLPP01	C941157	6/17/94								11.6		0.577
TWITCHELLPP01	C941158	6/18/94										0.579
TWITCHELLPP01	C941159	6/19/94								9.2		0.427
TWITCHELLPP01	C941160	6/20/94	230	<10	770	65	98	1065		9.3		0.440
TWITCHELLPP01	C941226	6/21/94								8.3		0.390
TWITCHELLPP01	C941227	6/22/94								7.7		0.390
TWITCHELLPP01	C941228	6/23/94								8.7		0.415
TWITCHELLPP01	C941229	6/24/94								10.8		0.524
TWITCHELLPP01	C941230	6/25/94								12.4		0.612
TWITCHELLPP01	C941231	6/26/94								11.8		0.594
TWITCHELLPP01	C941232	6/27/94	200	<10	660	72	85	932		7.7		0.364
TWITCHELLPP01	C941250	6/28/94								9.9		0.439
TWITCHELLPP01	C941272	6/28/94								10.2		0.476
TWITCHELLPP01	C941273	6/29/94								8.4		0.400
TWITCHELLPP01	C941274	6/30/94								7.6		0.353
TWITCHELLPP01	C941275	7/1/94								7.3		0.316
TWITCHELLPP01	C941276	7/2/94								6.8		0.306
TWITCHELLPP01	C941277	7/3/94								6.7		0.289
TWITCHELLPP01	C941278	7/4/94	230	<10	640	75	85	945		7.5		0.341
TWITCHELLPP01	C941308	7/5/94								10.3		0.511
TWITCHELLPP01	C941309	7/6/94								10.6		0.514
TWITCHELLPP01	C941310	7/7/94								11.0		0.534
TWITCHELLPP01	C941311	7/8/94								12.2		0.592
TWITCHELLPP01	C941312	7/9/94								12.4		0.606
TWITCHELLPP01	C941313	7/10/94								15.9		0.727
TWITCHELLPP01	C941314	7/11/94	290	<10	1300	69	156	1659		12.2		0.585
TWITCHELLPP01	C941426	7/12/94								15.7		0.694
TWITCHELLPP01	C941427	7/13/94								14.1		0.616
TWITCHELLPP01	C941428	7/14/94								13.8		0.635
TWITCHELLPP01	C941429	7/15/94								14.6		0.690
TWITCHELLPP01	C941430	7/16/94								16.9		0.782
TWITCHELLPP01	C941431	7/17/94								16.9		0.728
TWITCHELLPP01	C941432	7/18/94	320	<10	1700	61	198	2081		17.8		0.858
TWITCHELLPP01	C941462	7/19/94								17.8		0.800
TWITCHELLPP01	C941463	7/20/94								18.7		0.842
TWITCHELLPP01	C941464	7/21/94								19.3		0.894
TWITCHELLPP01	C941465	7/22/94								19.4		0.861
TWITCHELLPP01	C941466	7/23/94								18.9		0.807
TWITCHELLPP01	C941467	7/24/94								16.6		0.691
TWITCHELLPP01	C941468	7/25/94	290	<10	1200	59	145	1549		13.4		0.599
TWITCHELLPP01	C941548	7/26/94								13.3		0.604

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C941549	7/27/94								14.0		0.664
TWITCHELLPP01	C941550	7/28/94								15.5		0.710
TWITCHELLPP01	C941551	7/29/94								15.8		0.742
TWITCHELLPP01	C941552	7/30/94								13.6		0.671
TWITCHELLPP01	C941553	7/31/94								17.3		0.822
TWITCHELLPP01	C941554	8/1/94	290	<10	1800	33	204	2123		17.7		0.841
TWITCHELLPP01	C941630	8/2/94								14.2		0.722
TWITCHELLPP01	C941631	8/3/94								18.0		0.855
TWITCHELLPP01	C941632	8/4/94								16.2		0.756
TWITCHELLPP01	C941633	8/5/94								16.8		0.790
TWITCHELLPP01	C941634	8/6/94								18.6		0.903
TWITCHELLPP01	C941635	8/7/94								20.6		0.916
TWITCHELLPP01	C941636	8/8/94	320	<10	2000	37	227	2357		19.7		0.932
TWITCHELLPP01	C941666	8/9/94								23.9		1.050
TWITCHELLPP01	C941667	8/10/94								22.4		1.010
TWITCHELLPP01	C941668	8/11/94								24.3		1.060
TWITCHELLPP01	C941669	8/12/94								23.9		1.070
TWITCHELLPP01	C941670	8/13/94								23.6		1.060
TWITCHELLPP01	C941671	8/14/94								26.8		1.160
TWITCHELLPP01	C941672	8/15/94	340	<10	2000	50	229	2390		22.6		1.010
TWITCHELLPP01	C941711	8/23/94								20.4		0.924
TWITCHELLPP01	C941712	8/23/94								22.7		0.983
TWITCHELLPP01	C941713	8/23/94								15.5		0.709
TWITCHELLPP01	C941714	8/23/94								23.4		1.040
TWITCHELLPP01	C941715	8/23/94								25.4		1.130
TWITCHELLPP01	C941716	8/23/94								27.0		1.150
TWITCHELLPP01	C941717	8/23/94	310	<10	3100	30	336	3440		31.4		1.310
TWITCHELLPP01	C941725	8/23/94								28.3		1.160
TWITCHELLPP01	C941740	9/6/94								27.7		1.130
TWITCHELLPP01	C941741	9/7/94								26.6		1.160
TWITCHELLPP01	C941742	9/8/94								26.3		1.130
TWITCHELLPP01	C941743	9/9/94								26.2		1.200
TWITCHELLPP01	C941744	9/10/94								27.1		1.210
TWITCHELLPP01	C941745	9/11/94								28.6		1.340
TWITCHELLPP01	C941746	9/12/94	310	<10	3000	30	326	3340		33.9		1.510
TWITCHELLPP01	C941811	8/30/94								31.3		1.440
TWITCHELLPP01	C941812	8/31/94								32.0		1.440
TWITCHELLPP01	C941813	9/1/94								30.0		1.380
TWITCHELLPP01	C941814	9/2/94								33.5		1.610
TWITCHELLPP01	C941815	9/3/94								37.1		1.650
TWITCHELLPP01	C941816	9/4/94								39.2		1.710
TWITCHELLPP01	C941817	9/5/94	410	<10	4400	30	474	4840		40.0		1.790
TWITCHELLPP01	C941825	9/6/94								34.4		1.590
TWITCHELLPP01	C941840	9/13/94								34.5		1.590
TWITCHELLPP01	C941841	9/13/94								36.8		1.770
TWITCHELLPP01	C941842	9/13/94								36.8		1.710
TWITCHELLPP01	C941843	9/13/94								36.2		1.700
TWITCHELLPP01	C941844	9/13/94								35.8		1.700
TWITCHELLPP01	C941845	9/13/94								35.0		1.680
TWITCHELLPP01	C941846	9/13/94	330	<10	3300	30	358	3660		31.1		1.480
TWITCHELLPP01	C941880	9/13/94								25.2		0.843
TWITCHELLPP01	C941881	9/14/94								25.5		1.260
TWITCHELLPP01	C941882	9/15/94								25.6		1.300
TWITCHELLPP01	C941883	9/16/94								27.4		1.390
TWITCHELLPP01	C941884	9/17/94								29.0		1.490
TWITCHELLPP01	C941885	9/18/94								32.2		1.610
TWITCHELLPP01	C941886	9/19/94	260	<10	2900	30	312	3190		34.8		1.680
TWITCHELLPP01	C941998	9/27/94								28.8		1.420
TWITCHELLPP01	C941999	9/28/94								27.6		1.370
TWITCHELLPP01	C942000	9/29/94								26.8		1.340
TWITCHELLPP01	C942001	9/30/94								27.7		1.320
TWITCHELLPP01	C942002	10/1/94								27.1		1.320

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C942003	10/2/94								28.2		1.380
TWITCHELLPP01	C942004	10/3/94	320	<10	2600	40	287	2960		27.1		1.360
TWITCHELLPP01	C942012	10/4/94								28.3		1.500
TWITCHELLPP01	C942027	10/4/94								28.7		1.510
TWITCHELLPP01	C942028	10/5/94								27.8		1.370
TWITCHELLPP01	C942029	10/6/94								25.1		1.280
TWITCHELLPP01	C942030	10/7/94								29.6		1.530
TWITCHELLPP01	C942031	10/8/94								30.0		1.580
TWITCHELLPP01	C942032	10/9/94								27.3		1.440
TWITCHELLPP01	C942033	10/10/94	300	<10	2700	30	295	3030		30.9		1.550
TWITCHELLPP01	C942060	10/12/94								33.2		1.620
TWITCHELLPP01	C942061	10/12/94								33.4		1.610
TWITCHELLPP01	C942062	10/14/94								35.8		1.780
TWITCHELLPP01	C942063	10/17/94	410	<10	2300	60	270	2800	619	27.5	25	1.280
TWITCHELLPP01	C942088	10/19/94								20.6		0.896
TWITCHELLPP01	C942089	10/19/94								20.6		0.876
TWITCHELLPP01	C942090	10/21/94								18.2		0.801
TWITCHELLPP01	C942091	10/24/94	340	<10	980	110	130	1400	528	13.6	23	0.629
TWITCHELLPP01	C942105	10/26/94								12.6		0.580
TWITCHELLPP01	C942106	10/26/94								12.5		0.554
TWITCHELLPP01	C942107	10/28/94								12.0		0.587
TWITCHELLPP01	C942108	10/31/94	400	<10	1300	140	170	1800	521	13.1	28	0.596
TWITCHELLPP01	C942122	11/2/94								12.0		0.522
TWITCHELLPP01	C942123	11/2/94								12.0		0.496
TWITCHELLPP01	C942124	11/4/94								10.2		0.482
TWITCHELLPP01	C942125	11/7/94	410	<10	1600	91	200	2100	762	19.1	18	0.659
TWITCHELLPP01	C942162	11/9/94								14.8		0.575
TWITCHELLPP01	C942163	11/9/94								14.3		0.581
TWITCHELLPP01	C942164	11/11/94								15.4		0.646
TWITCHELLPP01	C942165	11/16/94	400	<10	1500	72	180	2000	590	16.0	24	0.652
TWITCHELLPP01	C942203	11/16/94								13.8		0.648
TWITCHELLPP01	C942204	11/16/94								13.8		0.657
TWITCHELLPP01	C942205	11/18/94								12.5		0.585
TWITCHELLPP01	C942206	11/21/94	400	<10	1400	130	180	1900	583	12.7	18	0.602
TWITCHELLPP01	C942291	11/30/94								20.1		0.770
TWITCHELLPP01	C942292	11/30/94								19.8		0.718
TWITCHELLPP01	C942293	12/2/94								18.2		0.805
TWITCHELLPP01	C942294	12/5/94	320	<10	1200	95	150	1600	758	20.5	16	0.793
TWITCHELLPP01	C942337	12/7/94								23.7		0.963
TWITCHELLPP01	C942338	12/7/94								23.9		0.963
TWITCHELLPP01	C942339	12/9/94								22.0		0.897
TWITCHELLPP01	C942340	12/12/94	310	<10	1000	91	130	1400	685	18.1	22	0.720
TWITCHELLPP01	C942373	12/14/94								18.1		0.749
TWITCHELLPP01	C942374	12/14/94								18.4		0.757
TWITCHELLPP01	C942375	12/16/94								21.7		0.860
TWITCHELLPP01	C942376	12/19/94	280	<10	3800	10	400	4100	720	26.6	10	1.060
TWITCHELLPP01	C950008	12/28/94								27.1		1.110
TWITCHELLPP01	C950009	12/28/94								27.4		1.110
TWITCHELLPP01	C950010	12/30/94								28.2		1.150
TWITCHELLPP01	C950011	1/4/95	300	<10	2000	40	230	2300	706	28.2	105	1.140
TWITCHELLPP01	C950050	1/4/95								29.2		1.160
TWITCHELLPP01	C950051	1/4/95								29.1		1.180
TWITCHELLPP01	C950052	1/6/95								31.3		1.270
TWITCHELLPP01	C950053	1/9/95	360	<10	2200	50	250	2600	799	31.5	25	1.280
TWITCHELLPP01	C950125	1/11/95								31.6		1.340
TWITCHELLPP01	C950126	1/11/95								32.6		1.340
TWITCHELLPP01	C950127	1/13/95								35.7		1.450
TWITCHELLPP01	C950128	1/18/95	230	<10	2000	30	220	2300	931	37.7	13	1.460
TWITCHELLPP01	C950167	1/18/95								38.8		1.460
TWITCHELLPP01	C950168	1/18/95								38.8		1.490
TWITCHELLPP01	C950169	1/20/95								40.8		1.580
TWITCHELLPP01	C950170	1/23/95	330	<10	2900	40	320	3300	1200	44.1	9	1.760

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C950275	1/25/95								44.6		1.840
TWITCHELLPP01	C950276	1/25/95								45.0		1.590
TWITCHELLPP01	C950277	1/27/95								44.7		1.790
TWITCHELLPP01	C950278	1/30/95	420	<10	3400	40	380	3900	1110	46.3	8	1.900
TWITCHELLPP01	C950327	2/1/95								42.8		1.650
TWITCHELLPP01	C950328	2/1/95								48.7		1.840
TWITCHELLPP01	C950329	2/3/95								48.1		1.850
TWITCHELLPP01	C950330	2/6/95	370	<10	2500	50	280	2900	1210	43.0	15	1.620
TWITCHELLPP01	C950367	2/8/95								34.5		1.450
TWITCHELLPP01	C950368	2/8/95								34.9		1.380
TWITCHELLPP01	C950369	2/10/95								36.4		1.500
TWITCHELLPP01	C950370	2/13/95	400	<10	2300	73	265	2773		36.8		1.490
TWITCHELLPP01	C950430	2/15/95								38.8		1.570
TWITCHELLPP01	C950431	2/15/95								39.4		1.700
TWITCHELLPP01	C950432	2/17/95								40.5		1.760
TWITCHELLPP01	C950433	2/20/95								38.6		1.550
TWITCHELLPP01	C950506	2/15/95	350	<10	2900	40	320	3300	861	40.0	13	1.730
TWITCHELLPP01	C950507	2/22/95	400	<10	2300	60	260	2800	992	34.0	19	1.440
TWITCHELLPP01	C950508	2/22/95								31.2		1.240
TWITCHELLPP01	C950509	2/22/95								32.5		1.390
TWITCHELLPP01	C950510	2/24/95								37.7		1.680
TWITCHELLPP01	C950511	2/27/95								33.9		1.490
TWITCHELLPP01	C950512	3/1/95	450	<10	2300	100	270	2850	967	31.7	30	1.350
TWITCHELLPP01	C950593	3/1/95								31.8		1.290
TWITCHELLPP01	C950594	3/1/95								32.0		1.340
TWITCHELLPP01	C950595	3/3/95								58.9		2.470
TWITCHELLPP01	C950596	3/5/95								58.0		2.470
TWITCHELLPP01	C950597	3/8/95	470	<10	3000	80	341	3550	1190	39.0	25	1.670
TWITCHELLPP01	C950660	3/8/95								37.2		1.540
TWITCHELLPP01	C950661	3/8/95								37.4		1.530
TWITCHELLPP01	C950662	3/10/95								49.6		2.080
TWITCHELLPP01	C950663	3/15/95								57.0		2.410
TWITCHELLPP01	C950664	3/15/95	410	<10	3800	50	420	4300	1120	48.4	13	2.170
TWITCHELLPP01	C950706	3/15/95								47.2		2.060
TWITCHELLPP01	C950707	3/15/95								47.7		2.070
TWITCHELLPP01	C950708	3/17/95								41.1		1.670
TWITCHELLPP01	C950709	3/20/95								40.0		1.680
TWITCHELLPP01	C950710	3/22/95	480	<10	3300	90	370	3900	952	38.7	28	1.630
TWITCHELLPP01	C950728	3/22/95								42.6		1.920
TWITCHELLPP01	C950729	3/22/95								46.8		2.200
TWITCHELLPP01	C950730	3/24/95								45.7		2.060
TWITCHELLPP01	C950731	3/27/95								48.1		2.070
TWITCHELLPP01	C950732	3/29/95	460	<10	3800	70	420	4300	1250	43.6	19	1.870
TWITCHELLPP01	C950776	3/29/95								42.6		1.780
TWITCHELLPP01	C950777	3/29/95								41.9		1.530
TWITCHELLPP01	C950778	3/31/95								32.5		1.460
TWITCHELLPP01	C950779	4/3/95								30.5		1.360
TWITCHELLPP01	C950780	4/5/95							811	25.8	29	1.170
TWITCHELLPP01	C950818	4/5/95								28.0		1.160
TWITCHELLPP01	C950819	4/5/95								28.2		1.170
TWITCHELLPP01	C950820	4/7/95								28.2		1.170
TWITCHELLPP01	C950821	4/10/95								28.5		1.280
TWITCHELLPP01	C950822	4/12/95	460	<10	2700	50	310	3200	810	27.8	28	1.220
TWITCHELLPP01	C950892	4/12/95								29.0		1.220
TWITCHELLPP01	C950893	4/12/95								28.4		1.210
TWITCHELLPP01	C950894	4/14/95								23.1		1.090
TWITCHELLPP01	C950895	4/17/95								24.6		1.160
TWITCHELLPP01	C950896	4/19/95	350	<10	2000	50	230	2400	681	24.4	26	1.060
TWITCHELLPP01	C950907	4/19/95								23.4		0.979
TWITCHELLPP01	C950908	4/19/95								23.4		0.969
TWITCHELLPP01	C950909	4/21/95								20.9		0.912
TWITCHELLPP01	C950910	4/24/95								24.0		1.020

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C950911	4/26/95	270	<10	1600	40	180	1900	666	22.9	28	1.030
TWITCHELLPP01	C951102	4/26/95								22.7		0.954
TWITCHELLPP01	C951103	4/26/95								23.1		0.958
TWITCHELLPP01	C951104	4/28/95								22.5		0.963
TWITCHELLPP01	C951106	5/1/95	350	<10	1700	60	200	2100	616	21.2	31	1.050
TWITCHELLPP01	C951135	5/1/95								21.2		1.030
TWITCHELLPP01	C951136	5/1/95								21.5		1.050
TWITCHELLPP01	C951137	5/3/95								22.5		1.110
TWITCHELLPP01	C951138	5/6/95								20.9		0.992
TWITCHELLPP01	C951139	5/8/95	310	<10	1700	40	200	2100	595	19.4	29	1.000
TWITCHELLPP01	C951183	5/8/95								19.4		0.922
TWITCHELLPP01	C951184	5/8/95								19.4		0.930
TWITCHELLPP01	C951185	5/10/95								14.4		0.734
TWITCHELLPP01	C951186	5/13/95								17.7		0.826
TWITCHELLPP01	C951269	5/15/95								19.4		0.959
TWITCHELLPP01	C951270	5/15/95								20.3		0.971
TWITCHELLPP01	C951271	5/17/95								20.2		1.020
TWITCHELLPP01	C951272	5/20/95								22.0		1.040
TWITCHELLPP01	C951273	5/22/95	330	<10	1600	64	190	2000	527	16.8	35	0.917
TWITCHELLPP01	C951328	5/22/95								19.1		0.971
TWITCHELLPP01	C951329	5/22/95								19.2		1.010
TWITCHELLPP01	C951330	5/24/95								13.1		0.828
TWITCHELLPP01	C951331	5/27/95								18.6		0.980
TWITCHELLPP01	C951332	5/30/95	340	<10	1800	60	210	2200	552	19.2	28	1.050
TWITCHELLPP01	C951401	5/31/95								16.6		0.886
TWITCHELLPP01	C951403	5/31/95								16.7		0.797
TWITCHELLPP01	C951404	6/5/95								20.8		0.949
TWITCHELLPP01	C951405	6/5/95	150	<10	1100	21	120	1300	304	12.7	36	0.536
TWITCHELLPP01	C951465	6/5/95								15.4		0.707
TWITCHELLPP01	C951466	6/5/95								15.5		0.700
TWITCHELLPP01	C951467	6/7/95								14.2		0.695
TWITCHELLPP01	C951468	6/10/95								13.4		0.665
TWITCHELLPP01	C951469	6/12/95	290	<10	1400	61	170	1800	467	15.5	24	0.822
TWITCHELLPP01	C951516	6/12/95								12.7		0.702
TWITCHELLPP01	C951517	6/12/95								13.7		0.701
TWITCHELLPP01	C951518	6/14/95								14.0		0.463
TWITCHELLPP01	C951519	6/17/95								7.5		0.670
TWITCHELLPP01	C951520	6/19/95	250	<10	1100	64	130	1400	423	12.1	34	0.609
TWITCHELLPP01	C951578	6/19/95								12.1		0.600
TWITCHELLPP01	C951579	6/19/95								12.1		0.605
TWITCHELLPP01	C951580	6/21/95								15.4		0.724
TWITCHELLPP01	C951581	6/24/95								14.7		0.706
TWITCHELLPP01	C951582	6/26/95	250	<10	1800	38	200	2100	474	18.3	31	0.806
TWITCHELLPP01	C951690	6/26/95								9.6		0.492
TWITCHELLPP01	C951691	6/26/95								9.3		0.541
TWITCHELLPP01	C951692	6/28/95								11.2		0.569
TWITCHELLPP01	C951693	7/1/95								12.9		0.450
TWITCHELLPP01	C951694	7/3/95	300	<10	880	79	120	1300	395	9.8	38	0.491
TWITCHELLPP01	C951730	7/10/95	310	<10	870	80	120	1300	370	9.3	27	0.523
TWITCHELLPP01	C951777	7/10/95								8.0		0.499
TWITCHELLPP01	C951778	7/10/95								8.0		0.429
TWITCHELLPP01	C951779	7/12/95								7.6		0.394
TWITCHELLPP01	C951780	7/15/95								5.9		0.297
TWITCHELLPP01	C951781	7/17/95	220	<10	1290	<10	150	1500	314	11.3	29	0.618
TWITCHELLPP01	C951825	7/17/95								8.7		0.452
TWITCHELLPP01	C951826	7/17/95								8.8		0.464
TWITCHELLPP01	C951827	7/19/95								9.7		0.495
TWITCHELLPP01	C951828	7/22/95								7.3		0.376
TWITCHELLPP01	C951829	7/24/95	230	<10	1430	<10	160	1700	355	14.8	22	0.767
TWITCHELLPP01	C951875	7/24/95								8.2		0.413
TWITCHELLPP01	C951876	7/24/95								8.1		0.422
TWITCHELLPP01	C951877	7/26/95								13.0		0.701

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C951878	7/29/95								13.8		0.711
TWITCHELLPP01	C951879	7/31/95	130	<10	850	<10	95	980	205	8.9	22	0.458
TWITCHELLPP01	C951923	7/31/95								12.4		0.641
TWITCHELLPP01	C951924	7/31/95								12.7		0.654
TWITCHELLPP01	C951925	8/2/95								18.8		0.991
TWITCHELLPP01	C951926	8/5/95								14.0		0.721
TWITCHELLPP01	C951927	8/7/95	250	<10	1430	23	163	1700	346	12.9		0.742
TWITCHELLPP01	C951974	8/7/95								13.2		0.723
TWITCHELLPP01	C951975	8/7/95								13.4		0.721
TWITCHELLPP01	C951976	8/9/95								11.0		0.613
TWITCHELLPP01	C951977	8/12/95								11.3		0.597
TWITCHELLPP01	C951978	8/14/95	180	<10	1200	<10	134	1380	251	10.1		0.572
TWITCHELLPP01	C952022	8/14/95								9.8		0.569
TWITCHELLPP01	C952023	8/14/95								9.8		0.523
TWITCHELLPP01	C952024	8/16/95								11.0		0.602
TWITCHELLPP01	C952025	8/19/95								11.7		0.641
TWITCHELLPP01	C952026	8/21/95	180	<10	1280	<10	142	1460	252	10.8		0.618
TWITCHELLPP01	C952084	8/21/95								7.8		0.480
TWITCHELLPP01	C952085	8/21/95								7.7		0.427
TWITCHELLPP01	C952086	8/23/95								11.6		0.834
TWITCHELLPP01	C952087	8/26/95								17.0		0.618
TWITCHELLPP01	C952088	8/28/95	200	<10	1620	<10	177	1820	300	15.7		0.893
TWITCHELLPP01	C952186	8/28/95								10.6		0.521
TWITCHELLPP01	C952187	8/28/95								10.4		0.514
TWITCHELLPP01	C952188	8/30/95								16.5		0.852
TWITCHELLPP01	C952189	9/2/95								15.3		0.762
TWITCHELLPP01	C952190	9/5/95	320	<10	1390	41	166	1751	373	14.1		0.795
TWITCHELLPP01	C952237	9/6/95								12.8		0.674
TWITCHELLPP01	C952238	9/6/95								12.8		0.685
TWITCHELLPP01	C952239	9/9/95								6.6		0.266
TWITCHELLPP01	C952241	9/11/95	250	<10	750	57	97	1057	356	9.4		0.497
TWITCHELLPP01	C952319	9/11/95								4.2		0.169
TWITCHELLPP01	C952320	9/11/95								4.1		0.165
TWITCHELLPP01	C952321	9/13/95								6.7		0.346
TWITCHELLPP01	C952322	9/18/95								5.4		0.185
TWITCHELLPP01	C952323	9/18/95	290	<10	630	110	91	1030	402	7.6		0.411
TWITCHELLPP01	C952367	9/18/95								3.0		0.123
TWITCHELLPP01	C952368	9/18/95								3.0		0.125
TWITCHELLPP01	C952369	9/20/95								8.6		0.501
TWITCHELLPP01	C952370	9/23/95								5.8		0.341
TWITCHELLPP01	C952371	9/25/95	250	<10	470	100	71	820	371	5.5	36	0.304
TWITCHELLPP01	C952453	9/25/95								7.4		0.396
TWITCHELLPP01	C952454	9/25/95								7.4		0.392
TWITCHELLPP01	C952455	9/27/95								9.9		0.563
TWITCHELLPP01	C952456	9/30/95								6.3		0.245
TWITCHELLPP01	C952457	10/2/95	270	<10	620	93	87	983	372	6.5	32	0.412
TWITCHELLPP01	C952502	10/2/95								5.7		0.274
TWITCHELLPP01	C952503	10/4/95								8.2		0.358
TWITCHELLPP01	C952504	10/7/95								5.8		0.293
TWITCHELLPP01	C952505	10/10/95	240	<10	480	100	72	820	395	5.8	28	0.327
TWITCHELLPP01	C952554	10/11/95								7.9		0.400
TWITCHELLPP01	C952555	10/14/95								5.9		0.330
TWITCHELLPP01	C952556	10/16/95	250	<10	600	96	84	946	387	6.6	29	0.395
TWITCHELLPP01	C952604	10/23/95	220	<10	520	98	74	838	415	5.9	33	0.362
TWITCHELLPP01	C952649	10/23/95								6.1		0.361
TWITCHELLPP01	C952650	10/25/95								6.2		0.369
TWITCHELLPP01	C952651	10/28/95								6.2		0.346
TWITCHELLPP01	C952652	10/30/95	270	<10	600	120	87	990	408	6.6	27	0.378
TWITCHELLPP01	C952720	10/30/95								6.6		0.398
TWITCHELLPP01	C952721	11/1/95								7.4		0.417
TWITCHELLPP01	C952722	11/4/95								10.3		0.583
TWITCHELLPP01	C952723	11/6/95	300	<10	900	89	118	1289	420	8.2	24	0.516

Table 7. THMFP Data (Agricultural Drain) (cont.)

Blank cells indicate that the parameter was not analyzed.

Station Name	Samp. No.	SampDate	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L	TTHMFP mg/L	TDS mg/L	DOC mg/L	Turbidit NTU	UVA Abs./cm
TWITCHELLPP01	C952771	11/6/95								9.2		0.550
TWITCHELLPP01	C952772	11/8/95								7.4		0.434
TWITCHELLPP01	C952773	11/11/95								8.8		0.485
TWITCHELLPP01	C952774	11/13/95	240	<10	500	120	75	860	414	5.9	34	0.356
TWITCHELLPP01	C952819	11/15/95								6.7		0.343
TWITCHELLPP01	C952820	11/17/95								7.5		0.376
TWITCHELLPP01	C952821	11/20/95								8.1		0.426
TWITCHELLPP01	C952822	11/20/95	240	<10	760	78	98	1078	414	8.0	30	0.468
TWITCHELLPP01	C952855	11/20/95								8.7		0.384
TWITCHELLPP01	C952856	11/22/95								7.2		0.360
TWITCHELLPP01	C952857	11/25/95								7.1		0.298
TWITCHELLPP01	C952858	11/27/95	210	<10	460	85	67	750	404	6.1	29	0.359
TWITCHELLPP01	C952935	11/27/95								6.5		0.316
TWITCHELLPP01	C952936	11/29/95								9.3		0.461
TWITCHELLPP01	C952937	12/2/95								9.3		0.498
TWITCHELLPP01	C952938	12/4/95	220	<10	540	100	76	860	395		32	0.408

Table 8. Mineral Data (Agricultural Drain)

Blank cells indicate that the parameter was not analyzed.

Station Name	Sample No.	SampDate	Alk. mg/L	B mg/L	Br mg/L	Ca mg/L	Cl mg/L	TDS mg/L	Hardness mg/L	Mg mg/L	K mg/L	Na mg/L	EC umhos/c	SO4 mg/L
TWITCHELLPP01	C942063	10/17/94	93	0.3	0.59	41	188	619	217	28	4.6	113	953	82
TWITCHELLPP01	C942091	10/24/94	77	0.2	0.72	32	186	528	171	22	3.7	114	894	51
TWITCHELLPP01	C942108	10/31/94	80	0.2	0.72	29	196	521	159	21	3.8	118	893	38
TWITCHELLPP01	C942125	11/7/94	67	0.2	0.60	44	316	762	262	37	7.7	149	1350	78
TWITCHELLPP01	C942165	11/16/94	75	0.2	0.65	38	209	590	202	26	4.2	122	1020	74
TWITCHELLPP01	C942206	11/21/94	73	0.2	0.70	35	203	583	182	23	3.6	124	982	67
TWITCHELLPP01	C942294	12/5/94	66	0.3	0.67	52	270	758	261	32	4.7	145	1300	92
TWITCHELLPP01	C942340	12/12/94	64	0.3	0.70	50	268	685	249	30	6.1	138	1200	90
TWITCHELLPP01	C942376	12/19/94	60	0.3	0.50	50	237	720	257	32	6	134	1190	128
TWITCHELLPP01	C950011	1/4/95	64	0.3	0.44	52	229	706	270	34	7.4	134	1180	141
TWITCHELLPP01	C950053	1/9/95	63	0.4	0.59	55	255	799	281	35	8.4	156	1320	148
TWITCHELLPP01	C950128	1/18/95	65	0.4	0.45	73	255	931	359	43	13	154	1480	216
TWITCHELLPP01	C950170	1/23/95	74	0.4	0.54	112	321	1200	539	63	7.7	186	1850	323
TWITCHELLPP01	C950278	1/30/95	75	0.4	0.42	106	280	1110	504	58	7.5	176	1740	309
TWITCHELLPP01	C950330	2/6/95	87	0.4	0.56	110	328	1210	546	66	5.8	185	1890	318
TWITCHELLPP01	C950506	2/15/95	106	0.5	0.40	71	236	861	317	34	6.6	136	1340	166
TWITCHELLPP01	C950507	2/22/95	91	0.4	0.60	86	288	992	388	42	5.3	168	1580	222
TWITCHELLPP01	C950512	3/1/95	92	0.3	0.65	82	286	967	410	50	4.6	170	1540	207
TWITCHELLPP01	C950597	3/8/95	90	0.4	0.63	110	307	1190	534	63	8.9	178	1790	310
TWITCHELLPP01	C950664	3/15/95	93	0.4	0.51	97	266	1120	485	59	5.5	173	1730	294
TWITCHELLPP01	C950710	3/22/95	75	0.3	0.62	77	246	952	394	49	6.5	143	1480	224
TWITCHELLPP01	C950732	3/29/95	101	0.4	0.49	106	286	1250	540	67	5.5	174	1850	331
TWITCHELLPP01	C950780	4/5/95	86	0.3	0.64	66	227	811	329	40	3.6	134	1330	172
TWITCHELLPP01	C950822	4/12/95	96	0.3	0.58	62	210	810	319	40	3.6	129	1260	164
TWITCHELLPP01	C950896	4/19/95	87	0.3	0.53	51	175	681	263	33	1.7	108	1050	125
TWITCHELLPP01	C950911	4/26/95	88	0.3	0.57	51	183	666	263	33	3	114	1070	127
TWITCHELLPP01	C951106	5/1/95	82	0.3	0.65	41	192	616	209	26	3.2	119	992	78
TWITCHELLPP01	C951139	5/8/95	82	0.2	0.49	40	167	595	207	26	3	104	922	87
TWITCHELLPP01	C951273	5/22/95	82	0.2	0.50	34	166	527	180	23	2.6	97	863	66
TWITCHELLPP01	C951332	5/30/95	95	0.3	0.54	37	175	552	196	25	3.5	112	912	69
TWITCHELLPP01	C951405	6/5/95	58	0.2	0.23	23	76	304	119	15	3.3	52	501	50
TWITCHELLPP01	C951469	6/12/95	78	0.2	0.57	32	155	467	162	20	2.9	93	783	51
TWITCHELLPP01	C951520	6/19/95	68	0.2	0.46	28	129	423	140	17	2.4	79	680	44
TWITCHELLPP01	C951582	6/26/95	99	0.3	0.41	34	122	474	184	24	2.6	82	771	74
TWITCHELLPP01	C951694	7/3/95	70	0.2	0.46	25	127	395	129	16	2.5	77	665	36
TWITCHELLPP01	C951730	7/10/95	71	0.2	0.44	21	119	370	110	14	2.6	76	612	30
TWITCHELLPP01	C951781	7/17/95	62	0.2	0.30	21	89	314	106	13	2.1	60	514	38
TWITCHELLPP01	C951829	7/24/95	62	0.2	0.30	25	92	355	129	16	2.1	63	567	60
TWITCHELLPP01	C951879	7/31/95	42	0.1	0.15	15	49	205	74	9	7.6	33	330	36
TWITCHELLPP01	C951927	8/7/95	69	0.2	0.32	24	84	346	122	15	1.9	56	535	46
TWITCHELLPP01	C951978	8/14/95	62	0.1	0.24	17	68	251	88	11	1.6	46	407	24
TWITCHELLPP01	C952026	8/21/95	62	0.2	0.23	16	66	252	81	10	1.6	45	400	23
TWITCHELLPP01	C952088	8/28/95	67	0.2	0.26	22	75	300	113	14	1.9	52	472	42
TWITCHELLPP01	C952190	9/5/95	75	0.2	0.45	23	118	373	115	14	2.2	76	614	30
TWITCHELLPP01	C952241	9/11/95	75	0.2	0.40	22	111	356	113	14	2	69	578	25
TWITCHELLPP01	C952323	9/18/95	78	0.2	0.51	22	137	402	113	14	2.2	81	664	18
TWITCHELLPP01	C952371	9/25/95	78	0.2	0.49	21	131	371	114	15	2.2	80	644	13
TWITCHELLPP01	C952457	10/2/95	77	0.2	0.49	20	129	372	108	14	2.2	81	639	14
TWITCHELLPP01	C952505	10/10/95	76	0.2	0.54	21	136	395	106	13	2.3	88	676	15
TWITCHELLPP01	C952556	10/16/95	78	0.2	0.55	20	148	387	104	13	1.8	91	685	15
TWITCHELLPP01	C952604	10/23/95	76	0.2	0.53	21	151	415	110	14	2.5	91	706	15
TWITCHELLPP01	C952652	10/30/95	78	0.2	0.52	20	149	408	108	14	2.6	93	691	17
TWITCHELLPP01	C952723	11/6/95	75	0.2	0.55	22	152	420	113	14	2.6	96	730	20
TWITCHELLPP01	C952774	11/13/95	74	0.2	0.56	18	157	414	103	14	2.4	95	714	18
TWITCHELLPP01	C952822	11/20/95	73	0.2	0.55	21	157	414	110	14	2.7	96	731	20
TWITCHELLPP01	C952858	11/27/95	74	0.2	0.50	21	146	404	110	14	2.4	87	688	17
TWITCHELLPP01	C952938	12/4/95	74	0.2	0.50	23	140	395	115	14	2.4	86	660	16

Chapter 4. DELTA ALTERNATIVES WATER TREATMENT AND COSTS COMPUTER MODELING

The model will provide answers as to where are the best locations that will yield good water quality with the lowest treatment requirements.

To predict future water conditions with 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.

In addition, under contract to the 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 to estimate the finished water quality and costs of treating Delta waters withdrawn from different Delta locations was desired by the TAC in 1994. Initial plans were to have DOP proceed with this study. In the summer of 1995, DOP transferred the responsibilities of managing the study and making contractual arrangements to the MWQI Program. By the time an agreeable scope of work and draft RFQ announcement were approved, the program year 1995 had ended. Consequently, this study will commence in program year 1996 (July 1996).

This project will utilize DWR's Delta THMFP and DICU models to establish boundary conditions representing influent water quality to the EPA model. The EPA model will then be operated to predict the effects of modifying Delta conditions on distribution system water quality. This application is intended to greatly improve the ability to quantify costs and savings associated with Delta action alternatives, as related to the use of Delta waters for municipal purposes. DOP's staff will work with a retained consultant who will perform this work, with oversight from MWQI Program staff.

To obtain the services of a qualified consultant, a RFQ was prepared and publicly announced in February 1996. As specified in the RFQ, the consultant will be required to:

1. Modify the current EPA WTP model, a computer software program, to predict the concentrations of DBPs formed from the treatment of Sacramento-San Joaquin Delta water which, in some cases, has high concentrations of bromide and organic carbon. Modify the EPA WTP model by: (1) inserting new subroutines for DBP formation as provided by DWR; and (2) merging the functionality of the model WATERCO$T.

2. Hold discussions with agency staff for information to tabulate the estimated costs of construction, operation, and maintenance of alternative water conveyance and storage facilities for SWP. Revise the cost figures to 1995 dollars.

3. Produce the relationship between water treatment cost and Delta source water quality for incorporation into the modified model. Run the modified WTP model to generate cost curves as functions of TOC and bromide concentrations in untreated source water based on at least 60 combinations of TOC and bromide concentrations.

4. Run the merged WTP and WATERCO$T model using Delta source water quality data for the three Delta water transfer and storage facility alternatives under two different hydrologies. DWR will provide the source water quality conditions and select the alternatives to be simulated. The merged model will be referred to as the "Department of Water Resources Delta Alternatives Water Quality and Cost Model" and will be the sole property of DWR.

5. Submit a draft and a final report of the results of work in Tasks 1 - 4 above within 30 days of completing Task 4, and provide five sets of program documentation, source codes, diskettes, and instructions on the use and modification procedures of the merged model specifically developed in this study to compare the costs of water treatment under different Delta water transfer and storage facility alternatives.

6. Provide one training workshop in Sacramento, California to DOP and MWQI staff within 30 days of completion of the above tasks.

7. Provide telephone technical support for up to one year after the completion date of the training workshop to designated DWR staff.

8. Provide at no additional expense to DWR 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.

The duration of the contracted work is anticipated to be from July 1, 1996 through December 31, 1996. The availability of the RFQ was publicly announced in February 1996. Through the RFQ process, Malcolm Pirnie, Inc. was selected as the most qualified firm to conduct this project.

Chapter 5. TREATMENT OF DELTA ISLAND DRAINAGE TO REDUCE TOC LOADS

> Conventional treatment methods applied to Delta island drainage may be one solution for reducing organic carbon loads in Delta drinking water supplies.

New USEPA regulations require reducing the amount of TOC concentrations at the water intake and the amount of DBP that are formed after treatment. A study was proposed and approved by the MWQI TAC Workplan Subcommittee in February 1995 to examine the feasibility of treating agricultural drain water on each island or groups of island/tracts to reduce high TOC levels prior to discharge into the Delta waterways. TOC concentrations in Delta waters are about twice as high as Sacramento River inflows at Greenes Landing. Increased TOC concentrations are attributed in part to the Delta island drainage discharges. Since the Delta is a source of drinking water for two-thirds of the State's population, reduced TOC levels in the source water could result in reduced treatment requirements for downstream water treatment facilities. This study will obtain information on the cost of treating water at a major source of organic discharges. It will examine the technical and economic feasibility of treating agricultural drainage to reduce TOC concentrations prior to discharge into the Delta rivers and channels. The results will be compared to Delta alternatives for transferring and storing water, which may also yield better water quality. Drain water from selected islands in the Delta will be tested.

During the 1995 program year, a detailed scope of work and draft RFQ announcement were written. The study will begin during program year 1996 (July). An engineering consulting firm under contract will conduct this study. The firm will be required to:

1. Conduct a review of currently available treatment technology for reducing TOC and identify treatment alternatives to be evaluated.

2. Perform bench scale testing (e.g., jar tests) to gather needed performance data for preliminary evaluation of treatment alternatives.

3. Perform a preliminary technical and economic feasibility evaluation which includes an estimate of the cost of providing treatment at various scales, from one drain up to and including the cost of providing Deltawide treatment of island drainage.

4. Identify and recommend one or more alternatives for a field or off-site pilot scale treatment plant study.

5. Provide a preliminary design and experimental plan for the recommended pilot plant(s).

6. Prepare a final report that fully documents the study and the consultant's recommendations.

A decision to proceed to a pilot WTP study in program year 1997 will be made based on the outcome of this study.

The study will provide the MWQI Program sponsors and DWR with information on: (1) currently available treatment methods applicable for reducing TOC in agricultural drain water, (2) projected costs of a treatment system for one island and for the entire Delta lowlands, and (3) design criteria for a pilot treatment plant study.

A RFQ was publicly announced in January 1996. The duration of the contracted work is anticipated to be from July 1, 1996 through December 31, 1996. Through the RFQ process, Brown and Caldwell was selected as the most qualified firm to conduct this project.

Chapter 6. CHARACTERIZATION OF DISSOLVED ORGANIC CARBON FROM DELTA ISLAND SOILS

> Understanding the character and factors that affect TOC availability in leached soil may lead to simple changes in farm practices to reduce TOC loads in agricultural drainage.

Past MWQI monitoring data have identified high DOC and high THMFP concentrations of Delta island drainage that are discharged into the river channels and contaminate drinking water supplies. The next step is to determine what are the factors that control DOC and organic THM precursor availability in the soils and drain water. Are there mechanisms, such as irrigation and flooding practices, that can be altered to reduce DOC and THMFP concentrations in drain water? To investigate this question, a study with USGS to characterize DOC in a farmed field on Twitchell Island is being performed. The study was planned for program year 1995 but due to lengthy contractual arrangements between DWR and USGS and the temporary stoppage of work by federal agencies due to congressional budget debates, work could not begin until January 1996.

An understanding of the processes influencing THM formation requires a detailed characterization of DOC. These types of analyses are not routine and require sophisticated research techniques and instrumentation. The detailed analysis and characterization of DOC and soil carbon are the critical links to understanding the processes and mechanisms affecting DOC and THMFP, and release of DOC from soils.

In this study, DOC from water samples will be chromatographically separated by the chemical characteristics of DOC (i.e., acid/base fractionation using XAD resins). The resulting fractions or isolates will be tested for THMFP and analyzed to determine their functional group composition using ^{13}C NMR (Nuclear Magnetic Resonance based on carbon atom weight 13). These isolates will be further characterized for molecular weight and elemental composition. These data, when compared to the THMFP of the whole water samples, should help elucidate the structural properties (aromatic and aliphatic composition) of DOC contributing to the formation of THMs and provide insights into the formation mechanism. By comparing and evaluating DOC from various sources (interstitial water from near-surface oxidized soil and reduced groundwater), in-field processes affecting DOC and the relation to THMFP may be discerned. These processes may have important implications regarding land/water management practices influencing DOC and the potential to form THMs. Furthermore, detailed characterization of the carbon contained in the unsaturated and saturated peat soils and the associated interstitial waters may provide insights into the potential mechanisms of carbon release from these sources.

The results of this study should answer some important and fundamental questions related to the factors influencing the release of DOC from peat soils and relations between DOC and THMFP. The objectives for this study are:

I. To characterize the concentration and composition of DOC in drainage water from one agricultural field on Twitchell Island.

Hypothesis: Interstitial waters from oxidized, near-surface soils have higher DOC concentrations and differ in composition and THMFP compared to interstitial waters from reduced, saturated, fibrous peat soils.

Approach: Lysimeters will be installed at depths of about 1.5 to 2 feet (oxidized, near-surface soil) and piezometers will be installed at 5 to 7 feet (reduced, saturated, fibrous peat soil) at four sites along the edge of an agricultural field.

Samples will be taken at the following frequencies: two per week during the flooding/leaching period (two to four weeks), one per week for four weeks during the peak irrigation season, and one per month during other periods.

These samples will be analyzed for DOC, specific $UVabs_{254}$, THMFP, Br, Na, Ca, Mg, pH, alkalinity, and specific conductance (i.e., Routine Analyses).

DOC will be characterized in detail for samples taken at four critical periods during the year: after harvest and prior to winter flooding, during the flooding/leaching period, prior to summer irrigation, and during the peak of irrigation. These samples will be fractionated (XAD resins) and the isolates analyzed for structural properties (aromatic and aliphatic composition), elemental composition, and molecular weight (i.e., Detailed Characterization). These samples also will be subjected to the Routine Analyses.

In addition, irrigation water samples will be taken from the irrigation canal during the irrigation period, and a surface water sample taken from the ponded field during the flooding/leaching period for Routine Analyses. Samples will also be taken on a less frequent basis from the siphon supplying water to the field.

II. To characterize the oxidized, near-surface and reduced, fibrous peat soil organic matter.

Hypothesis: The organic matter composition differs significantly between the oxidized, near-surface and reduced, fibrous peat soils, and these differences relate to the differences in DOC composition of interstitial waters.

Approach: One sample from the oxidized, near-surface soil and one from the reduced, fibrous peat soil will be taken and the organic matter characterized. Soil organic matter will be directly characterized using ^{13}C NMR (if Fe and Mn concentrations are low) and soil extraction techniques will be explored to further characterize differences in organic matter composition (e.g., functional groups). These differences will be related to differences found in DOC composition of associated interstitial waters.

III. To characterize the concentration and composition of DOC found in drainage ditches.

Hypothesis: The composition of DOC and THMFP of ditch water differs from the drainage water coming off of an irrigated field.

Approach: Drainage ditch water (spud ditch closest to the lysimeters and the main drainage ditch where the drainage waters are pumped over the levee) will be sampled at the same frequencies as the lysimeters/piezometers (see Objective I) and subjected to Routine Analyses. Four samples will be taken during the four critical periods (see Objective I) and the DOC subjected to Detailed Characterization.

IV. To characterize the concentration and composition of DOC in selected waters associated with wetland-habitat test ponds constructed to evaluate the effects of alternative land and water management practices on the oxidation of peat soils and land subsidence.

Hypothesis: The concentration and composition of DOC in waters associated with selected wetland habitats (continuous-flooding, open-water, and reverse-flooding) differ from those associated with traditional irrigated agricultural practices on Twitchell Island.

Approach: Monthly piezometer samples (one for each habitat) of interstitial water from near-surface soils (1.0 to 1.5 feet) will be taken and subjected to Routine Analyses (see Objective I). One near-surface interstitial water sample will be taken from each habitat (during the peak flooding period for the open-water habitat and reverse flooding treatments) and the DOC subjected to Detailed Characterization (see Objective I).

After selection of an appropriate field on Twitchell Island, the lysimeters and piezometers were installed in late January 1996. Sampling for this study was initiated during the first week of February 1996.

Chapter 7. DELTA REAL-TIME MONITORING OF TOTAL ORGANIC CARBON

Real-time monitoring gives us the ability to see how quickly upstream conditions and events affect downstream water quality and water treatment.

Management of Delta water quality for all users has been through flow and salinity standards at various locations in the Bay-Delta. Future Bay-Delta standards, such as for TOC concentrations, may be needed to protect the suitability and treatability of Delta drinking water supplies.

This study proposes to monitor the effects of current Bay-Delta water quality standards and of water project operations on Delta water TOC concentrations. This will be achieved by establishing real-time instrumentation for monitoring TOC at key locations within the Delta.

Results from the study might lead to new water management strategies that could reduce TOC removal requirements at WTPs that use the Delta as a major source of drinking water. The data, in concert with other studies, could also be used to assess the costs and benefits associated with present water supply and transfer alternatives and of WTP modifications that are needed to meet drinking water standards. The data would also be used to supplement DWR's Delta computer modeling work. If new drinking water standards continue to evolve at the present pace, critical questions will be asked in the near future about the economies of treating water taken from current Delta locations as compared to other Delta transfer and storage alternatives. Some of these alternatives include taking water from other locations and regulating the discharge of organic matter.

In this study, one TOC autoanalyzer will be installed and rotated among key river channel stations and selected accessible agricultural drainage pump stations in the Delta. The planned tasks include:

1. Instrumentation Evaluation: Completed August 1995.

2. Procurement: Requisition forms submitted in December 1995. State bid announcement released in May 1996.

3. Staff Training: June/July 1996.

4. Field Testing and Evaluation: July - December 1996

5. Final Recommendation and Approval for Additional TOC Analyzers: December 1996 - January 1997.

In August 1995, MWQI staff evaluated TOC autoanalyzers from three manufacturers for potential use in this study. Evaluation criteria included cost, size and weight, portability, ease of operation and maintenance, available interfaces for remote linkup or data downloads, as well as measurement accuracy and reproducible results. Two of the three manufacturers were able to provide their respective TOC autoanalyzers for testing.

The Sievers Instruments Model 800 TOC Analyzer met the desired criteria. The relative percent differences of split samples analyzed by the Sievers TOC Analyzer and DWR's Bryte Chemical Laboratory ranged from 4 to 10.6 percent (average 7.13 percent) for nine serial dilutions of river and drain water mixtures with TOC concentrations ranging from 2 to 12 mg/L.

DWR procured via competitive bidding a Sievers Instruments Model 800 TOC Analyzer (estimated price $ 20,000) in July 1996. Training and testing began in August. The unit will initially be installed for field testing at or near the North Bay Aqueduct Pumping Plant. The reliability of the unit under extensive field tests will be evaluated prior to subsequent purchases of additional units. A real-time TOC monitoring network can be created in the Delta with multiple units installed at several key Delta locations.

Chapter 8. ALGAL DISINFECTION BY-PRODUCTS PRECURSORS STUDY

> Algae are another source of THM precursors of unknown significance.

Past MWQI studies have focused on the contribution of organic DBP precursors from Delta island drainage. Information on other sources, such as primary productivity in upstream reservoirs and in the biologically productive Delta, have been lacking. Agricultural interests in the Delta have criticized this lack of information and the MWQI Program's focus on agricultural drainage sources. This study will determine if periods of localized high THMFP concentrations correlate with algal blooms in the Delta.

Historically, the populations of the filamentous diatoms, *Melosira granulata* and *Thalasiosira* spp., increase throughout the Delta in wet years as a result of increased freshwater habitat. *Melosira granulata* blooms peak in May in the lower San Joaquin River. *Thalasiosira* spp. and *Cyclotella* spp. blooms occur during the summer in the southern Delta. At times, the high chlorophyll *a* levels associated with peak blooms have reached over 200 µg/L.

Samples would be initially taken from the Delta for determining statistical correlations among biological parameters and DBP formation potential concentrations. The samples would be analyzed for chlorophyll *a*, phaeophytin, algal community composition, TOC, DOC, POC, UVA-254 nm, THMFP, and HAA6FP (if possible) to relate the DBP formation potential to phytoplankton concentration. Filtered, unfiltered, and filtrate samples would be analyzed.

In the full study, samples would be collected before, during, and after a bloom so as to measure corresponding changes in DBP formation potential. Chlorophyll measurements will indicate the phase of any bloom that may be occurring. Percent chlorophyll concentration is computed as the ratio of chlorophyll *a* concentration to chlorophyll *a* plus phaeophytin concentration times 100. Percent chlorophyll concentration increases during the initial phase of a phytoplankton bloom when exponentially dividing cells produce large amounts of chlorophyll. Percent chlorophyll concentration decreases as the bloom declines when pigment breakdown products (e.g., phaeophytin) are higher in concentration than chlorophyll.

Correlations of THMFP to chlorophyll *a* or THMFP to phaeophytin will indicate the relative DBP formation potential of algae or its breakdown products. Changes in these ratios and concentrations will also indicate at which stage of an algal bloom is the DBP formation potential the highest and lowest. Ratios of UVA-254 nm to other measurements will also indicate changes in the humic-like nature of organic carbon during a bloom. If the relationship between Delta algal populations and THMFP can be established, historical monthly and semi-monthly Delta algae data can be used to obtain gross estimates on the standing crop THMFP of Delta phytoplankton. To assess the significance of DBP precursors from Delta phytoplankton, the results will be compared to past mass load estimates of organic contributions from agricultural drainage.

The study was approved by the MWQI TAC Workplan Subcommittee in February 1995. Sampling in the Delta for this study was planned for the spring of 1996. In May 1996, there was a decision to postpone the study to 1997 due to other priorities identified by TAC.

(Photo by Dale Kolke, DWR photographer.)

The names of famous scientists such as Pasteur and Whipple are inscribed along the top wall of the chlorination facility at City of Sacramento water treatment plant. Disinfection is a necessity but new EPA regulations on the levels of disinfectants and disinfection by-products in treated water are making protection from microbial diseases more difficult to achieve.

Chapter 9. COLIFORM AND PATHOGEN SAMPLING AND ANALYSIS

After several outbreaks across the nation, utilities are deeply concerned about pathogen sources in the watershed and the adequacy of filtration at their treatment facilities.

EPA is promulgating an Information Collection Rule which establishes monitoring and data reporting requirements for large public water systems. This Rule is intended to provide EPA with information on the occurrence in drinking water of (1) chemical byproducts that form when disinfectants used for microbial control react with chemicals already present in source water (DBPs) and (2) disease-causing microorganisms (pathogens), including *Cryptosporidium*. Also, EPA will collect engineering data on how public water systems currently control such contaminants. All data collected pursuant to this rule will be available to the public via the Internet.

This information is being collected because a Regulatory Negotiation on disinfectants and DBPs concluded that additional information is needed to assess the potential health problem created by the presence of DBPs and pathogens in drinking water and to assess the extent and severity of risk in order to make sound regulatory and public health decisions. These contaminants may have adverse human health effects, including cancer, liver and kidney damage, and may cause microbial disease such as cryptosporidiosis and hepatitis.

EPA will use information generated by this rule, along with concurrent research, to determine whether revisions need to be made to EPA's current drinking water filtration and disinfection rule and to determine the need for new regulations for disinfectants and DBPs.

EPA has determined that the rule's objectives can be satisfied, and sufficient information collected, by requiring only large PWSs to collect the data. Surface water systems serving at least 100,000 people and groundwater systems serving at least 50,000 must monitor for pathogens and DBPs. EPA will supplement this information with EPA-funded surveys that target smaller PWSs. The specific information required is based on the number of people served, the source of water (i.e., surface water or groundwater), and the type(s) of treatment used.

Although *Cryptosporidium* is an important drinking water pathogen, it poses difficult measurement challenges. To ensure quality of data, EPA has and will continue to take extraordinary steps. The first is to continue an extensive method analysis and possible improvements. The second is to establish stringent laboratory approval criteria to increase *Cryptosporidium* data quality for developing a national occurrence data base and conducting a national cost assessment of possible future rules. Finally, EPA will supplement the collection of Cryptosporidium data in this rule with a separate, EPA-funded survey.

EPA believes this combination of data collection activities will produce the best data possible. The effective date for this final rule is June 18, 1996.

In response to concerns about pathogens in drinking water supplies, a new study was proposed to the MWQI TAC Workplan Subcommittee in February 1995. The study would examine the feasibility of using current sampling and laboratory analytical methods to quantify *Giardia* and *Cryptosporidium* concentrations in samples collected from discharged effluent and receiving water in the Delta and watersheds tributary to the Delta, and to implement total and fecal (*Escherichia coli*) coliform monitoring at key locations in the Delta and other SWP watersheds.

The study plan was developed, sampling equipment procured, and contractual arrangements with laboratories for PE samples completed in program year 1996.

Currently, the sampling method for *Giardia* and *Cryptosporidium* analyses requires the filtering of large volumes of water, and past experience has shown that this can take many hours. Obtaining samples can also be hindered by waters with high particulate matter which quickly clog the one micron pore size filters.

Wide variability in recoveries and detection limits of the immunofluorescence antibody method for *Giardia* and *Cryptosporidium* analyses has hindered the interpretation of results. Research efforts are currently underway to find a more rapid, sensitive, and reproducible analytical method. One of the methods under development is the use of the polymerase chain reaction process to detect the protozoans in water samples. Perkin Elmer, Inc. is currently conducting research on the PCR method under a contract with EPA's Office of Research and Development. Another method being studied is the use of the flow cytometry technique for *Giardia* and *Cryptosporidium* analyses. This method is currently being studied at BioVir Laboratories, Inc.

The study on *Giardia* and *Cryptosporidium* will be conducted in two phases:

1. The objective of the first phase will be to determine if laboratory analytical methods can be used to quantify pathogen levels in environmental samples obtained from discharged effluent and receiving water in the Delta. To determine the adequacy of the IFA method, customized PE samples of different matrices will be submitted BioVir Laboratories, Inc. and Metropolitan Water District of Southern California. The customized PE samples, which will be obtained from Clancy Environmental Consultants, Inc., will be samples of different water

matrices in which a known amount of *Giardia* cysts and *Cryptosporidium* oocysts are added prior to filtration. PE samples will also be sent to BioVir Laboratories, Inc. and Perkin Elmer, Inc. to assist in the development of PCR and flow cytometry methods and to compare the results of PCR and flow cytometry methods with the IFA method.

2. The objective of the second phase will be to determine if the current sampling methods (equipment and protocol) can be used to adequately collect samples for quantification of *Giardia* cysts and *Cryptosporidium* oocysts contributed by potential sources in the Delta and watersheds tributary to the Delta. Continuation into the second phase will be dependent on the results of the first phase which evaluates laboratories' performances, pending satisfactory results of the analytical methodologies. The potential sources which will be sampled include effluent from wastewater treatment plants, areas of recreational activity, sheep and cattle grazing areas, stormwater runoff, and wetlands wildlife refuge areas.

To implement total and fecal coliform monitoring in the Delta and SWP watersheds, samples will be collected for analyses using the Colilert system. The Colilert system is a direct water testing method for total and fecal coliforms which has been approved by EPA for testing of drinking water and source water. The method has been included in the 18th and subsequent editions of Standard Methods. To evaluate the results of the Colilert system on water samples collected in this study, replicate samples will be initially submitted for laboratory analysis. The replicate analyses will be evaluated to determine the accuracy and reliability of the Colilert method and to determine if there is significant interference with the interpretation of the "colorimetric" method used with the Colilert system by water samples (e.g., agricultural drain water) which typically already have a yellowish to brownish color due to high concentrations of organic substances. In February 1996, a purchase requisition was approved and submitted for purchase of the Colilert system.

In January 1996, customized *Giardia* and *Cryptosporidium* performance evaluation samples prepared by Clancy Environmental Consultants, Inc. were sent to BioVir Laboratories, Inc. and Metropolitan Water District of Southern California to evaluate the laboratories' performances on *Giardia* and *Cryptosporidium* analyses. The PE samples were analyzed by BioVir using the proposed ICR method and the flow cytometry technique, and by MWD using the proposed ICR method. The results of the analyses are summarized below:

Table 9. Results of *Giardia* Performance Evaluation Samples (Reported as No. of Cysts per 100 Liters)

PE Sample Matrix	Seeded Number of Cysts	MWD (8/95 ICR method)	BioVir (8/95 ICR method)	BioVir (Flow Cytometry)
60 NTUs (BL 5466)	2928 ± 447	350	1,266.7	233.3
10 NTUs (BL 5467)	2928 ± 447	232	1,220	110
Wastewater (BL 5468)	2928 ± 447	90.4	1,733.3	166.7

Table 10. Results of *Cryptosporidium* Performance Evaluation Samples (Reported as No. of Oocysts per 100 Liters)

PE Sample Matrix	Seeded Number of Oocysts	MWD (8/95 ICR method)	BioVir (8/95 ICR method)	BioVir (Flow Cytometry)
60 NTUs (BL 5466)	5532 ± 880	440	33.3	166.67
10 NTUs (BL 5467)	5532 ± 880	200	<10	120
Wastewater (BL 5468)	5532 ± 880	142.5	50	116.7

Testing of the IDEXX Colilert Quanti-Tray® system for the detection and quantification of coliform bacteria is underway. Coordination and discussions with Metropolitan Water District of Southern California on *Giardia* and *Cryptosporidium* sampling will be held to outline the direction of this work in program year 1996 in view of PE results.

Chapter 10. RICE FIELD DRAINAGE STUDY

Potential major sources of organic carbon located upstream of the Delta are being examined.

The MWQI Program implemented the Rice Field Drainage Study to determine the effects of rice field drainage on Sacramento River TOC levels and to assess the potential impact of this TOC source on municipal water facility treatment practices for all downstream users of Sacramento River water. Regulation changes in EPA's Disinfectants-Disinfection By-Products Rule will require pretreatment of TOC for conventional water treatment facilities with a surface water source. TOC levels in the Sacramento River are suspected to increase because of changing rice straw decomposition practices caused by the Connelly-Areias-Chandler Rice Straw Burning Reduction Act of 1991 (AB1378), California State Health and Safety Code Section 41865. This law reduces the allowable burned acreage for rice straw disposal. One alternative, flooding rice straw for decomposition, may be practiced more extensively. There are concerns that this practice and others may cause an increase of organic materials in the Sacramento River as the rice fields are drained.

The objective of this study was to determine if drain water from rice farming in the Colusa Basin Drain and Sutter Bypass significantly contributes to organic carbon levels in the Sacramento River. It should be noted, however, that although winter-flooded rice acreage is about 150,000 acres, drain water in the Colusa Basin Drain and Sutter Bypass is mixed with other carbon sources. These include natural runoff, flood bypasses, runoff from refuges, wetlands, marshes, and other crop runoff. The study may be expanded to other seasons and locations to examine these other sources for comparison in the near future. In such a case, the study may be renamed to reflect a broader scope of work.

This study was jointly conducted by DWR's Northern District office and MWQI Program staff. The Colusa Basin and Sutter Bypass drains, American River, and Sacramento River at three stations were monitored during February and March 1995. TOC and DOC were sampled at these stations on 12 days during rice field drainage. Rice acreages flooded and burned for each drain system were obtained from county agricultural commissioners and DWR land and water use staff. Flow records were obtained from DWR and USGS gaging stations to allow mass load estimate calculations.

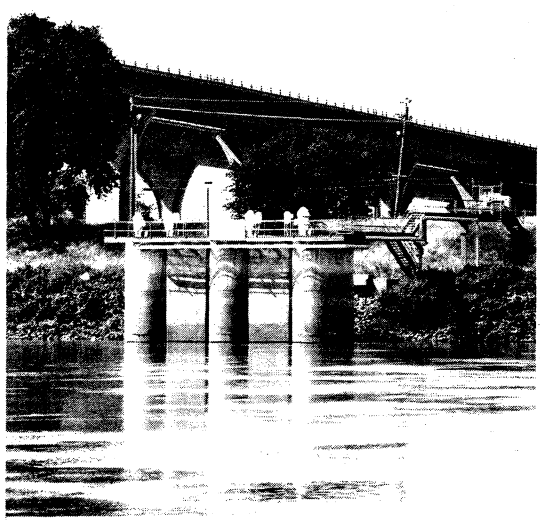
Over 500,000 acres of rice were farmed in the Sacramento Valley during 1994. Fifty-nine percent of the rice fields were burned and twenty-one percent were purposely flooded for decomposition.

The Feather River, Natomas drains, and Reclamation Districts 70, 108, and 1500 drain water were not sampled. These sources included approximately 148,000 rice production acres, of which 34,000 were flooded.

TOC levels in the Sacramento River above the drains ranged from 2.1 to 5.9 mg/L, while lower river TOC levels ranged from 2.2 to 3.9 mg/L. Agricultural drain TOC ranged from 2.6 to 7.5 mg/L. Unusually heavy precipitation during the study period resulted in widespread flooding and diversions of excess flood flows into bypasses and drains. Sacramento River TOC levels were similar between Colusa and Greenes Landing on three of the four sample days when flooding from heavy precipitation did not occur.

Mass load estimates were made on sample days without flooding (February 23 and 27, 1995 and March 2 and 6, 1995). The organic carbon load from the Colusa Basin and Sutter Bypass drains comprised 7 to 26 percent of the lower Sacramento River's load. Other sources, including the Feather River and some unaccounted rice drains, were estimated to comprise 17 to 63 percent of the downstream load. The American River, which has no rice drain water, contributes 7 to 16 percent of the lower Sacramento River's load. Based on these loading estimates, the agricultural drain loads increased TOC levels at the lower stations by 3 to 22 percent.

Study data indicate that drain organic carbon loads affect the Sacramento River's water quality. To augment tracing of organic carbon loads from the drains to downstream stations, three additional upstream stations will be added to the second year's sampling for this study. In addition, sampling will be limited to periods of nonfloodflows, with no weir diversions to Sutter Bypass or Yolo Bypass. Finally, samples will be analyzed for not only TOC, DOC, and ultraviolet absorbance, but also for THMFP, alkalinity, and sulfate. The second year's sampling for this study will begin in February 1996 by the Northern District. Consideration will be given to broaden the scope of the study to encompass drainage from other sources in addition to rice fields.



(Photo by Dale Kolke, DWR photographer.)

Water withdrawn at the City of West Sacramento water treatment plant intake on the Sacramento River is less likely to encounter taste and odor problems due to a successful cooperative rice herbicide control program established by rice growers.

Chapter 11. NEW PARAMETERS STUDY

The vulnerability of Delta water supplies to newly regulated chemicals will be assessed.

The goals of this study are to provide information on newly regulated constituents under the Phase II and V rules, and those constituents listed in the Phase VIB rule, which have not yet been promulgated. The results 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, and (3) provide data that may be used to evaluate future best available technology requirements.

The new Phase II and Phase V rules under the USEPA's drinking water regulations establish limits for several organic and inorganic chemicals (Table 11. *Drinking Water Regulatory Schedule*). In addition, California has established new MCLs for a number of constituents. The MWQI Program has little or no historical data for many of the newly regulated constituents. The New Parameter Study is a special investigation for monitoring and analyzing newly regulated or soon to be regulated constituents of concern.

The California DHS is the State agency given authority to grant waivers to compliance monitoring requirements. Waivers are based on a vulnerability assessment, or prior analyses, or both. Waiver determinations are made by the State 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.

The parameters analyzed in the Program are listed in Table 12. *Study Parameters and Analytical Methods*. With few exceptions, this list includes most of the newly or soon to be regulated parameters included in Table 11. *Drinking Water Regulatory Schedule*. The list of study parameters does not include parameters that are currently monitored under MWQI Program (Table 13. *Current MWQI Monitoring Program*).

The pathogens, including *Giardia* and *Cryptosporidium*, were not proposed for monitoring under this study. MWQI is developing a separate study to address these constituents. The disinfection products and disinfection by-products are also 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. In addition, a separate MWQI study is planned to simulate the distribution system process and measure D/DBPs.

Although waivers may be granted based on a vulnerability assessment alone, DWR conducted analyses for all parameters 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 in each method.

The study was conducted at major sites of diversion from the Sacramento-San Joaquin Delta. Five sites were sampled including: (1) Barker North Bay, (2) Contra Costa Pumping Plant, (3) Delta Mendota Canal, (4) Old River at Bacon Island, and (5) Banks Pumping Plant.

During the 1994/95 water year, two quarterly samplings were completed. Samples were collected during the months of June and September 1995. Results of the analyses are summarized below (see **Study Results**).

QA/QC

Field Quality Control

EPA methods for sample collection, preservation, and handling of water were followed. Field quality control samples consisted of duplicates and blanks. Field quality control samples were utilized to determine any sampling bias or contamination. Three field blanks were collected during each sampling event: one unfiltered blank, one filtered blank, and one nutrient blank. The filtered and unfiltered blanks were analyzed for metals, and the nutrient blank was analyzed for nitrate, nitrite, and nitrate+nitrite. One duplicate sample was collected. The duplicate was analyzed for all inorganic constituents and selected organic constituents in Table 12. *Study Parameters and Analytical Methods.*

Laboratory Quality Control

Laboratory quality control procedures listed in EPA methods were followed. This includes the analysis of laboratory blanks, laboratory control samples, matrix spike samples, and surrogate analytes. Two performance evaluation samples were submitted in June 1995. The samples were analyzed for EPA Methods 507 and 524. Performance evaluation samples are prepared by an independent laboratory and contain known concentrations of selected constituents. The analytical results are compared with the known concentrations to determine the accuracy of the analytical laboratory.

Data Quality Assessment

A data quality assessment was performed to determine whether the data collected were acceptable for the intended use. Both field and laboratory quality control is assessed. Based on the results of the data quality assessment, sample data may be qualified as estimated or questionable. Estimated or questionable data may or may not be considered acceptable depending on the intended use of the data. In cases where data are to be used for regulatory purposes, estimated or questionable data are not acceptable.

Laboratory Data Evaluation

Laboratory data were evaluated for precision, accuracy, and comparability. Laboratory methods, procedures, holding times, and quality control sample data were reviewed to assess data quality. Based on an evaluation of the quality control data, all data collected for this study are acceptable. Data with a "ND" or "0" notation were not detected or below the laboratory's reporting limit. Data indicated with a "NA" notation were not analyzed.

Field Blanks

Results for the unfiltered and filtered field blanks were not-detectable for all metals. The nutrient blanks had detectable results in one sample (Table 14. *Field Blank Sample Results*). Nitrate and nitrate+nitrite were both found at a concentration of 0.02 mg/L as N. Water quality samples collected during the same sampling event had nitrate concentrations of 0.29 and 0.30 mg/L as N, and nitrate+nitrite concentrations of 0.30 and 0.31 mg/L as N, respectively. Since the blank result for each constituent was less than one-tenth the concentration of the water quality sample, it is not considered to significantly affect the sample result. Therefore, the samples are acceptable for use in this study.

Field Duplicates

The field duplicates are evaluated by calculating the relative percent difference between the duplicate results. RPD is compared to control limits which are established for the type of matrix and type of analyte. Generally, the maximum acceptable RPD for inorganics and other miscellaneous water quality parameters in water is 25 percent. A greater RPD is often accepted for organic constituents due to increased analytical difficulty. As can be seen in Table 15. *Duplicate Sample Results for Old River at Bacon Island,* all RPDs, for both inorganic and organics, were below the 25 percent limit. In cases where results are not-detectable, a RPD cannot be calculated, but results are assumed to be acceptable since they are grouped with other sample results that meet acceptability criteria.

Performance Evaluation Sample

The results for the performance evaluation samples were compared to the certified value and acceptance limits developed for the sample (Table 16. *BSK Performance Evaluation Sample Results*). The laboratory PE sample for EPA Method 507 had recoveries outside of the acceptance limits for five constituents: atrazine, metolachlor, simazine, metribuzin, and butachlor. Atrazine and simazine had recoveries below the acceptance limits, indicating that the sample results for June 1995 may be biased low for these constituents. Metolachlor, metribuzin, and butachlor were falsely identified in the sample (false positive), indicating a high recovery bias for these constituents. Since these compounds were not detected in any of the June 1995 samples, this does not significantly affect the sample results. Alachlor recovery could not be evaluated because the laboratory had a not-detectable result with the reporting limit between the acceptance limits.

The PE sample results for EPA Method 524.2 sent to Bryte Chemical Laboratory are presented in Table 17. *Bryte Performance Evaluation Sample Results*. Analyses for 43 compounds were performed and the results were compared to the certified value. Six parameters were found to have results outside of the acceptance limits: Carbon tetrachloride, methylene chloride, vinyl chloride, bromomethane, dibromomethane, and 2,2-Dichloropropane. Carbon tetrachloride and vinyl chloride are not listed under the parameters of analysis for this study; therefore, the results are not discussed here. Methylene chloride and bromomethane both had results slightly exceeding the maximum acceptance limit. This indicates a potential for the June 1995 sample results to be biased high. However, since all sample results for these parameters were not-detectable, this does not significantly affect the sample results. 2,2-Dichloropropane was found at a concentration significantly below the lower acceptance limit, indicating a bias for low results. However, 2,2-Dichloropropane is not listed under the EPA Phase II and Phase V rules and, consequently, is not a candidate for a waiver. Therefore, the June 1995 results will be acceptable for use in this study but should be considered estimated.

Study Results

A complete listing of sample results can be found in Table 18. *New Parameter Study 1994/95 Sample Results.*

No obvious trends were detected between the two sampling events. In all cases, organic analytes were either not-detectable or detected at concentrations below their respective MCLs. The only organic analytes detected during the study were: 2,4-D; 2,4,5-T; and Diquat. 2,4-D was detected at the Banks Pumping Plant (0.14 µg/L) in June 1995, and at Barker North Bay and Contra Costa Pumping Plants (0.2 µg/L both sites) in September 1995. The EPA MCL for 2,4-D is 0.07 mg/L (70 µg/L) and the

California MCL is 0.1 mg/L (100 µg/L). Diquat was detected at Old River at Bacon Island at a concentration of 13 µg/L in September 1995. The EPA and California MCL for Diquat is 0.02 mg/L (20 µg/L). 2,4,5-T was detected at Contra Costa Pumping Plant at 0.1 µg/L in June 1995. No MCL exists for 2,4,5-T.

All inorganic constituents were found at concentrations below their respective MCLs.

Upon completion of four quarterly samplings, a summary report will be prepared. Based on the results of the first year of monitoring, the study will be evaluated to determine if any changes in sampling location or frequency are required. The study is scheduled for completion in March 1998. A final report will be completed in June 1998.

Table 11. Drinking Water Regulatory Schedule

Regulation	Constituents	Proposed Date	Effective Date
ICR		Jun-95	Oct-95
	Giardia		
	Cryptosporidium		
	Total coliforms		
	Fecal coliforms/ E. coli.		
	Viruses		
	TOC		
Phase II		May-89	Jul-91
Inorganics	Asbestos		
	Barium		
	Cadmium		
	Chromium		
	Mercury		
	Nitrate		
	Nitrite		
	Total nitrate-nitrite		
	Selenium		
Volatile Organics (solvents)	cis-1,2-Dichloroethylene		
	1,2-Dichloropropane		
	Ethylbenzene		
	Monochlorobenzene		
	o-Dichlorobenzene		
	Styrene		
	Tetrachloroethylene		
	Toluene		
	trans-1,2-Dichloroethylene		
	Xylenes (total)		
Pesticides, herbicides, PCBs	Alachlor		
	Aldicarb		
	Aldicarb sulfone		
	Aldicarb sulfoxide		
	Atrazine		
	Carbofuran		
	Chlordane		
	Dibromochlorpropane		
	2,4-D		
	Ethylenedibromide		
	Heptachlor		
	Heptachlor epoxide		
	Lindane		
	Methoxychlor		
	PCBs		
	Pentachlorophenol		
	Toxaphene		
	2,4,5-TP		

Table 11. Drinking Water Regulatory Schedule (continued)

Regulation	Constituents	Proposed Date	Effective Date
Drinking water treatment chemicals			
	Acrylamide		
	Epichlorohdrin		
Unregulated Inorganics	Antimony		
	Beryllium		
	Cyanide		
	Nickel		
	Sulfate		
	Thallium		
Unregulated Organics	Aldrin		
	Benzo(a)-pyrene		
	Butachlor		
	Carbaryl		
	Dalapon		
	Di-2(ethylhexyl)adipate		
	Di-2(ethylhexyl)phalates		
	Dicamba		
	Dieldrin		
	Dinoseb		
	Diquat		
	Endothall		
	Glyphosate		
	Hexachlorobenzene		
	Hexachlorocyclopentadiene		
	3-Hydroxycarbofuran		
	Methomyl		
	Metolachlor		
	Metribuzin		
	Oxamyl		
	Picloram		
	Propachlor		
	Simazine		
	2,3,7,8-TCDD		
Phase V		Jul-90	Jul-92
Inorganics	Antimony		
	Beryllium		
	Cyanide		
	Nickel		
	Sulfate		
	Thallium		
Organics	Dichloromethane		
	1,2,4-Trichlorobenzene		
	1,1,2-Trichloroethane		
Synthetic Organics (pesticides, herbicides)			
	Dalapon		
	Dinoseb		

Table 11. Drinking Water Regulatory Schedule (continued)

Regulation	Constituents	Proposed Date	Effective Date
	Diquat		
	Endothall		
	Endrin		
	Glyphosate		
	Oxamyl		
	Picloram		
	Simazine		
Synthetic Organics (nonpesticides)			
	Benzo(a)-pyrene		
	Di(2-ethylhexyl)adipate		
	Di(2-ethylhexyl)phthalate		
	Hexachlorobenzene		
	Hexachlorocyclopentadiene		
	2,3,7,8-TCDD		
D/DBP		Dec-96	Jun-98
	TTHMs		
	THAAs		
	Bromate		
	Chlorine		
	Chloramines		
	Chlorine Dioxide		
	Chlorite		
Phase VIb		Feb-97	Aug-98
Organics	Acifluorfen		
	Acrylonitrile/Dinitrotoluene		
	Bromacil		
	Bromomethane		
	Cyanazine		
	Dicamba		
	Dichloroethane		
	Dichloropropene		
	Ethylene Thiourea		
	Hexachlorobutadiene		
	Methomyl		
	Methyl tertiary butyl ether		
	Metolachlor		
	Metribuzin		
	Prometon		
	1,1,1,2-Tetrachloroethane		
	Trichloropropane		
	Trifluralin		
Inorganics	Boron		
	Manganese		
	Molybdenum		
	Zinc		

Table 11. Drinking Water Regulatory Schedule (continued)

Regulation	Constituents	Proposed Date	Effective Date
Sulfate Rule		Dec-94	Jun-96
	Sulfate		
ESWTR		Jun-94	Jun-98
	Giardia lamblia		
	Legionella		
	Heterotrophic Bacteria		
	Turbidity		
	Viruses		
Listed in Drinking Water Priorities List			
Organic	Bromobenzene		Jan-88
	Bromochloroacetonitrile		Jan-88
	Chloroethane		Jan-88
	Chloromethane		Jan-88
	o-Chlorotoluene		Jan-91
	p-Chlorotoluene		Jan-91
	Dibromoacetonitrile		Jan-91
	Dichloracetaldehyde		Jan-88
	Dichloroacetonitrile		Jan-88
	Dichlorodifluoromethane		Jan-91
	1,3-Dichloropropane		Jan-91
	2,2-Dichloropropane		Jan-91
	1,1-Dichloropropene		Jan-91
	Fluorotrichloromethane		Jan-91
	Hexachloroethane		Jan-91
	Monochloroacetic Acid		Jan-88
	2,4,5-T		Jan-91
	Trichloroacetonitrile		Jan-91
	Trichlorophenol		Jan-88
Inorganic	Hypochlorite		Jan-91
	Hypochlorous Acid		Jan-88
	Strontium		Jan-91

Table 12. Study Parameters and Analytical Methods

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 II	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	1 (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 Phosphorous Pesticides		
	Bromacil	Phase VIB	
	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 12. Study Parameters and Analytical Methods (continued)

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	Volatile 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 VIB	0.0008
	Xylenes (total)	Phase II	10
	1,1,2-Trichloroethane	Phase V	0.005
	Hexachloroethane	Priority List	
	Methyl tertiary butyl ether	Phase VIB	
	Dichloropropene	Phase VIB	0.0006
	Acrylonitrile	Phase VIB	0.003

Table 12. Study Parameters and Analytical Methods (continued)

Method	Constituents	Regulation	MCL mg/L
525.1	Base Neutrals, Acids & Pesticides		
	Di-2(ethylhexyl)adipate	Phase II, V	0.4
	Di-2(ethylhexyl)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-Hydroxycarbofuran	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 13. Current MWQI Monitoring Program

Constituents	Number of Stations	Sampling Frequency
North Delta		
Std. Mineral	9	monthly
THM	9	monthly
DOC	9	monthly
Br	9	monthly
UVA	9	monthly
Arsenic	5	monthly
Copper	5	monthly
Selenium	5	monthly
South Delta		
Std. Mineral	8	monthly
THM	8	monthly
DOC	8	monthly
Br	8	monthly
UVA	8	monthly
Arsenic	3	monthly
Copper	3	monthly
Selenium	3	monthly
Autosampler		
DOC	3	daily
UVA	3	daily
THM	3	weekly

Stations for Metals Analysis

NORTH DELTA

Barker Slough @ No. Bay PP.
Contra Costa PP. No. 1
Ag Drain on Jersey Island
Sac. River @ Greenes Landing
Sac. River @ W. Sac. Intake

SOUTH DELTA

San Joaquin R. @ Mossdale Bridge
Delta P.P. Headworks
DMC Intake @ Lindemann Rd.

Table 14. Field Blank Sample Results
(units in mg/L)

Sample Number	Sample Date	Field Blank Type	As	Ba	Be	Cd	Cr	Cu	Mn	Hg	Mo	Ni	Se	Tl	Zn	Nitrate (as N)	Nitrite (as N)	Nitrate &Nitrite
C51570	21-Jun-95	Filtered	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C51635	21-Jun-95	Unfiltered	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C51636	21-Jun-95	Nutrient														.02	ND	.02
C51576	22-Jun-95	Filtered	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C51577	22-Jun-95	Unfiltered	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C51637	22-Jun-95	Nutrient														ND	ND	ND
C52227	06-Sep-95	Filtered	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C52228	06-Sep-95	Unfiltered	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C52416	06-Sep-95	Nutrient														ND	ND	ND
C52304	13-Sep-95	Filtered	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C52305	13-Sep-95	Unfiltered	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C52306	13-Sep-95	Nutrient														ND	ND	ND
C52312	14-Sep-95	Filtered	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C52313	14-Sep-95	Unfiltered	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
C52314	14-Sep-95	Nutrient														ND	ND	ND

Table 15. Duplicate Sample Results for Old River at Bacon Island

Parameter	Reporting Limit	OR @ Bacon	OR @ Bacon dup	RPD
Inorganic Constituents (mg/L)				
Arsenic	0.001	0.001	0.001	0
Barium	0.05	ND	0.052	NA
Beryllium	0.002	ND	ND	NA
Boron	0.1	0.1	0.1	0
Bromide	0.01	0.05	0.05	0
Cadmium	0.005	ND	ND	NA
Calcium	1	10	10	0
Chloride	1	18	18	0
Chromium	0.005	ND	ND	NA
Copper	0.005	ND	ND	NA
EC (μmhos/cm)	1	185	188	2
Hardness	1	46	46	0
Magnesium	1	5	5	0
Manganese	0.005	0.022	0.024	9
Mercury	0.001	ND	ND	NA
Molybdenum	0.005	ND	ND	NA
Nickel	0.005	ND	ND	NA
Nitrate (as N mg/L)	0.01	0.30	0.29	NA
Nitrite (as N mg/L)	0.01	ND	ND	NA
Nitrate+Nitrite (as N mg/L)	0.01	0.31	0.30	3
Nitrate (NO3 mg/L)	0.01	1.2	1.2	0
pH (pH units)	0.1	7.1	7	1
Potassium	0.1	1.4	1.3	7
Selenium	0.001	ND	ND	NA
Sodium	1	17	18	6
Sulfate	1	20	21	5
TDS	1	116	113	3
Thallium	0.002	ND	ND	NA
Total Alkalinity (as CaCO3)	1	35	35	0
Turbidity (NTU)	1	13	12	8
UVA (ABS/cm)	0.001	0.154	0.154	0
Zinc	0.005	0.005	0.006	18
Organic Constituents (μg/L)				
1,2-Dibromo-3-chloropropane	0.01	ND	ND	NA
1,2-Dibromoethane (EDB)	0.02	ND	ND	NA
1-Naphthol	4	ND	ND	NA
3-Hydroxycarbofuran	2	ND	ND	NA
Aldicarb	2	ND	ND	NA
Aldicarbe Sulfone	2	ND	ND	NA
Aldicarbe Sulfoxone	2	ND	ND	NA
Aminomethylphosphonic Acid	100	ND	ND	NA
Carbaryl	2	ND	ND	NA
Carbofuran	2	ND	ND	NA
Formetanate Hydrochloride	100	ND	ND	NA
Glyphosate	100	ND	ND	NA
Methiocarb	4	ND	ND	NA
Methomyl	2	ND	ND	NA
Oxarnyl	2	ND	ND	NA
TOC	0.1	3.8	3.8	0

RPD: Relative Percent Difference

Table 16. BSK Performance Evaluation Sample Results

DWR Sample C51688 6/14/95

EPA Method 507

(units in µg/L)

Parameter	Lab Result	Reporting Limit	Certified Value	Acceptance Limits	Recovery within Limits?
Atrazine	0	1.0	3.04	2.07-3.53	No
Dimethoate	0	10	NI		
Diazinon	0	0.25	NI		
Molinate	0	2.0	NI		
Bromacil	0	10	NI		
Alachlor	0	1.0	1.1	0.690-1.42	Unknown*
Metolachlor	0.7	0.5	NI		No
Disulfoton	0	0.5	NI		
Demeton	0	0.5	NI		
Simazine	0	1.0	3.25	2.41-4.10	No
Prometryn	0	2	NI		
Metribuzin	1.7	0.5	NI		No
Propachlor	0	0.5	NI		
Butachlor	4.1	0.38	NI		No

NI - Not included in PE sample

* Because the lower acceptance limit (0.690 ug/L) is below the laboratory reporting limit (1.0 ug/L), it is not possible to determine whether or not the result is within the acceptance limits. However, the result is below the certified value.

Table 17. Bryte Performance Evaluation Sample Results
DWR Sample C51689 6/14/95
EPA Method 524.2
(units in µg/L)

Parameter	Lab Result	Reporting Limit	Certified Value	Acceptance Limits	Recovery within Limits?
Regulated Volatiles Sample					
Benzene	2.7	0.5	2.46	1.97-2.95	y
Carbon tetrachloride	3.6	0.5	4.95	3.96-5.95	n
Chlorobenzene	6.1	0.5	6.00	4.80-7.20	y
1,2-Dichlorobenzene	3.7	0.5	3.47	2.77-4.16	y
1,4-Dichlorobenzene	2.6	0.5	2.81	2.25-3.37	y
1,2-Dichloroethane	6.9	0.5	6.55	5.25-7.85	y
1,1-Dichloroethylene	4	0.5	3.52	2.81-4.22	y
cis-1,2-Dichloroethylene	3.4	0.5	3.22	2.58-3.87	y
trans-1,2-Dichloroethylene	3.2	0.5	3.05	2.44-3.66	y
1,2-Dichloropropane	2.4	0.5	2.28	1.82-2.73	y
Ethylbenzene	1.6	0.5	1.60	1.28-1.92	y
Methylene chloride	3.2	0.5	2.61	2.09-3.13	n
Styrene	3.5	0.5	3.98	3.19-4.78	y
Tetrachloroethylene	4.9	0.5	5.50	4.40-6.60	y
Toluene	5.2	0.5	5.10	4.08-6.10	y
1,2,4-Trichlorobenzene	4.6	0.5	4.74	3.79-5.70	y
1,1,1-Trichloroethane	2.3	0.5	2.07	1.65-2.48	y
1,1,2-Trichloroethane	3.2	0.5	3.25	2.60-3.90	y
Trichloroethylene	3.6	0.5	3.64	2.91-4.37	y
Vinyl chloride	4.8	0.5	3.50	2.80-4.20	n
o-Xylene	10.3	0.5	8.60	6.90-10.3	y
m-Xylene	below	0.5	1.59	1.27-1.91	-
p-Xylene	9.1(m+p)	0.5	7.60	6.10-9.10	y
Unregulated Volatiles Sample					
Bromobenzene	5	0.5	4.96	3.97-5.95	y
Bromomethane	5.9	0.5	4.00	2.40-5.60	n
Chloroethane	6.7	0.5	6.00	3.60-8.40	y
Chloromethane	9.9	0.5	5.00	3.00-7.00	n
o-Chlorotoluene	7.7	0.5	8.00	6.40-9.60	y
p-Chlorotoluene	3.4	0.5	3.45	2.76-4.14	y
Dibromomethane	1.6	0.5	1.98	1.64-2.38	y
1,3-Dichlorobenzene	2.4	0.5	2.45	1.96-2.94	y
Dichlorodifluoromethane	7.9	0.5	7.00	4.20-9.80	y
1,1-Dichloroethane	7.9	0.5	8.00	6.40-9.60	y
1,3-Dichloropropane	3.6	0.5	3.72	2.97-4.46	y
2,2-Dichloropropane	1.4	0.5	5.55	4.44-6.65	n
1,1-Dichloropropylene	6.6	0.5	7.45	5.95-8.95	y
cis-1,3-Dichloropropylene	7.3	0.5	8.05	6.45-9.65	y
trans-1,3-Dichloropropylene	1.6	0.5	2.00	1.60-2.40	y
Fluorotrichloromethane	6.1	0.5	5.10	3.06-7.15	y
t-Butylmethylether	NA	0.5	7.05	4.23-9.85	-
1,1,2,2-Tetrachloroethane	2.9	0.5	2.51	2.01-3.01	y
1,1,1,2-Tetrachloroethane	3	0.5	3.49	2.79-4.19	y
1,2,3-Trichloropropane	1.6	0.5	1.52	1.22-1.83	y

NA - Not Analyzed

Table 18. New Parameter Study 1994/95 Sample Results

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Sl @ North Bay PP	C52223	9/6/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,1,1,2-Tetrachloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	1,1,1-Trichloro-2-propanone	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1,1-Trichloro-2-propanone	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	1,1,1-Trichloro-2-propanone	0	1.0	µg/L
Contra Costa PP	C52225	9/6/95	1,1,1-Trichloro-2-propanone	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	1,1,1-Trichloro-2-propanone	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1,1-Trichloro-2-propanone	ND	1	µg/L
Old River at Bacon Island	C52303	9/13/95	1,1,1-Trichloro-2-propanone	ND	1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1,1-Trichloroethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,1,1-Trichloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,1,1-Trichloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,1,1-Trichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,1,1-Trichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1,1-Trichloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,1,1-Trichloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,1,1-Trichloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,1,2,2-Tetrachloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1,2-Trichloroethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,1,2-Trichloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,1,2-Trichloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,1,2-Trichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,1,2-Trichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1,2-Trichloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,1,2-Trichloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,1,2-Trichloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	1,1-Dichloro-2-propanone	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1-Dichloro-2-propanone	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	1,1-Dichloro-2-propanone	0	1.0	µg/L
Contra Costa PP	C52225	9/6/95	1,1-Dichloro-2-propanone	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	1,1-Dichloro-2-propanone	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1-Dichloro-2-propanone	ND	1	µg/L
Old River at Bacon Island	C52303	9/13/95	1,1-Dichloro-2-propanone	ND	1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1-Dichloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1-Dichloroethane	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C52225	9/6/95	1,1-Dichloroethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,1-Dichloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,1-Dichloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,1-Dichloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,1-Dichloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,1-Dichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,1-Dichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,1-Dichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1-Dichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1-Dichloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,1-Dichloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,1-Dichloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,1-Dichloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,1-Dichloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,1-Dichloropropene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,1-Dichloropropene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,1-Dichloropropene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,1-Dichloropropene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,1-Dichloropropene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,1-Dichloropropene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,1-Dichloropropene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,1-Dichloropropene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2,3-Trichlorobenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2,3-Trichloropropane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2,3-Trichloropropane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2,3-Trichloropropane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2,3-Trichloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2,3-Trichloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2,3-Trichloropropane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2,3-Trichloropropane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2,3-Trichloropropane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2,4-Trichlorobenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2,4-Trimethylbenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2,4-Trimethylbenzene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta PP Headworks	C51575	6/22/95	1,2,4-Trimethylbenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2,4-Trimethylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2,4-Trimethylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2,4-Trimethylbenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2,4-Trimethylbenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2,4-Trimethylbenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2-Dibromo-3-chloropropane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Contra Costa PP	C51504	6/14/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Contra Costa PP	C52225	9/6/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Delta PP Headworks	C51575	6/22/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Delta PP Headworks	C52311	9/14/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Old River at Bacon Island du	C51565	6/21/95	1,2-Dibromo-3-chloropropane	ND	.01	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2-Dibromoethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2-Dibromoethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2-Dibromoethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2-Dibromoethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2-Dibromoethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2-Dibromoethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2-Dibromoethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2-Dibromoethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Contra Costa PP	C51504	6/14/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Contra Costa PP	C52225	9/6/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Delta PP Headworks	C51575	6/22/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Delta PP Headworks	C52311	9/14/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Old River at Bacon Island du	C51565	6/21/95	1,2-Dibromoethane (EDB)	ND	.02	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2-Dichlorobenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2-Dichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2-Dichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2-Dichlorobenzene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann R	C51574	6/22/95	1,2-Dichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2-Dichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2-Dichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2-Dichlorobenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2-Dichloroethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2-Dichloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2-Dichloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2-Dichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2-Dichloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2-Dichloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2-Dichloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2-Dichloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,2-Dichlorpropane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,2-Dichlorpropane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,2-Dichlorpropane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,2-Dichlorpropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,2-Dichlorpropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,2-Dichlorpropane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,2-Dichlorpropane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,2-Dichlorpropane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,3,5-Trimethylbenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,3-Dichlorobenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,3-Dichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,3-Dichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,3-Dichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,3-Dichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,3-Dichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,3-Dichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,3-Dichlorobenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,3-Dichloropropane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,3-Dichloropropane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,3-Dichloropropane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,3-Dichloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1,3-Dichloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,3-Dichloropropane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,3-Dichloropropane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,3-Dichloropropane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1,4-Dichlorobenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	1,4-Dichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	1,4-Dichlorobenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	1,4-Dichlorobenzene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann R	C51574	6/22/95	1,4-Dichlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1,4-Dichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	1,4-Dichlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	1,4-Dichlorobenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	1-Naphthol	ND	4	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	1-Naphthol	ND	4	ug/L
Contra Costa PP	C51504	6/14/95	1-Naphthol	ND	4	ug/L
Contra Costa PP	C52225	9/6/95	1-Naphthol	ND	4	ug/L
Delta PP Headworks	C51575	6/22/95	1-Naphthol	ND	4	ug/L
Delta PP Headworks	C52311	9/14/95	1-Naphthol	ND	4	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	1-Naphthol	ND	4	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	1-Naphthol	ND	4	ug/L
Old River at Bacon Island	C51569	6/21/95	1-Naphthol	ND	4	ug/L
Old River at Bacon Island	C52303	9/13/95	1-Naphthol	ND	4	ug/L
Old River at Bacon Island du	C51565	6/21/95	1-Naphthol	ND	4	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	2,2-Dichloropropane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	2,2-Dichloropropane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	2,2-Dichloropropane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	2,2-Dichloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	2,2-Dichloropropane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	2,2-Dichloropropane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	2,2-Dichloropropane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	2,2-Dichloropropane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	2,4,5-T	0	0.2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	2,4,5-T	ND	.2	µg/L
Contra Costa PP	C51504	6/14/95	2,4,5-T	0.1	0.2	ug/L
Contra Costa PP	C52225	9/6/95	2,4,5-T	ND	.2	µg/L
Delta PP Headworks	C52311	9/14/95	2,4,5-T	ND	.2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	2,4,5-T	ND	.2	µg/L
Old River at Bacon Island	C52303	9/13/95	2,4,5-T	ND	.2	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	2,4,5-TP (Silvex)	0	0.2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	2,4,5-TP (Silvex)	ND	.2	µg/L
Contra Costa PP	C51504	6/14/95	2,4,5-TP (Silvex)	0	0.2	ug/L
Contra Costa PP	C52225	9/6/95	2,4,5-TP (Silvex)	ND	.2	µg/L
Delta PP Headworks	C52311	9/14/95	2,4,5-TP (Silvex)	ND	.2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	2,4,5-TP (Silvex)	ND	.2	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	2,4-D	0	0.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	2,4-D	ND	.1	µg/L
Contra Costa PP	C51504	6/14/95	2,4-D	0	0.1	ug/L
Contra Costa PP	C52225	9/6/95	2,4-D	.2	.1	µg/L
Delta PP Headworks	C52311	9/14/95	2,4-D	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	2,4-D	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	2,4-D	ND	.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	2-Chlorotoluene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	2-Chlorotoluene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	2-Chlorotoluene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	2-Chlorotoluene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	2-Chlorotoluene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann R	C52310	9/14/95	2-Chlorotoluene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	2-Chlorotoluene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	2-Chlorotoluene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	3-Hydroxycarbofuran	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	3-Hydroxycarbofuran	ND	2	ug/L
Contra Costa PP	C51504	6/14/95	3-Hydroxycarbofuran	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	3-Hydroxycarbofuran	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	3-Hydroxycarbofuran	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	3-Hydroxycarbofuran	ND	2	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	3-Hydroxycarbofuran	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	3-Hydroxycarbofuran	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	3-Hydroxycarbofuran	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	3-Hydroxycarbofuran	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	3-Hydroxycarbofuran	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	4-Chlorotoluene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	4-Chlorotoluene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	4-Chlorotoluene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	4-Chlorotoluene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	4-Chlorotoluene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	4-Chlorotoluene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	4-Chlorotoluene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	4-Chlorotoluene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	4-Isopropyltoluene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	4-Isopropyltoluene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	4-Isopropyltoluene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	4-Isopropyltoluene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	4-Isopropyltoluene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	4-Isopropyltoluene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	4-Isopropyltoluene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	4-Isopropyltoluene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Acifluorfen	ND	.1	µg/L
Contra Costa PP	C52225	9/6/95	Acifluorfen	ND	.1	µg/L
Delta PP Headworks	C52311	9/14/95	Acifluorfen	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Acifluorfen	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	Acifluorfen	ND	.1	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Alachlor	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Alachlor	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Alachlor	0	1.0	ug/L
Contra Costa PP	C52225	9/6/95	Alachlor	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Alachlor	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Alachlor	ND	1	µg/L
PE Sample Method 507	C51688	6/14/95	Alachlor	0	1.0	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Aldicarb	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Aldicarb	ND	2	ug/L
Contra Costa PP	C51504	6/14/95	Aldicarb	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	Aldicarb	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	Aldicarb	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	Aldicarb	ND	2	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann R	C51574	6/22/95	Aldicarb	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Aldicarb	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	Aldicarb	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	Aldicarb	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	Aldicarb	ND	2	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Aldicarbe Sulfone	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Aldicarbe Sulfone	ND	2	ug/L
Contra Costa PP	C51504	6/14/95	Aldicarbe Sulfone	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	Aldicarbe Sulfone	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	Aldicarbe Sulfone	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	Aldicarbe Sulfone	ND	2	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Aldicarbe Sulfone	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Aldicarbe Sulfone	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	Aldicarbe Sulfone	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	Aldicarbe Sulfone	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	Aldicarbe Sulfone	ND	2	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Aldicarbe Sulfoxone	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Aldicarbe Sulfoxone	ND	2	ug/L
Contra Costa PP	C51504	6/14/95	Aldicarbe Sulfoxone	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	Aldicarbe Sulfoxone	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	Aldicarbe Sulfoxone	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	Aldicarbe Sulfoxone	ND	2	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Aldicarbe Sulfoxone	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Aldicarbe Sulfoxone	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	Aldicarbe Sulfoxone	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	Aldicarbe Sulfoxone	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	Aldicarbe Sulfoxone	ND	2	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Aldrin	0	0.075	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Aldrin	ND	.075	µg/L
Contra Costa PP	C51504	6/14/95	Aldrin	0	0.075	ug/L
Contra Costa PP	C52225	9/6/95	Aldrin	ND	.075	µg/L
Delta PP Headworks	C52311	9/14/95	Aldrin	ND	.075	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Aldrin	ND	.075	µg/L
Old River at Bacon Island	C52303	9/13/95	Aldrin	ND	.075	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Aminomethylphosphonic Acid	ND	100	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Aminomethylphosphonic Acid	ND	100	ug/L
Contra Costa PP	C51504	6/14/95	Aminomethylphosphonic Acid	ND	100	ug/L
Contra Costa PP	C52225	9/6/95	Aminomethylphosphonic Acid	ND	100	ug/L
Delta PP Headworks	C51575	6/22/95	Aminomethylphosphonic Acid	ND	100	ug/L
Delta PP Headworks	C52311	9/14/95	Aminomethylphosphonic Acid	ND	100	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Aminomethylphosphonic Acid	ND	100	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Aminomethylphosphonic Acid	ND	100	ug/L
Old River at Bacon Island	C51569	6/21/95	Aminomethylphosphonic Acid	ND	100	ug/L
Old River at Bacon Island	C52303	9/13/95	Aminomethylphosphonic Acid	ND	100	ug/L
Old River at Bacon Island du	C51565	6/21/95	Aminomethylphosphonic Acid	ND	100	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Antimony (Sb)	0	2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Antimony (Sb)	ND	2	µg/L
Contra Costa PP	C51504	6/14/95	Antimony (Sb)	0	2	µg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C52225	9/6/95	Antimony (Sb)	ND	2	µg/L
Delta PP Headworks	C52311	9/14/95	Antimony (Sb)	ND	2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Antimony (Sb)	ND	2	µg/L
Old River at Bacon Island	C52303	9/13/95	Antimony (Sb)	ND	2	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Arsenic	.002	.001	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Arsenic	.003	.001	mg/L
Contra Costa PP	C51504	6/14/95	Arsenic	.002	.001	mg/L
Contra Costa PP	C52225	9/6/95	Arsenic	.002	.001	mg/L
Delta PP Headworks	C51575	6/22/95	Arsenic	.002	.001	mg/L
Delta PP Headworks	C52311	9/14/95	Arsenic	.002	.001	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Arsenic	.002	.001	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Arsenic	.002	.001	mg/L
Filtered Field Blank	C51570	6/21/95	Arsenic	ND	.001	mg/L
Filtered Field Blank	C51576	6/22/95	Arsenic	ND	.001	mg/L
Filtered Field Blank	C52227	9/6/95	Arsenic	ND	.001	mg/L
Filtered Field Blank	C52304	9/13/95	Arsenic	ND	.001	mg/L
Filtered Field Blank	C52312	9/14/95	Arsenic	ND	.001	mg/L
Old River at Bacon Island	C51569	6/21/95	Arsenic	.001	.001	mg/L
Old River at Bacon Island	C52303	9/13/95	Arsenic	.002	.001	mg/L
Old River at Bacon Island du	C51565	6/21/95	Arsenic	.001	.001	mg/L
Unfiltered Field Blank	C51635	6/21/95	Arsenic	ND	.001	mg/L
Unfiltered Field Blank	C51577	6/22/95	Arsenic	ND	.001	mg/L
Unfiltered Field Blank	C52228	9/6/95	Arsenic	ND	.001	mg/L
Unfiltered Field Blank	C52305	9/13/95	Arsenic	ND	.001	mg/L
Unfiltered Field Blank	C52313	9/14/95	Arsenic	ND	.001	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Atrazine	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Atrazine	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Atrazine	0	1.0	ug/L
Contra Costa PP	C52225	9/6/95	Atrazine	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Atrazine	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Atrazine	ND	1	µg/L
PE Sample Method 507	C51688	6/14/95	Atrazine	0	1.0	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Barium	.13	.05	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Barium	.06	.05	mg/L
Contra Costa PP	C51504	6/14/95	Barium	ND	.05	mg/L
Contra Costa PP	C52225	9/6/95	Barium	ND	.05	mg/L
Delta PP Headworks	C51575	6/22/95	Barium	ND	.05	mg/L
Delta PP Headworks	C52311	9/14/95	Barium	ND	.05	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Barium	.062	.05	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Barium	.07	.05	mg/L
Filtered Field Blank	C51570	6/21/95	Barium	ND	.05	mg/L
Filtered Field Blank	C51576	6/22/95	Barium	ND	.05	mg/L
Filtered Field Blank	C52227	9/6/95	Barium	ND	.05	mg/L
Filtered Field Blank	C52304	9/13/95	Barium	ND	.05	mg/L
Filtered Field Blank	C52312	9/14/95	Barium	ND	.05	mg/L
Old River at Bacon Island	C51569	6/21/95	Barium	ND	.05	mg/L
Old River at Bacon Island	C52303	9/13/95	Barium	ND	.05	mg/L
Old River at Bacon Island du	C51565	6/21/95	Barium	.052	.05	mg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Unfiltered Field Blank	C51635	6/21/95	Barium	ND	.05	mg/L
Unfiltered Field Blank	C51577	6/22/95	Barium	ND	.05	mg/L
Unfiltered Field Blank	C52228	9/6/95	Barium	ND	.05	mg/L
Unfiltered Field Blank	C52305	9/13/95	Barium	ND	.05	mg/L
Unfiltered Field Blank	C52313	9/14/95	Barium	ND	.05	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Bentazon	0	2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bentazon	ND	2	µg/L
Contra Costa PP	C51504	6/14/95	Bentazon	0	2	ug/L
Contra Costa PP	C52225	9/6/95	Bentazon	ND	2	µg/L
Delta PP Headworks	C52311	9/14/95	Bentazon	ND	2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bentazon	ND	2	µg/L
Old River at Bacon Island	C52303	9/13/95	Bentazon	ND	2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Benzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Benzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Benzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Benzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Benzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Benzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Benzo(a)pyrene	0	0.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Benzo(a)pyrene	ND	.1	µg/L
Contra Costa PP	C51504	6/14/95	Benzo(a)pyrene	0	0.1	ug/L
Contra Costa PP	C52225	9/6/95	Benzo(a)pyrene	ND	.1	µg/L
Delta PP Headworks	C52311	9/14/95	Benzo(a)pyrene	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Benzo(a)pyrene	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	Benzo(a)pyrene	ND	.1	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Beryllium	ND	.002	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Beryllium		.002	mg/L
Contra Costa PP	C51504	6/14/95	Beryllium	ND	.002	mg/L
Contra Costa PP	C52225	9/6/95	Beryllium		.002	mg/L
Delta PP Headworks	C51575	6/22/95	Beryllium	ND	.002	mg/L
Delta PP Headworks	C52311	9/14/95	Beryllium		.002	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Beryllium	ND	.002	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Beryllium		.002	mg/L
Filtered Field Blank	C51570	6/21/95	Beryllium	ND	.002	mg/L
Filtered Field Blank	C51576	6/22/95	Beryllium	ND	.002	mg/L
Filtered Field Blank	C52227	9/6/95	Beryllium	ND	.002	mg/L
Filtered Field Blank	C52304	9/13/95	Beryllium		.002	mg/L
Filtered Field Blank	C52312	9/14/95	Beryllium		.002	mg/L
Old River at Bacon Island	C51569	6/21/95	Beryllium	ND	.002	mg/L
Old River at Bacon Island	C52303	9/13/95	Beryllium		.002	mg/L
Old River at Bacon Island du	C51565	6/21/95	Beryllium	ND	.002	mg/L
Unfiltered Field Blank	C51635	6/21/95	Beryllium	ND	.002	mg/L
Unfiltered Field Blank	C51577	6/22/95	Beryllium	ND	.002	mg/L
Unfiltered Field Blank	C52228	9/6/95	Beryllium	ND	.002	mg/L
Unfiltered Field Blank	C52305	9/13/95	Beryllium		.002	mg/L
Unfiltered Field Blank	C52313	9/14/95	Beryllium		.002	mg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Sl @ North Bay PP	C51502	6/14/95	Beryllium (Be)	0	1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Beryllium (Be)	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Beryllium (Be)	0	1	µg/L
Contra Costa PP	C52225	9/6/95	Beryllium (Be)	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Beryllium (Be)	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Beryllium (Be)	ND	1	µg/L
Old River at Bacon Island	C52303	9/13/95	Beryllium (Be)	ND	1	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Bis(2-ethylhexyl)adipate	0	3	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bis(2-ethylhexyl)adipate	ND	3	µg/L
Contra Costa PP	C51504	6/14/95	Bis(2-ethylhexyl)adipate	0	3	ug/L
Contra Costa PP	C52225	9/6/95	Bis(2-ethylhexyl)adipate	ND	3	µg/L
Delta PP Headworks	C52311	9/14/95	Bis(2-ethylhexyl)adipate	ND	3	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bis(2-ethylhexyl)adipate	ND	3	µg/L
Old River at Bacon Island	C52303	9/13/95	Bis(2-ethylhexyl)adipate	ND	3	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Bis(2-ethylhexyl)phthalate	0	3	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bis(2-ethylhexyl)phthalate	ND	3	µg/L
Contra Costa PP	C51504	6/14/95	Bis(2-ethylhexyl)phthalate	0	3	ug/L
Contra Costa PP	C52225	9/6/95	Bis(2-ethylhexyl)phthalate	ND	3	µg/L
Delta PP Headworks	C52311	9/14/95	Bis(2-ethylhexyl)phthalate	ND	3	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bis(2-ethylhexyl)phthalate	ND	3	µg/L
Old River at Bacon Island	C52303	9/13/95	Bis(2-ethylhexyl)phthalate	ND	3	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Boron	.4	.1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Boron	.2	.1	mg/L
Contra Costa PP	C51504	6/14/95	Boron	.2	.1	mg/L
Contra Costa PP	C52225	9/6/95	Boron	ND	.1	mg/L
Delta PP Headworks	C51575	6/22/95	Boron	.1	.1	mg/L
Delta PP Headworks	C52311	9/14/95	Boron	.1	.1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Boron	.2	.1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Boron	.2	.1	mg/L
Old River at Bacon Island	C51569	6/21/95	Boron	.1	.1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Boron	.1	.1	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Bromacil	0	10	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromacil	ND	10	µg/L
Contra Costa PP	C51504	6/14/95	Bromacil	0	10	ug/L
Contra Costa PP	C52225	9/6/95	Bromacil	ND	10	µg/L
Delta PP Headworks	C52311	9/14/95	Bromacil	ND	10	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromacil	ND	10	µg/L
PE Sample Method 507	C51688	6/14/95	Bromacil	0	10	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromide	.04	.01	mg/L
Contra Costa PP	C52225	9/6/95	Bromide	.04	.01	mg/L
Delta PP Headworks	C51575	6/22/95	Bromide	.06	.01	mg/L
Delta PP Headworks	C52311	9/14/95	Bromide	.06	.01	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Bromide	.09	.01	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromide	.12	.01	mg/L
Old River at Bacon Island	C51569	6/21/95	Bromide	.05	.01	mg/L
Old River at Bacon Island	C52303	9/13/95	Bromide	.02	.01	mg/L
Old River at Bacon Island du	C51565	6/21/95	Bromide	.05	.01	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromobenzene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C52225	9/6/95	Bromobenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Bromobenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Bromobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Bromobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromobenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Bromobenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Bromobenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Bromochloroacetonitrile	0	0.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromochloroacetonitrile	ND	.5	µg/L
Contra Costa PP	C51504	6/14/95	Bromochloroacetonitrile	0	0.5	µg/L
Contra Costa PP	C52225	9/6/95	Bromochloroacetonitrile	ND	.5	µg/L
Delta PP Headworks	C52311	9/14/95	Bromochloroacetonitrile	ND	.5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromochloroacetonitrile	ND	.5	µg/L
Old River at Bacon Island	C52303	9/13/95	Bromochloroacetonitrile	ND	.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromochloromethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Bromochloromethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Bromochloromethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Bromochloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Bromochloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromochloromethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Bromochloromethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Bromochloromethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromodichloromethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Bromodichloromethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Bromodichloromethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Bromodichloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Bromodichloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromodichloromethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Bromodichloromethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Bromodichloromethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromoform	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Bromoform	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Bromoform	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Bromoform	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Bromoform	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromoform	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Bromoform	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Bromoform	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Bromomethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Bromomethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Bromomethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Bromomethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Bromomethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Bromomethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Bromomethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Bromomethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Butachlor	0	0.38	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Butachlor	ND	.38	µg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C51504	6/14/95	Butachlor	0	0.38	ug/L
Contra Costa PP	C52225	9/6/95	Butachlor	ND	.38	µg/L
Delta PP Headworks	C52311	9/14/95	Butachlor	ND	.38	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Butachlor	ND	.38	µg/L
PE Sample Method 507	C51688	6/14/95	Butachlor	4.1	0.38	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Cadmium	ND	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Cadmium	ND	.005	mg/L
Contra Costa PP	C51504	6/14/95	Cadmium	ND	.005	mg/L
Contra Costa PP	C52225	9/6/95	Cadmium	ND	.005	mg/L
Delta PP Headworks	C51575	6/22/95	Cadmium	ND	.005	mg/L
Delta PP Headworks	C52311	9/14/95	Cadmium	ND	.005	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Cadmium	ND	.005	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Cadmium	ND	.005	mg/L
Filtered Field Blank	C51570	6/21/95	Cadmium	ND	.005	mg/L
Filtered Field Blank	C51576	6/22/95	Cadmium	ND	.005	mg/L
Filtered Field Blank	C52227	9/6/95	Cadmium	ND	.005	mg/L
Filtered Field Blank	C52304	9/13/95	Cadmium	ND	.005	mg/L
Filtered Field Blank	C52312	9/14/95	Cadmium	ND	.005	mg/L
Old River at Bacon Island	C51569	6/21/95	Cadmium	ND	.005	mg/L
Old River at Bacon Island	C52303	9/13/95	Cadmium	ND	.005	mg/L
Old River at Bacon Island du	C51565	6/21/95	Cadmium	ND	.005	mg/L
Unfiltered Field Blank	C51635	6/21/95	Cadmium	ND	.005	mg/L
Unfiltered Field Blank	C51577	6/22/95	Cadmium	ND	.005	mg/L
Unfiltered Field Blank	C52228	9/6/95	Cadmium	ND	.005	mg/L
Unfiltered Field Blank	C52305	9/13/95	Cadmium	ND	.005	mg/L
Unfiltered Field Blank	C52313	9/14/95	Cadmium	ND	.005	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Calcium	22	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Calcium	15	1	mg/L
Contra Costa PP	C51504	6/14/95	Calcium	12	1	mg/L
Contra Costa PP	C52225	9/6/95	Calcium	11	1	mg/L
Delta PP Headworks	C51575	6/22/95	Calcium	12	1	mg/L
Delta PP Headworks	C52311	9/14/95	Calcium	12	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Calcium	15	1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Calcium	19	1	mg/L
Old River at Bacon Island	C51569	6/21/95	Calcium	10	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Calcium	10	1	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Carbaryl	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Carbaryl	ND	2	ug/L
Contra Costa PP	C51504	6/14/95	Carbaryl	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	Carbaryl	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	Carbaryl	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	Carbaryl	ND	2	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Carbaryl	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Carbaryl	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	Carbaryl	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	Carbaryl	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	Carbaryl	ND	2	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Carbofuran	ND	2	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Sl @ North Bay PP	C52223	9/6/95	Carbofuran	ND	2	ug/L
Contra Costa PP	C51504	6/14/95	Carbofuran	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	Carbofuran	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	Carbofuran	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	Carbofuran	ND	2	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Carbofuran	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Carbofuran	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	Carbofuran	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	Carbofuran	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	Carbofuran	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Carbon tetrachloride	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Carbon tetrachloride	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Carbon tetrachloride	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Carbon tetrachloride	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Carbon tetrachloride	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Carbon tetrachloride	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Carbon tetrachloride	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Carbon tetrachloride	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Chloral Hydrate	0	2.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chloral Hydrate	ND	2	µg/L
Contra Costa PP	C51504	6/14/95	Chloral Hydrate	0	2.0	µg/L
Contra Costa PP	C52225	9/6/95	Chloral Hydrate	ND	2	µg/L
Delta PP Headworks	C52311	9/14/95	Chloral Hydrate	ND	2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chloral Hydrate	ND	2	µg/L
Old River at Bacon Island	C52303	9/13/95	Chloral Hydrate	ND	2	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Chlordane	0	0.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chlordane	ND	.1	µg/L
Contra Costa PP	C51504	6/14/95	Chlordane	0	0.1	ug/L
Contra Costa PP	C52225	9/6/95	Chlordane	ND	.1	µg/L
Delta PP Headworks	C52311	9/14/95	Chlordane	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chlordane	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	Chlordane	ND	.1	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Chloride	23	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chloride	16	1	mg/L
Contra Costa PP	C51504	6/14/95	Chloride	23	1	mg/L
Contra Costa PP	C52225	9/6/95	Chloride	14	1	mg/L
Delta PP Headworks	C51575	6/22/95	Chloride	22	1	mg/L
Delta PP Headworks	C52311	9/14/95	Chloride	20	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Chloride	29	1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chloride	40	1	mg/L
Old River at Bacon Island	C51569	6/21/95	Chloride	18	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Chloride	18	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chlorobenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Chlorobenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Chlorobenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Chlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Chlorobenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chlorobenzene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C51569	6/21/95	Chlorobenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Chlorobenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chloroethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Chloroethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Chloroethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Chloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Chloroethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chloroethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Chloroethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Chloroethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chloroform	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Chloroform	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Chloroform	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Chloroform	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Chloroform	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chloroform	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Chloroform	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Chloroform	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chloromethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Chloromethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Chloromethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Chloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Chloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chloromethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Chloromethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Chloromethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Chloropicrin	0	2.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chloropicrin	ND	2	µg/L
Contra Costa PP	C51504	6/14/95	Chloropicrin	0	2.0	µg/L
Contra Costa PP	C52225	9/6/95	Chloropicrin	ND	2	µg/L
Delta PP Headworks	C52311	9/14/95	Chloropicrin	ND	2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chloropicrin	ND	2	µg/L
Old River at Bacon Island	C52303	9/13/95	Chloropicrin	ND	2	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Chlorothalonil	0	5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chlorothalonil	ND	5	µg/L
Contra Costa PP	C51504	6/14/95	Chlorothalonil	0	5	ug/L
Contra Costa PP	C52225	9/6/95	Chlorothalonil	ND	5	µg/L
Delta PP Headworks	C52311	9/14/95	Chlorothalonil	ND	5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chlorothalonil	ND	5	µg/L
Old River at Bacon Island	C52303	9/13/95	Chlorothalonil	ND	5	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Chromium	ND	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Chromium	ND	.005	mg/L
Contra Costa PP	C51504	6/14/95	Chromium	ND	.005	mg/L
Contra Costa PP	C52225	9/6/95	Chromium	ND	.005	mg/L
Delta PP Headworks	C51575	6/22/95	Chromium	ND	.005	mg/L
Delta PP Headworks	C52311	9/14/95	Chromium	ND	.005	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Chromium	ND	.005	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Chromium	ND	.005	mg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Filtered Field Blank	C51570	6/21/95	Chromium	ND	.005	mg/L
Filtered Field Blank	C51576	6/22/95	Chromium	ND	.005	mg/L
Filtered Field Blank	C52227	9/6/95	Chromium	ND	.005	mg/L
Filtered Field Blank	C52304	9/13/95	Chromium	ND	.005	mg/L
Filtered Field Blank	C52312	9/14/95	Chromium	ND	.005	mg/L
Old River at Bacon Island	C51569	6/21/95	Chromium	ND	.005	mg/L
Old River at Bacon Island	C52303	9/13/95	Chromium	ND	.005	mg/L
Old River at Bacon Island du	C51565	6/21/95	Chromium	ND	.005	mg/L
Unfiltered Field Blank	C51635	6/21/95	Chromium	ND	.005	mg/L
Unfiltered Field Blank	C51577	6/22/95	Chromium	ND	.005	mg/L
Unfiltered Field Blank	C52228	9/6/95	Chromium	ND	.005	mg/L
Unfiltered Field Blank	C52305	9/13/95	Chromium	ND	.005	mg/L
Unfiltered Field Blank	C52313	9/14/95	Chromium	ND	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	cis-1,2-Dichloroethene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	cis-1,2-Dichloroethene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	cis-1,2-Dichloroethene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	cis-1,2-Dichloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	cis-1,2-Dichloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	cis-1,2-Dichloroethene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	cis-1,2-Dichloroethene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	cis-1,2-Dichloroethene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	cis-1,3-Dichloropropene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	cis-1,3-Dichloropropene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	cis-1,3-Dichloropropene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	cis-1,3-Dichloropropene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	cis-1,3-Dichloropropene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	cis-1,3-Dichloropropene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	cis-1,3-Dichloropropene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	cis-1,3-Dichloropropene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Copper	ND	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Copper	ND	.005	mg/L
Contra Costa PP	C51504	6/14/95	Copper	ND	.005	mg/L
Contra Costa PP	C52225	9/6/95	Copper	ND	.005	mg/L
Delta PP Headworks	C51575	6/22/95	Copper	ND	.005	mg/L
Delta PP Headworks	C52311	9/14/95	Copper	ND	.005	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Copper	ND	.005	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Copper	ND	.005	mg/L
Filtered Field Blank	C51570	6/21/95	Copper	ND	.005	mg/L
Filtered Field Blank	C51576	6/22/95	Copper	ND	.005	mg/L
Filtered Field Blank	C52227	9/6/95	Copper	ND	.005	mg/L
Filtered Field Blank	C52304	9/13/95	Copper	ND	.005	mg/L
Filtered Field Blank	C52312	9/14/95	Copper	ND	.005	mg/L
Old River at Bacon Island	C51569	6/21/95	Copper	ND	.005	mg/L
Old River at Bacon Island	C52303	9/13/95	Copper	ND	.005	mg/L
Old River at Bacon Island du	C51565	6/21/95	Copper	ND	.005	mg/L
Unfiltered Field Blank	C51635	6/21/95	Copper	ND	.005	mg/L
Unfiltered Field Blank	C51577	6/22/95	Copper	ND	.005	mg/L
Unfiltered Field Blank	C52228	9/6/95	Copper	ND	.005	mg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Unfiltered Field Blank	C52305	9/13/95	Copper	ND	.005	mg/L
Unfiltered Field Blank	C52313	9/14/95	Copper	ND	.005	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Cyanide, Total (CN)	0	20	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Cyanide, Total (CN)	ND	20	µg/L
Contra Costa PP	C51504	6/14/95	Cyanide, Total (CN)	0	20	µg/L
Contra Costa PP	C52225	9/6/95	Cyanide, Total (CN)	ND	20	µg/L
Delta PP Headworks	C52311	9/14/95	Cyanide, Total (CN)	ND	20	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Cyanide, Total (CN)	ND	20	µg/L
Old River at Bacon Island	C52303	9/13/95	Cyanide, Total (CN)	ND	20	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Dalapon	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dalapon	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Dalapon	0	1.0	ug/L
Contra Costa PP	C52225	9/6/95	Dalapon	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Dalapon	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dalapon	ND	1	µg/L
Old River at Bacon Island	C52303	9/13/95	Dalapon	ND	1	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Demeton	0	0.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Demeton	ND	.5	µg/L
Contra Costa PP	C51504	6/14/95	Demeton	0	0.5	ug/L
Contra Costa PP	C52225	9/6/95	Demeton	ND	.5	µg/L
Delta PP Headworks	C52311	9/14/95	Demeton	ND	.5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Demeton	ND	.5	µg/L
PE Sample Method 507	C51688	6/14/95	Demeton	0	0.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Diazinon	0	0.25	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Diazinon	ND	.25	µg/L
Contra Costa PP	C51504	6/14/95	Diazinon	0	0.25	ug/L
Contra Costa PP	C52225	9/6/95	Diazinon	ND	.25	µg/L
Delta PP Headworks	C52311	9/14/95	Diazinon	ND	.25	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Diazinon	ND	.25	µg/L
PE Sample Method 507	C51688	6/14/95	Diazinon	0	0.25	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Dibromoacetonitrile	0	0.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dibromoacetonitrile	ND	.5	µg/L
Contra Costa PP	C51504	6/14/95	Dibromoacetonitrile	0	0.5	µg/L
Contra Costa PP	C52225	9/6/95	Dibromoacetonitrile	ND	.5	µg/L
Delta PP Headworks	C52311	9/14/95	Dibromoacetonitrile	ND	.5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dibromoacetonitrile	ND	.5	µg/L
Old River at Bacon Island	C52303	9/13/95	Dibromoacetonitrile	ND	.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dibromochloromethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Dibromochloromethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Dibromochloromethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Dibromochloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Dibromochloromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dibromochloromethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Dibromochloromethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Dibromochloromethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dibromomethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Dibromomethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Dibromomethane	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta PP Headworks	C52311	9/14/95	Dibromomethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Dibromomethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dibromomethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Dibromomethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Dibromomethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Dicamba	0	0.081	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dicamba	ND	.081	µg/L
Contra Costa PP	C51504	6/14/95	Dicamba	0	0.081	ug/L
Contra Costa PP	C52225	9/6/95	Dicamba	ND	.081	µg/L
Delta PP Headworks	C52311	9/14/95	Dicamba	ND	.081	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dicamba	ND	.081	µg/L
Old River at Bacon Island	C52303	9/13/95	Dicamba	ND	.081	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Dichloroacetonitrile	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dichloroacetonitrile	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Dichloroacetonitrile	0	1.0	µg/L
Contra Costa PP	C52225	9/6/95	Dichloroacetonitrile	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Dichloroacetonitrile	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dichloroacetonitrile	ND	1	µg/L
Old River at Bacon Island	C52303	9/13/95	Dichloroacetonitrile	ND	1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dichlorodifluoromethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Dichlorodifluoromethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Dichlorodifluoromethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Dichlorodifluoromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Dichlorodifluoromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dichlorodifluoromethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Dichlorodifluoromethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Dichlorodifluoromethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Dieldrin	0	0.02	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dieldrin	ND	.02	µg/L
Contra Costa PP	C51504	6/14/95	Dieldrin	0	0.02	ug/L
Contra Costa PP	C52225	9/6/95	Dieldrin	ND	.02	µg/L
Delta PP Headworks	C52311	9/14/95	Dieldrin	ND	.02	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dieldrin	ND	.02	µg/L
Old River at Bacon Island	C52303	9/13/95	Dieldrin	ND	.02	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Dimethoate	0	10	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dimethoate	ND	10	µg/L
Contra Costa PP	C51504	6/14/95	Dimethoate	0	10	ug/L
Contra Costa PP	C52225	9/6/95	Dimethoate	ND	10	µg/L
Delta PP Headworks	C52311	9/14/95	Dimethoate	ND	10	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dimethoate	ND	10	µg/L
PE Sample Method 507	C51688	6/14/95	Dimethoate	0	10	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Dinoseb	0	0.2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Dinoseb	ND	.2	µg/L
Contra Costa PP	C51504	6/14/95	Dinoseb	0	0.2	ug/L
Contra Costa PP	C52225	9/6/95	Dinoseb	ND	.2	µg/L
Delta PP Headworks	C52311	9/14/95	Dinoseb	ND	.2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Dinoseb	ND	.2	µg/L
Old River at Bacon Island	C52303	9/13/95	Dinoseb	ND	.2	µg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Sl @ North Bay PP	C51502	6/14/95	Diquat	0	4.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Diquat	ND	4	µg/L
Contra Costa PP	C51504	6/14/95	Diquat	0	4.0	ug/L
Contra Costa PP	C52225	9/6/95	Diquat	ND	4	µg/L
Delta PP Headworks	C52311	9/14/95	Diquat	ND	4	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Diquat	ND	4	µg/L
Old River at Bacon Island	C52303	9/13/95	Diquat	ND	4	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Disulfoton	0	0.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Disulfoton	ND	.5	µg/L
Contra Costa PP	C51504	6/14/95	Disulfoton	0	0.5	ug/L
Contra Costa PP	C52225	9/6/95	Disulfoton	ND	.5	µg/L
Delta PP Headworks	C52311	9/14/95	Disulfoton	ND	.5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Disulfoton	ND	.5	µg/L
PE Sample Method 507	C51688	6/14/95	Disulfoton	0	0.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	EC	387	1	mhos/c
Barker Sl @ North Bay PP	C52223	9/6/95	EC	274	1	mhos/c
Contra Costa PP	C51504	6/14/95	EC	214	1	mhos/c
Contra Costa PP	C52225	9/6/95	EC	187	1	mhos/c
Delta PP Headworks	C51575	6/22/95	EC	211	1	mhos/c
Delta PP Headworks	C52311	9/14/95	EC	220	1	mhos/c
DMC Intake @ Lindemann R	C51574	6/22/95	EC	262	1	mhos/c
DMC Intake @ Lindemann R	C52310	9/14/95	EC	365	1	mhos/c
Old River at Bacon Island	C51569	6/21/95	EC	185	1	mhos/c
Old River at Bacon Island du	C51565	6/21/95	EC	188	1	mhos/c
Barker Sl @ North Bay PP	C51502	6/14/95	Endothall	0	45	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Endothall	ND	45	µg/L
Contra Costa PP	C51504	6/14/95	Endothall	0	45	ug/L
Contra Costa PP	C52225	9/6/95	Endothall	ND	45	µg/L
Delta PP Headworks	C52311	9/14/95	Endothall	ND	45	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Endothall	ND	45	µg/L
Old River at Bacon Island	C52303	9/13/95	Endothall	ND	45	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Endrin	0	0.02	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Endrin	ND	.02	µg/L
Contra Costa PP	C51504	6/14/95	Endrin	0	0.02	ug/L
Contra Costa PP	C52225	9/6/95	Endrin	ND	.02	µg/L
Delta PP Headworks	C52311	9/14/95	Endrin	ND	.02	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Endrin	ND	.02	µg/L
Old River at Bacon Island	C52303	9/13/95	Endrin	ND	.02	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Ethyl benzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Ethyl benzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Ethyl benzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Ethyl benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Ethyl benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Ethyl benzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Ethyl benzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Ethyl benzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Formetanate Hydrochloride	ND	100	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Formetanate Hydrochloride	ND	100	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C51504	6/14/95	Formetanate Hydrochloride	ND	100	ug/L
Contra Costa PP	C52225	9/6/95	Formetanate Hydrochloride	ND	100	ug/L
Delta PP Headworks	C51575	6/22/95	Formetanate Hydrochloride	ND	100	ug/L
Delta PP Headworks	C52311	9/14/95	Formetanate Hydrochloride	ND	100	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Formetanate Hydrochloride	ND	100	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Formetanate Hydrochloride	ND	100	ug/L
Old River at Bacon Island	C51569	6/21/95	Formetanate Hydrochloride	ND	100	ug/L
Old River at Bacon Island	C52303	9/13/95	Formetanate Hydrochloride	ND	100	ug/L
Old River at Bacon Island du	C51565	6/21/95	Formetanate Hydrochloride	ND	100	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Glyphosate	ND	100	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Glyphosate	ND	100	ug/L
Contra Costa PP	C51504	6/14/95	Glyphosate	ND	100	ug/L
Contra Costa PP	C52225	9/6/95	Glyphosate	ND	100	ug/L
Delta PP Headworks	C51575	6/22/95	Glyphosate	ND	100	ug/L
Delta PP Headworks	C52311	9/14/95	Glyphosate	ND	100	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Glyphosate	ND	100	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Glyphosate	ND	100	ug/L
Old River at Bacon Island	C51569	6/21/95	Glyphosate	ND	100	ug/L
Old River at Bacon Island	C52303	9/13/95	Glyphosate	ND	100	ug/L
Old River at Bacon Island du	C51565	6/21/95	Glyphosate	ND	100	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Hardness	137	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Hardness	91	1	mg/L
Contra Costa PP	C51504	6/14/95	Hardness	54	1	mg/L
Contra Costa PP	C52225	9/6/95	Hardness	56	1	mg/L
Delta PP Headworks	C51575	6/22/95	Hardness	50	1	mg/L
Delta PP Headworks	C52311	9/14/95	Hardness	59	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Hardness	66	1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Hardness	88	1	mg/L
Old River at Bacon Island	C51569	6/21/95	Hardness	46	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Hardness	46	1	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Heptachlor	0	0.01	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Heptachlor	ND	.01	µg/L
Contra Costa PP	C51504	6/14/95	Heptachlor	0	0.01	ug/L
Contra Costa PP	C52225	9/6/95	Heptachlor	ND	.01	µg/L
Delta PP Headworks	C52311	9/14/95	Heptachlor	ND	.01	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Heptachlor	ND	.01	µg/L
Old River at Bacon Island	C52303	9/13/95	Heptachlor	ND	.01	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Heptachlor epoxide	0	0.01	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Heptachlor epoxide	ND	.01	µg/L
Contra Costa PP	C51504	6/14/95	Heptachlor epoxide	0	0.01	ug/L
Contra Costa PP	C52225	9/6/95	Heptachlor epoxide	ND	.01	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Heptachlor epoxide	ND	.01	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Heptachlor epoxide	ND	.01	µg/L
Old River at Bacon Island	C52303	9/13/95	Heptachlor epoxide	ND	.01	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Hexachlorobenzene	0	0.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Hexachlorobenzene	ND	.1	µg/L
Contra Costa PP	C51504	6/14/95	Hexachlorobenzene	0	0.1	ug/L
Contra Costa PP	C52225	9/6/95	Hexachlorobenzene	ND	.1	µg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta PP Headworks	C52311	9/14/95	Hexachlorobenzene	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Hexachlorobenzene	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	Hexachlorobenzene	ND	.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Hexachlorobutadiene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Hexachlorobutadiene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Hexachlorobutadiene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Hexachlorobutadiene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Hexachlorobutadiene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Hexachlorobutadiene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Hexachlorobutadiene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Hexachlorobutadiene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Hexachlorocyclopentadiene	0	0.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Hexachlorocyclopentadiene	ND	.1	µg/L
Contra Costa PP	C51504	6/14/95	Hexachlorocyclopentadiene	0	0.1	ug/L
Contra Costa PP	C52225	9/6/95	Hexachlorocyclopentadiene	ND	.1	µg/L
Delta PP Headworks	C52311	9/14/95	Hexachlorocyclopentadiene	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Hexachlorocyclopentadiene	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	Hexachlorocyclopentadiene	ND	.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Isopropyl benzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Isopropyl benzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Isopropyl benzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Isopropyl benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Isopropyl benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Isopropyl benzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Isopropyl benzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Isopropyl benzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Lindane	0	0.04	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Lindane	ND	.04	µg/L
Contra Costa PP	C51504	6/14/95	Lindane	0	0.04	ug/L
Contra Costa PP	C52225	9/6/95	Lindane	ND	.04	µg/L
Delta PP Headworks	C52311	9/14/95	Lindane	ND	.04	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Lindane	ND	.04	µg/L
Old River at Bacon Island	C52303	9/13/95	Lindane	ND	.04	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	m-Xylene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	m-Xylene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	m-Xylene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	m-Xylene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	m-Xylene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	m-Xylene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	m-Xylene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	m-Xylene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Magnesium	20	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Magnesium	13	1	mg/L
Contra Costa PP	C51504	6/14/95	Magnesium	6	1	mg/L
Contra Costa PP	C52225	9/6/95	Magnesium	7	1	mg/L
Delta PP Headworks	C51575	6/22/95	Magnesium	5	1	mg/L
Delta PP Headworks	C52311	9/14/95	Magnesium	7	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Magnesium	7	1	mg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann R	C52310	9/14/95	Magnesium	10	1	mg/L
Old River at Bacon Island	C51569	6/21/95	Magnesium	5	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Magnesium	5	1	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Manganese	.013	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Manganese	.014	.005	mg/L
Contra Costa PP	C51504	6/14/95	Manganese	.013	.005	mg/L
Contra Costa PP	C52225	9/6/95	Manganese	.018	.005	mg/L
Delta PP Headworks	C51575	6/22/95	Manganese	.037	.005	mg/L
Delta PP Headworks	C52311	9/14/95	Manganese	.009	.005	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Manganese	.038	.005	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Manganese	.023	.005	mg/L
Filtered Field Blank	C51570	6/21/95	Manganese	ND	.005	mg/L
Filtered Field Blank	C51576	6/22/95	Manganese	ND	.005	mg/L
Filtered Field Blank	C52227	9/6/95	Manganese	ND	.005	mg/L
Filtered Field Blank	C52304	9/13/95	Manganese	ND	.005	mg/L
Filtered Field Blank	C52312	9/14/95	Manganese	ND	.005	mg/L
Old River at Bacon Island	C51569	6/21/95	Manganese	.022	.005	mg/L
Old River at Bacon Island	C52303	9/13/95	Manganese	.007	.005	mg/L
Old River at Bacon Island du	C51565	6/21/95	Manganese	.024	.005	mg/L
Unfiltered Field Blank	C51635	6/21/95	Manganese	ND	.005	mg/L
Unfiltered Field Blank	C51577	6/22/95	Manganese	ND	.005	mg/L
Unfiltered Field Blank	C52228	9/6/95	Manganese	ND	.005	mg/L
Unfiltered Field Blank	C52305	9/13/95	Manganese	ND	.005	mg/L
Unfiltered Field Blank	C52313	9/14/95	Manganese	ND	.005	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Mercury	ND	.001	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Mercury	ND	.001	mg/L
Contra Costa PP	C51504	6/14/95	Mercury	ND	.001	mg/L
Contra Costa PP	C52225	9/6/95	Mercury	ND	.001	mg/L
Delta PP Headworks	C51575	6/22/95	Mercury	ND	.001	mg/L
Delta PP Headworks	C52311	9/14/95	Mercury	ND	.001	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Mercury	ND	.001	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Mercury	ND	.001	mg/L
Filtered Field Blank	C51570	6/21/95	Mercury	ND	.001	mg/L
Filtered Field Blank	C51576	6/22/95	Mercury	ND	.001	mg/L
Filtered Field Blank	C52227	9/6/95	Mercury	ND	.001	mg/L
Filtered Field Blank	C52304	9/13/95	Mercury	ND	.001	mg/L
Filtered Field Blank	C52312	9/14/95	Mercury	ND	.001	mg/L
Old River at Bacon Island	C51569	6/21/95	Mercury	ND	.001	mg/L
Old River at Bacon Island	C52303	9/13/95	Mercury	ND	.001	mg/L
Old River at Bacon Island du	C51565	6/21/95	Mercury	ND	.001	mg/L
Unfiltered Field Blank	C51635	6/21/95	Mercury	ND	.001	mg/L
Unfiltered Field Blank	C51577	6/22/95	Mercury	ND	.001	mg/L
Unfiltered Field Blank	C52228	9/6/95	Mercury	ND	.001	mg/L
Unfiltered Field Blank	C52305	9/13/95	Mercury	ND	.001	mg/L
Unfiltered Field Blank	C52313	9/14/95	Mercury	ND	.001	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Methiocarb	ND	4	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Methiocarb	ND	4	ug/L
Contra Costa PP	C51504	6/14/95	Methiocarb	ND	4	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C52225	9/6/95	Methiocarb	ND	4	ug/L
Delta PP Headworks	C51575	6/22/95	Methiocarb	ND	4	ug/L
Delta PP Headworks	C52311	9/14/95	Methiocarb	ND	4	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Methiocarb	ND	4	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Methiocarb	ND	4	ug/L
Old River at Bacon Island	C51569	6/21/95	Methiocarb	ND	4	ug/L
Old River at Bacon Island	C52303	9/13/95	Methiocarb	ND	4	ug/L
Old River at Bacon Island du	C51565	6/21/95	Methiocarb	ND	4	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Methomyl	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Methomyl	ND	2	ug/L
Contra Costa PP	C51504	6/14/95	Methomyl	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	Methomyl	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	Methomyl	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	Methomyl	ND	2	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Methomyl	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Methomyl	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	Methomyl	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	Methomyl	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	Methomyl	ND	2	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Methoxychlor	0	0.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Methoxychlor	ND	.1	µg/L
Contra Costa PP	C51504	6/14/95	Methoxychlor	0	0.1	ug/L
Contra Costa PP	C52225	9/6/95	Methoxychlor	ND	.1	µg/L
Delta PP Headworks	C52311	9/14/95	Methoxychlor	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Methoxychlor	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	Methoxychlor	ND	.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Methylene Chloride	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Methylene Chloride	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Methylene Chloride	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Methylene Chloride	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Methylene Chloride	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Methylene Chloride	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Methylene Chloride	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Methylene Chloride	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Metolachlor	0	0.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Metolachlor	ND	.5	µg/L
Contra Costa PP	C51504	6/14/95	Metolachlor	0	0.5	ug/L
Contra Costa PP	C52225	9/6/95	Metolachlor	ND	.5	µg/L
Delta PP Headworks	C52311	9/14/95	Metolachlor	ND	.5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Metolachlor	ND	.5	µg/L
Old River at Bacon Island	C52303	9/13/95	Metolachlor	ND	.5	µg/L
PE Sample Method 507	C51688	6/14/95	Metolachlor	0.7	0.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Metribuzin	0	0.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Metribuzin	ND	.5	µg/L
Contra Costa PP	C51504	6/14/95	Metribuzin	0	0.5	ug/L
Contra Costa PP	C52225	9/6/95	Metribuzin	ND	.5	µg/L
Delta PP Headworks	C52311	9/14/95	Metribuzin	ND	.5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Metribuzin	ND	.5	µg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C52303	9/13/95	Metribuzin	ND	.5	µg/L
PE Sample Method 507	C51688	6/14/95	Metribuzin	1.7	0.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Molinate	0	2.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Molinate	ND	2	µg/L
Contra Costa PP	C51504	6/14/95	Molinate	0	2.0	ug/L
Contra Costa PP	C52225	9/6/95	Molinate	ND	2	µg/L
Delta PP Headworks	C52311	9/14/95	Molinate	ND	2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Molinate	ND	2	µg/L
Old River at Bacon Island	C52303	9/13/95	Molinate	ND	2	µg/L
PE Sample Method 507	C51688	6/14/95	Molinate	0	2.0	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Molybdenum	ND	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Molybdenum	ND	.005	mg/L
Contra Costa PP	C51504	6/14/95	Molybdenum	ND	.005	mg/L
Contra Costa PP	C52225	9/6/95	Molybdenum	ND	.005	mg/L
Delta PP Headworks	C51575	6/22/95	Molybdenum	ND	.005	mg/L
Delta PP Headworks	C52311	9/14/95	Molybdenum	ND	.005	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Molybdenum	ND	.005	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Molybdenum	ND	.005	mg/L
Filtered Field Blank	C51570	6/21/95	Molybdenum	ND	.005	mg/L
Filtered Field Blank	C51576	6/22/95	Molybdenum	ND	.005	mg/L
Filtered Field Blank	C52227	9/6/95	Molybdenum	ND	.005	mg/L
Filtered Field Blank	C52304	9/13/95	Molybdenum	ND	.005	mg/L
Filtered Field Blank	C52312	9/14/95	Molybdenum	ND	.005	mg/L
Old River at Bacon Island	C51569	6/21/95	Molybdenum	ND	.005	mg/L
Old River at Bacon Island	C52303	9/13/95	Molybdenum	ND	.005	mg/L
Old River at Bacon Island du	C51565	6/21/95	Molybdenum	ND	.005	mg/L
Unfiltered Field Blank	C51635	6/21/95	Molybdenum	ND	.005	mg/L
Unfiltered Field Blank	C51577	6/22/95	Molybdenum	ND	.005	mg/L
Unfiltered Field Blank	C52228	9/6/95	Molybdenum	ND	.005	mg/L
Unfiltered Field Blank	C52305	9/13/95	Molybdenum	ND	.005	mg/L
Unfiltered Field Blank	C52313	9/14/95	Molybdenum	ND	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	n-Butylbenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	n-Butylbenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	n-Butylbenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	n-Butylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	n-Butylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	n-Butylbenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	n-Butylbenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	n-Butylbenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	n-propyl benzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	n-propyl benzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	n-propyl benzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	n-propyl benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	n-propyl benzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	n-propyl benzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	n-propyl benzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	n-propyl benzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Napthalene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C52225	9/6/95	Napthalene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Napthalene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Napthalene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Napthalene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Napthalene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Napthalene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Napthalene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Nickel	ND	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Nickel	ND	.005	mg/L
Contra Costa PP	C51504	6/14/95	Nickel	ND	.005	mg/L
Contra Costa PP	C52225	9/6/95	Nickel	ND	.005	mg/L
Delta PP Headworks	C51575	6/22/95	Nickel	ND	.005	mg/L
Delta PP Headworks	C52311	9/14/95	Nickel	ND	.005	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Nickel	ND	.005	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Nickel	ND	.005	mg/L
Filtered Field Blank	C51570	6/21/95	Nickel	ND	.005	mg/L
Filtered Field Blank	C51576	6/22/95	Nickel	ND	.005	mg/L
Filtered Field Blank	C52227	9/6/95	Nickel	ND	.005	mg/L
Filtered Field Blank	C52304	9/13/95	Nickel	ND	.005	mg/L
Filtered Field Blank	C52312	9/14/95	Nickel	ND	.005	mg/L
Old River at Bacon Island	C51569	6/21/95	Nickel	ND	.005	mg/L
Old River at Bacon Island	C52303	9/13/95	Nickel	ND	.005	mg/L
Old River at Bacon Island du	C51565	6/21/95	Nickel	ND	.005	mg/L
Unfiltered Field Blank	C51635	6/21/95	Nickel	ND	.005	mg/L
Unfiltered Field Blank	C51577	6/22/95	Nickel	ND	.005	mg/L
Unfiltered Field Blank	C52228	9/6/95	Nickel	ND	.005	mg/L
Unfiltered Field Blank	C52305	9/13/95	Nickel	ND	.005	mg/L
Unfiltered Field Blank	C52313	9/14/95	Nickel	ND	.005	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Nitrate	.06	.01	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Nitrate	.2	.01	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Nitrate	.24	.01	s N mg/
Barker Sl @ North Bay PP	C52223	9/6/95	Nitrate	1	.01	mg/L
Contra Costa PP	C51504	6/14/95	Nitrate	.35	.01	mg/L
Contra Costa PP	C51504	6/14/95	Nitrate	1.6	.01	mg/L
Contra Costa PP	C52225	9/6/95	Nitrate	.3	.01	mg/L
Contra Costa PP	C52225	9/6/95	Nitrate	.08	.01	s N mg/
Delta PP Headworks	C51575	6/22/95	Nitrate	.44	.01	s N mg/
Delta PP Headworks	C51575	6/22/95	Nitrate	1.5	.01	mg/L
Delta PP Headworks	C52311	9/14/95	Nitrate	.23	.01	s N mg/
Delta PP Headworks	C52311	9/14/95	Nitrate	.9	.01	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Nitrate	.57	.01	s N mg/
DMC Intake @ Lindemann R	C51574	6/22/95	Nitrate	1.8	.01	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Nitrate	4	.01	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Nitrate	.99	.01	s N mg/
Nutrient Field Blank	C51636	6/21/95	Nitrate	.02	.01	s N mg/
Nutrient Field Blank	C51637	6/22/95	Nitrate	ND	.01	s N mg/
Nutrient Field Blank	C52416	9/6/95	Nitrate	ND	.01	s N mg/
Nutrient Field Blank	C52306	9/13/95	Nitrate	ND	.01	s N mg/

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Nutrient Field Blank	C52314	9/14/95	Nitrate	ND	.01	s N mg/
Old River at Bacon Island	C51569	6/21/95	Nitrate	.3	.01	mg/L
Old River at Bacon Island	C51569	6/21/95	Nitrate	1.2	.01	mg/L
Old River at Bacon Island	C52303	9/13/95	Nitrate	.13	.01	s N mg/
Old River at Bacon Island du	C51565	6/21/95	Nitrate	.29	.01	s N mg/
Old River at Bacon Island du	C51565	6/21/95	Nitrate	1.2	.01	O3 mg/
Barker Sl @ North Bay PP	C51502	6/14/95	Nitrate+Nitrite	.06	.01	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Nitrate+Nitrite	.24	.01	s N mg/
Contra Costa PP	C51504	6/14/95	Nitrate+Nitrite	.36	.01	mg/L
Contra Costa PP	C52225	9/6/95	Nitrate+Nitrite	.08	.01	s N mg/
Delta PP Headworks	C51575	6/22/95	Nitrate+Nitrite	.45	.01	s N mg/
Delta PP Headworks	C52311	9/14/95	Nitrate+Nitrite	.23	.01	s N mg/
DMC Intake @ Lindemann R	C51574	6/22/95	Nitrate+Nitrite	.58	.01	s N mg/
DMC Intake @ Lindemann R	C52310	9/14/95	Nitrate+Nitrite	.99	.01	s N mg/
Nutrient Field Blank	C51636	6/21/95	Nitrate+Nitrite	.02	.01	s N mg/
Nutrient Field Blank	C51637	6/22/95	Nitrate+Nitrite	ND	.01	s N mg/
Nutrient Field Blank	C52416	9/6/95	Nitrate+Nitrite	ND	.01	s N mg/
Nutrient Field Blank	C52306	9/13/95	Nitrate+Nitrite	ND	.01	s N mg/
Nutrient Field Blank	C52314	9/14/95	Nitrate+Nitrite	ND	.01	s N mg/
Old River at Bacon Island	C51569	6/21/95	Nitrate+Nitrite	.31	.01	mg/L
Old River at Bacon Island	C52303	9/13/95	Nitrate+Nitrite	.13	.01	s N mg/
Old River at Bacon Island du	C51565	6/21/95	Nitrate+Nitrite	.3	.01	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Nitrite	ND	.01	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Nitrite	ND	.01	s N mg/
Contra Costa PP	C51504	6/14/95	Nitrite	.01	.01	mg/L
Contra Costa PP	C52225	9/6/95	Nitrite	ND	.01	s N mg/
Delta PP Headworks	C51575	6/22/95	Nitrite	.01	.01	s N mg/
Delta PP Headworks	C52311	9/14/95	Nitrite	ND	.01	s N mg/
DMC Intake @ Lindemann R	C51574	6/22/95	Nitrite	.02	.01	s N mg/
DMC Intake @ Lindemann R	C52310	9/14/95	Nitrite	.02	.01	s N mg/
Nutrient Field Blank	C51636	6/21/95	Nitrite	ND	.01	s N mg/
Nutrient Field Blank	C51637	6/22/95	Nitrite	ND	.01	s N mg/
Nutrient Field Blank	C52416	9/6/95	Nitrite	ND	.01	s N mg/
Nutrient Field Blank	C52306	9/13/95	Nitrite	ND	.01	s N mg/
Nutrient Field Blank	C52314	9/14/95	Nitrite	ND	.01	s N mg/
Old River at Bacon Island	C51569	6/21/95	Nitrite	ND	.01	mg/L
Old River at Bacon Island	C52303	9/13/95	Nitrite	ND	.01	s N mg/
Old River at Bacon Island du	C51565	6/21/95	Nitrite	ND	.01	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	o-Xylene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	o-Xylene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	o-Xylene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	o-Xylene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	o-Xylene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	o-Xylene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	o-Xylene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	o-Xylene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Oxarnyl	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Oxarnyl	ND	2	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Contra Costa PP	C51504	6/14/95	Oxarnyl	ND	2	ug/L
Contra Costa PP	C52225	9/6/95	Oxarnyl	ND	2	ug/L
Delta PP Headworks	C51575	6/22/95	Oxarnyl	ND	2	ug/L
Delta PP Headworks	C52311	9/14/95	Oxarnyl	ND	2	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Oxarnyl	ND	2	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Oxarnyl	ND	2	ug/L
Old River at Bacon Island	C51569	6/21/95	Oxarnyl	ND	2	ug/L
Old River at Bacon Island	C52303	9/13/95	Oxarnyl	ND	2	ug/L
Old River at Bacon Island du	C51565	6/21/95	Oxarnyl	ND	2	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	p-Xylene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	p-Xylene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	p-Xylene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	p-Xylene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	p-Xylene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	p-Xylene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	p-Xylene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	p-Xylene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	PCB's: Arochlor Screen	0	0.2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	PCB's: Arochlor Screen	ND	.2	µg/L
Contra Costa PP	C51504	6/14/95	PCB's: Arochlor Screen	0	0.2	ug/L
Contra Costa PP	C52225	9/6/95	PCB's: Arochlor Screen	ND	.2	µg/L
Delta PP Headworks	C52311	9/14/95	PCB's: Arochlor Screen	ND	.2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	PCB's: Arochlor Screen	ND	.2	µg/L
Old River at Bacon Island	C52303	9/13/95	PCB's: Arochlor Screen	ND	.2	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Pentachlorophenol	0	0.2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Pentachlorophenol	ND	.2	µg/L
Contra Costa PP	C51504	6/14/95	Pentachlorophenol	0	0.2	ug/L
Contra Costa PP	C52225	9/6/95	Pentachlorophenol	ND	.2	µg/L
Delta PP Headworks	C52311	9/14/95	Pentachlorophenol	ND	.2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Pentachlorophenol	ND	.2	µg/L
Old River at Bacon Island	C52303	9/13/95	Pentachlorophenol	ND	.2	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	pH	7.9	.1	units
Barker Sl @ North Bay PP	C52223	9/6/95	pH	7.6	.1	units
Contra Costa PP	C51504	6/14/95	pH	7.3	.1	units
Contra Costa PP	C52225	9/6/95	pH	7.6	.1	units
Delta PP Headworks	C51575	6/22/95	pH	7.3	.1	units
Delta PP Headworks	C52311	9/14/95	pH	7.4	.1	units
DMC Intake @ Lindemann R	C51574	6/22/95	pH	7.4	.1	units
DMC Intake @ Lindemann R	C52310	9/14/95	pH	7.2	.1	units
Old River at Bacon Island	C51569	6/21/95	pH	7.1	.1	units
Old River at Bacon Island du	C51565	6/21/95	pH	7	.1	units
Barker Sl @ North Bay PP	C51502	6/14/95	Picloram	0	0.1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Picloram	ND	.1	µg/L
Contra Costa PP	C51504	6/14/95	Picloram	0	0.1	ug/L
Contra Costa PP	C52225	9/6/95	Picloram	ND	.1	µg/L
Delta PP Headworks	C52311	9/14/95	Picloram	ND	.1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Picloram	ND	.1	µg/L
Old River at Bacon Island	C52303	9/13/95	Picloram	ND	.1	µg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Barker Sl @ North Bay PP	C51502	6/14/95	Potassium	2.5	.1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Potassium	2	.1	mg/L
Contra Costa PP	C51504	6/14/95	Potassium	1.4	.1	mg/L
Contra Costa PP	C52225	9/6/95	Potassium	1.2	.1	mg/L
Delta PP Headworks	C51575	6/22/95	Potassium	1.4	.1	mg/L
Delta PP Headworks	C52311	9/14/95	Potassium	14	.1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Potassium	1.5	.1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Potassium	1.8	.1	mg/L
Old River at Bacon Island	C51569	6/21/95	Potassium	1.4	.1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Potassium	1.3	.1	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Prometryn	0	2	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Prometryn	ND	2	µg/L
Contra Costa PP	C51504	6/14/95	Prometryn	0	2	ug/L
Contra Costa PP	C52225	9/6/95	Prometryn	ND	2	µg/L
Delta PP Headworks	C52311	9/14/95	Prometryn	ND	2	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Prometryn	ND	2	µg/L
Old River at Bacon Island	C52303	9/13/95	Prometryn	ND	2	µg/L
PE Sample Method 507	C51688	6/14/95	Prometryn	0	2	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Propachlor	0	0.5	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Propachlor	ND	.5	µg/L
Contra Costa PP	C51504	6/14/95	Propachlor	0	0.5	ug/L
Contra Costa PP	C52225	9/6/95	Propachlor	ND	.5	µg/L
Delta PP Headworks	C52311	9/14/95	Propachlor	ND	.5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Propachlor	ND	.5	µg/L
Old River at Bacon Island	C52303	9/13/95	Propachlor	ND	.5	µg/L
PE Sample Method 507	C51688	6/14/95	Propachlor	0	0.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	sec-Butylbenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	sec-Butylbenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	sec-Butylbenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	sec-Butylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	sec-Butylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	sec-Butylbenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	sec-Butylbenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	sec-Butylbenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Selenium	ND	.001	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Selenium	ND	.001	mg/L
Contra Costa PP	C51504	6/14/95	Selenium	ND	.001	mg/L
Contra Costa PP	C52225	9/6/95	Selenium	ND	.001	mg/L
Delta PP Headworks	C51575	6/22/95	Selenium	ND	.001	mg/L
Delta PP Headworks	C52311	9/14/95	Selenium	ND	.001	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Selenium	ND	.001	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Selenium	.001	.001	mg/L
Filtered Field Blank	C51570	6/21/95	Selenium	ND	.001	mg/L
Filtered Field Blank	C51576	6/22/95	Selenium	ND	.001	mg/L
Filtered Field Blank	C52227	9/6/95	Selenium	ND	.001	mg/L
Filtered Field Blank	C52304	9/13/95	Selenium	ND	.001	mg/L
Filtered Field Blank	C52312	9/14/95	Selenium	ND	.001	mg/L
Old River at Bacon Island	C51569	6/21/95	Selenium	ND	.001	mg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C52303	9/13/95	Selenium	ND	.001	mg/L
Old River at Bacon Island du	C51565	6/21/95	Selenium	ND	.001	mg/L
Unfiltered Field Blank	C51635	6/21/95	Selenium	ND	.001	mg/L
Unfiltered Field Blank	C51577	6/22/95	Selenium	ND	.001	mg/L
Unfiltered Field Blank	C52228	9/6/95	Selenium	ND	.001	mg/L
Unfiltered Field Blank	C52305	9/13/95	Selenium	ND	.001	mg/L
Unfiltered Field Blank	C52313	9/14/95	Selenium	ND	.001	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Simazine	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Simazine	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Simazine	0	1.0	ug/L
Contra Costa PP	C52225	9/6/95	Simazine	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Simazine	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Simazine	ND	1	µg/L
Old River at Bacon Island	C52303	9/13/95	Simazine	ND	1	µg/L
PE Sample Method 507	C51688	6/14/95	Simazine	0	1.0	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Sodium	31	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Sodium	21	1	mg/L
Contra Costa PP	C51504	6/14/95	Sodium	21	1	mg/L
Contra Costa PP	C52225	9/6/95	Sodium	14	1	mg/L
Delta PP Headworks	C51575	6/22/95	Sodium	17	1	mg/L
Delta PP Headworks	C52311	9/14/95	Sodium	19	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Sodium	26	1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Sodium	36	1	mg/L
Old River at Bacon Island	C51569	6/21/95	Sodium	17	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Sodium	18	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Styrene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Styrene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Styrene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Styrene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Styrene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Styrene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Styrene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Styrene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Sulfate	35	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Sulfate	21	1	mg/L
Contra Costa PP	C51504	6/14/95	Sulfate	23	1	mg/L
Contra Costa PP	C52225	9/6/95	Sulfate	15	1	mg/L
Delta PP Headworks	C51575	6/22/95	Sulfate	26	1	mg/L
Delta PP Headworks	C52311	9/14/95	Sulfate	18	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Sulfate	33	1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Sulfate	47	1	mg/L
Old River at Bacon Island	C51569	6/21/95	Sulfate	20	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Sulfate	21	1	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	TDS	230	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	TDS	163	1	mg/L
Contra Costa PP	C51504	6/14/95	TDS	127	1	mg/L
Contra Costa PP	C52225	9/6/95	TDS	113	1	mg/L
Delta PP Headworks	C51575	6/22/95	TDS	136	1	mg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Delta PP Headworks	C52311	9/14/95	TDS	134	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	TDS	156	1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	TDS	214	1	mg/L
Old River at Bacon Island	C51569	6/21/95	TDS	116	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	TDS	113	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	tert-Butylbenzene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	tert-Butylbenzene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	tert-Butylbenzene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	tert-Butylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	tert-Butylbenzene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	tert-Butylbenzene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	tert-Butylbenzene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	tert-Butylbenzene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Tetrachloroethene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Tetrachloroethene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Tetrachloroethene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Tetrachloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Tetrachloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Tetrachloroethene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Tetrachloroethene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Tetrachloroethene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Thallium	ND	.002	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Thallium	ND	.002	mg/L
Contra Costa PP	C51504	6/14/95	Thallium	ND	.002	mg/L
Contra Costa PP	C52225	9/6/95	Thallium	ND	.002	mg/L
Delta PP Headworks	C51575	6/22/95	Thallium	ND	.002	mg/L
Delta PP Headworks	C52311	9/14/95	Thallium	ND	.002	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Thallium	ND	.002	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Thallium	ND	.002	mg/L
Filtered Field Blank	C51570	6/21/95	Thallium	ND	.002	mg/L
Filtered Field Blank	C51576	6/22/95	Thallium	ND	.002	mg/L
Filtered Field Blank	C52227	9/6/95	Thallium	ND	.002	mg/L
Filtered Field Blank	C52304	9/13/95	Thallium	ND	.002	mg/L
Filtered Field Blank	C52312	9/14/95	Thallium	ND	.002	mg/L
Old River at Bacon Island	C51569	6/21/95	Thallium	ND	.002	mg/L
Old River at Bacon Island	C52303	9/13/95	Thallium	ND	.002	mg/L
Old River at Bacon Island du	C51565	6/21/95	Thallium	ND	.002	mg/L
Unfiltered Field Blank	C51635	6/21/95	Thallium	ND	.002	mg/L
Unfiltered Field Blank	C51577	6/22/95	Thallium	ND	.002	mg/L
Unfiltered Field Blank	C52228	9/6/95	Thallium	ND	.002	mg/L
Unfiltered Field Blank	C52305	9/13/95	Thallium	ND	.002	mg/L
Unfiltered Field Blank	C52313	9/14/95	Thallium	ND	.002	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Thiobencarb	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Thiobencarb	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Thiobencarb	0	1.0	ug/L
Contra Costa PP	C52225	9/6/95	Thiobencarb	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Thiobencarb	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Thiobencarb	ND	1	µg/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C52303	9/13/95	Thiobencarb	ND	1	μg/L
Barker Sl @ North Bay PP	C52223	9/6/95	TOC	4	.1	mg/L
Contra Costa PP	C52225	9/6/95	TOC	2.7	.1	mg/L
Delta PP Headworks	C51575	6/22/95	TOC	3.1	.1	mg/L
Delta PP Headworks	C52311	9/14/95	TOC	2.6	.1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	TOC	3.2	.1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	TOC	2.8	.1	mg/L
Old River at Bacon Island	C51569	6/21/95	TOC	3.8	.1	mg/L
Old River at Bacon Island	C52303	9/13/95	TOC	2.2	.1	mg/L
Old River at Bacon Island du	C51565	6/21/95	TOC	3.8	.1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Toluene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Toluene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Toluene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Toluene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Toluene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Toluene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Toluene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Toluene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Total Alkalinity	129	1	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Total Alkalinity	87	1	mg/L
Contra Costa PP	C51504	6/14/95	Total Alkalinity	40	1	mg/L
Contra Costa PP	C52225	9/6/95	Total Alkalinity	55	1	mg/L
Delta PP Headworks	C51575	6/22/95	Total Alkalinity	36	1	mg/L
Delta PP Headworks	C52311	9/14/95	Total Alkalinity	52	1	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Total Alkalinity	43	1	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Total Alkalinity	58	1	mg/L
Old River at Bacon Island	C51569	6/21/95	Total Alkalinity	35	1	mg/L
Old River at Bacon Island du	C51565	6/21/95	Total Alkalinity	35	1	mg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Toxaphene	0	0.5	μg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Toxaphene	ND	.5	μg/L
Contra Costa PP	C51504	6/14/95	Toxaphene	0	0.5	ug/L
Contra Costa PP	C52225	9/6/95	Toxaphene	ND	.5	μg/L
Delta PP Headworks	C52311	9/14/95	Toxaphene	ND	.5	μg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Toxaphene	ND	.5	μg/L
Old River at Bacon Island	C52303	9/13/95	Toxaphene	ND	.5	μg/L
Barker Sl @ North Bay PP	C52223	9/6/95	trans-1,2-Dichloroethene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	trans-1,2-Dichloroethene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	trans-1,2-Dichloroethene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	trans-1,2-Dichloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	trans-1,2-Dichloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	trans-1,2-Dichloroethene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	trans-1,2-Dichloroethene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	trans-1,2-Dichloroethene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	trans-1,3-Dichloropropene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	trans-1,3-Dichloropropene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	trans-1,3-Dichloropropene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	trans-1,3-Dichloropropene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	trans-1,3-Dichloropropene	ND	.5	ug/L

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
DMC Intake @ Lindemann R	C52310	9/14/95	trans-1,3-Dichloropropene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	trans-1,3-Dichloropropene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	trans-1,3-Dichloropropene	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Trichloroacetonitrile	0	1.0	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Trichloroacetonitrile	ND	1	µg/L
Contra Costa PP	C51504	6/14/95	Trichloroacetonitrile	0	1.0	µg/L
Contra Costa PP	C52225	9/6/95	Trichloroacetonitrile	ND	1	µg/L
Delta PP Headworks	C52311	9/14/95	Trichloroacetonitrile	ND	1	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Trichloroacetonitrile	ND	1	µg/L
Old River at Bacon Island	C52303	9/13/95	Trichloroacetonitrile	ND	1	µg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Trichloroethene	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Trichloroethene	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Trichloroethene	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Trichloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Trichloroethene	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Trichloroethene	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Trichloroethene	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Trichloroethene	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Trichlorofluoromethane	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Trichlorofluoromethane	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Trichlorofluoromethane	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Trichlorofluoromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Trichlorofluoromethane	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Trichlorofluoromethane	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Trichlorofluoromethane	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Trichlorofluoromethane	ND	.5	ug/L
Barker Sl @ North Bay PP	C52223	9/6/95	Trifluralin	ND	5	µg/L
Contra Costa PP	C52225	9/6/95	Trifluralin	ND	5	µg/L
Delta PP Headworks	C52311	9/14/95	Trifluralin	ND	5	µg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Trifluralin	ND	5	µg/L
Old River at Bacon Island	C52303	9/13/95	Trifluralin	ND	5	µg/L
Barker Sl @ North Bay PP	C51502	6/14/95	Turbidity	20	1	NTU
Barker Sl @ North Bay PP	C52223	9/6/95	Turbidity	28	1	NTU
Contra Costa PP	C51504	6/14/95	Turbidity	10	1	NTU
Contra Costa PP	C52225	9/6/95	Turbidity		1	NTU
Delta PP Headworks	C51575	6/22/95	Turbidity	9	1	NTU
Delta PP Headworks	C52311	9/14/95	Turbidity	9.4	1	NTU
DMC Intake @ Lindemann R	C51574	6/22/95	Turbidity	20	1	NTU
DMC Intake @ Lindemann R	C52310	9/14/95	Turbidity	33.8	1	NTU
Old River at Bacon Island	C51569	6/21/95	Turbidity	13	1	NTU
Old River at Bacon Island du	C51565	6/21/95	Turbidity	12	1	NTU
Barker Sl @ North Bay PP	C52223	9/6/95	UVA	.13	.001	Abs cm
Contra Costa PP	C52225	9/6/95	UVA	.092	.001	Abs cm
Delta PP Headworks	C51575	6/22/95	UVA	.104	.001	Abs cm
Delta PP Headworks	C52311	9/14/95	UVA	.095	.001	Abs cm
DMC Intake @ Lindemann R	C51574	6/22/95	UVA	.104	.001	Abs cm
DMC Intake @ Lindemann R	C52310	9/14/95	UVA	.09	.001	Abs cm
Old River at Bacon Island	C51569	6/21/95	UVA	.154	.001	Abs cm

Table 18. New Parameter Study 1994/95 Sample Results (continued)

DWR Site	Sample ID	Sample Date	Analyte Name	Result	Detection Limit	Units
Old River at Bacon Island	C52303	9/13/95	UVA	.079	.001	Abs cm
Old River at Bacon Island du	C51565	6/21/95	UVA	.154	.001	Abs cm
Barker Sl @ North Bay PP	C52223	9/6/95	Vinyl chloride	ND	.5	ug/L
Contra Costa PP	C52225	9/6/95	Vinyl chloride	ND	.5	ug/L
Delta PP Headworks	C51575	6/22/95	Vinyl chloride	ND	.5	ug/L
Delta PP Headworks	C52311	9/14/95	Vinyl chloride	ND	.5	ug/L
DMC Intake @ Lindemann R	C51574	6/22/95	Vinyl chloride	ND	.5	ug/L
DMC Intake @ Lindemann R	C52310	9/14/95	Vinyl chloride	ND	.5	ug/L
Old River at Bacon Island	C51569	6/21/95	Vinyl chloride	ND	.5	ug/L
Old River at Bacon Island	C52303	9/13/95	Vinyl chloride	ND	.5	ug/L
Barker Sl @ North Bay PP	C51502	6/14/95	Zinc	.021	.005	mg/L
Barker Sl @ North Bay PP	C52223	9/6/95	Zinc	.011	.005	mg/L
Contra Costa PP	C51504	6/14/95	Zinc	.011	.005	mg/L
Contra Costa PP	C52225	9/6/95	Zinc	ND	.005	mg/L
Delta PP Headworks	C51575	6/22/95	Zinc	ND	.005	mg/L
Delta PP Headworks	C52311	9/14/95	Zinc	.008	.005	mg/L
DMC Intake @ Lindemann R	C51574	6/22/95	Zinc	.007	.005	mg/L
DMC Intake @ Lindemann R	C52310	9/14/95	Zinc	.026	.005	mg/L
Filtered Field Blank	C51570	6/21/95	Zinc	ND	.005	mg/L
Filtered Field Blank	C51576	6/22/95	Zinc	ND	.005	mg/L
Filtered Field Blank	C52227	9/6/95	Zinc	ND	.005	mg/L
Filtered Field Blank	C52304	9/13/95	Zinc	ND	.005	mg/L
Filtered Field Blank	C52312	9/14/95	Zinc	ND	.005	mg/L
Old River at Bacon Island	C51569	6/21/95	Zinc	.005	.005	mg/L
Old River at Bacon Island	C52303	9/13/95	Zinc	.013	.005	mg/L
Old River at Bacon Island du	C51565	6/21/95	Zinc	.006	.005	mg/L
Unfiltered Field Blank	C51635	6/21/95	Zinc	ND	.005	mg/L
Unfiltered Field Blank	C51577	6/22/95	Zinc	ND	.005	mg/L
Unfiltered Field Blank	C52228	9/6/95	Zinc	ND	.005	mg/L
Unfiltered Field Blank	C52305	9/13/95	Zinc	ND	.005	mg/L
Unfiltered Field Blank	C52313	9/14/95	Zinc	ND	.005	mg/L

Chapter 12. DELTA MONITORING

> Monitoring will continue to be an important function due to the many environmental and drinking water concerns about Delta water quality and quantity.

The monitoring of drinking water quality in the Delta continues, but at fewer stations than in the past. This planned reduction of monitoring stations resulted from staff recommendations made after reviewing *The Five-Year Report of the Municipal Water Quality Investigations Program 1987-1991*. The seasonal and regional patterns in agricultural drain water quality were adequately documented at over 40 island pump stations. It was felt that the continued expense of monitoring all the drainage pump stations would not significantly add to the general knowledge about the expected seasonal and regional changes in water quality at the drains. Therefore, under the new sampling plan, four island drains are now monitored. These four islands are representative of the various soil types in the region. If the data do not fall within the range of past observations, a plan to resume monitoring at more drains will be considered.

In the past, synoptic sampling runs were also performed across the Delta at a frequency of four to six times per year. Over 30 channel stations were sampled during these runs to obtain snapshot observations of drinking water quality across the region. The synoptic runs were suspended and monitoring was returned to a set of key channel stations. The new emphasis is to study the daily variability in water quality by more frequent sampling at fewer stations. The greatest changes typically occur during the wet periods of heavy storms, runoff, and riverflows. Autosamplers have been installed at some locations to obtain multiple samples each week (e.g., two or three times per week). This higher sampling frequency will provide better mass load estimates of water constituents and improve DWR's computer models.

The new sampling plan is shown in Table 19. The plan shows the frequency of sampling, method of sampling, and analytes at each station. Implementation of the sampling plan was phased in during the year as autosampling equipment was procured and installed. The monitoring data obtained through the MWQI Program are used to:

1. Alert water agencies about potential contaminant sources to Delta water supplies;

2. Document water quality under a variety of hydrologic conditions for studying water transfer alternatives, water quality standards, and predictive modeling capabilities;

3. Determine the influence of seawater intrusion, local and external sources of farm drainage, river input, in-channel processes, weather, and SWP and CVP operations on Delta drinking water quality. Selenium, bromide, and other inorganic constituents are used to trace the movement and mixing of water from different sources; and

4. Assist water agencies in planning, protecting, and improving drinking water facilities.

The evaluation of monitoring data enables us to have a better understanding of the shifts in water quality caused by a variety of environmental conditions and water management operations. The data are used for planning and protecting Delta water resources. The value of this data collection effort will increase as different alternatives for storing and transferring water in the Delta are evaluated under the CALFED Bay-Delta Program.

Some of the results for the channel stations monitored in Water Year 1995 are presented in time series plots. Field electrical conductivity readings, DOC concentrations, and total THMFP concentrations are briefly discussed. Data for water year 1995 are presented in Tables 20-23.

Hydrology

Water year 1995 was classified as a wet year. From preliminary data, the Sacramento River unimpaired runoff was 33.9 million acre-feet. This was the second wettest year on record since 1906. The wettest year was 1993 with 37.7 MAF. Two large floods occurred in January and March 1995.

Delta inflow, net Delta outflow index, and SWP/CVP export pumping rates from October 1, 1994 to December 31, 1995 are shown in Figure 11. During water year 1995, inflows to the Delta were approximately 28 MAF from the Sacramento River, 6.4 MAF from the San Joaquin River, and 10.8 MAF from the Yolo Bypass. The net Delta outflow averaged about 49,600 cfs and peaked in mid-March 1995 at about 353,000 cfs, as a result of high Delta inflow and precipitation.

Average export rates were 3,000 cfs for SWP, and 3,700 cfs for the CVP. SWP pumping was stopped in March and early April because all reservoirs were full. Pumping was a few hundred cubic feet per second in November and December 1995 because of a major repair in the California Aqueduct.

Electrical Conductivity Readings

Electrical conductivity readings at the four monitoring stations in the northern region of the Delta (Sacramento River at Bryte Bend, American River at the City of Sacramento WTP intake, Sacramento River at Greenes Landing, and at the Barker North Bay Pumping Plant) are shown in Figures 12-15.

EC readings at the west end of the Delta (Sacramento River at Mallard Island) and in the southern Delta (Old River at Bacon Island, Old River at Station 9, Middle River at Borden Highway, and San Joaquin River at Mossdale) are shown in Figures 16-20. As outlined in the monitoring plan, grab sampling at Rock Slough at Old River was replaced with the installation of an autosampler at a secured platform on Old River at Bacon Island to collect more data. Sampling off the San Joaquin River bridge near Vernalis was replaced with sampling further downstream at Mossdale. The Mossdale station is also a D-1485 monitoring station (C7) with a long history of water quality data on file. The site is also more amenable for installing an autosampler because of security and a lower pump lift elevation than at the Vernalis bridge site.

EC readings at the southern Delta water diversions (CCWD Pumping Plant No. 1, Banks Headworks, and Delta-Mendota Canal intake) are shown in Figures 21-23. A comparison of the EC readings at DMC intake (Figure 23) and San Joaquin River at Mossdale (Figure 20) indicates that San Joaquin River water was drawn to the Tracy Pumping Plant from June to September 1995. The return of San Joaquin River water to the Central Valley by the Delta-Mendota Canal facility has been observed and confirmed in previous MWQI studies of the movement of selenium and mineral salts in the southern Delta.

DOC

Automated sampling devices were installed during the program year at four locations: (1) Sacramento River at Greenes Landing, (2) Harvey O. Banks Headworks, (3) Old River at Bacon Island, and (4) Twitchell Island agricultural drainage pump station. Depending upon the season and station, the sampling cycle was two or three times per week. The purpose of using automated samplers was to study the variability of DOC and to determine what sampling frequency should be employed to obtain representative data. Past data have indicated that for some water quality parameters, variability may be less during some months than other time periods.

Data collected at Twitchell Island are discussed in the Delta Island Water Use Study section of this report. DOC results for the three river channel stations are shown in Figures 24-26 with the moving average for the previous three observations. The three-observation moving average is equivalent to a moving weekly average. When the moving weekly average line closely approximates the values of the individual observations, collections more than once per week may not be necessary. For example, the three-observation DOC moving average line for Greenes Landing closely match the DOC values measured from May 11, 1995 to September 28, 1995. This suggests that sampling for DOC at this station during the period of May to September could be reduced to a once per week schedule due to the fairly constant DOC concentrations observed. Conversely, DOC concentrations were more variable from mid-December 1994 through April 1995. This would suggest that the automated sampling frequency should be increased to daily collections during these months to refine studies on upstream DOC input during the wet season.

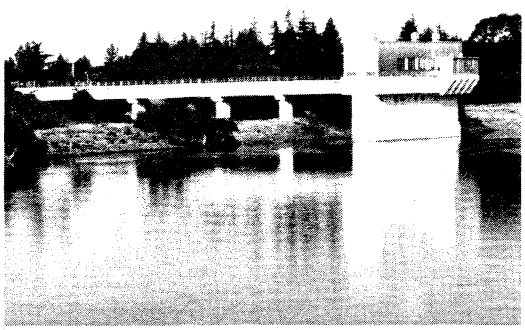
As more automated samplers are either rotated for installation at other stations or procured for other sites, the additional data will assist in planning a more efficient data collection effort and in refining DWR's Delta computer models.

Total THMFP Concentrations

Total THMFP concentrations of samples collected at Greenes Landing, Banks Headworks, and Old River at Bacon Island are shown in Figures 27-29. The samples were collected once per week on the day when the field crew retrieved samples collected by the automated sampling devices. Duplicate samples are taken during each sampling run and from different stations for quality control. The duplicates are submitted as blind samples to the laboratory. Duplicate sample results are shown as paired bars in the figures.

MWQI Data

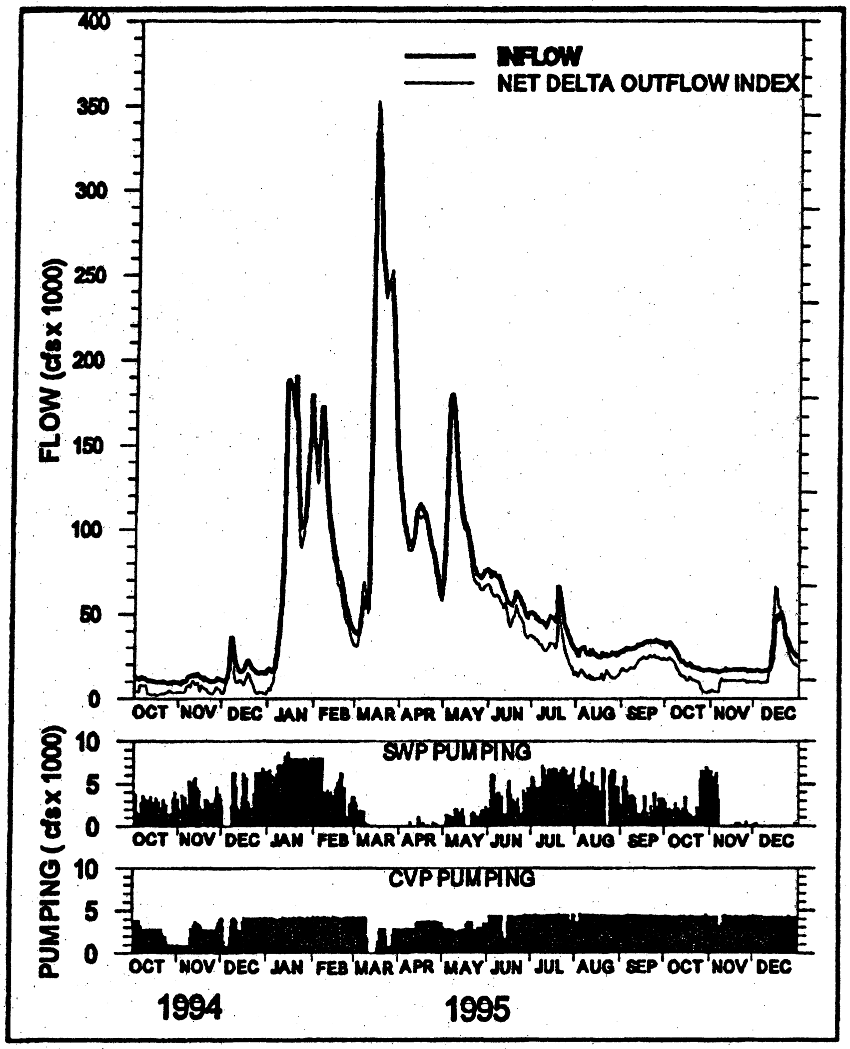
Tables 20-23 list the data collected during water year 1995. The data are separated into four sections: (a) field measurements, (b) DOC and THMFP concentrations, (c) minor elements, and (d) minerals.



(Photo by Dale Kolke, DWR photographer.)

One of the MWQI monitored sites is at the City of Sacramento E.A. Fairbairn water treatment plant intake on the American River.

Figure 11. **Delta Inflow, Net Delta Outflow, and Export Pumping Rates, October 1994 - December 1995**



Source: Interagency Ecological Program for the Sacramento-San Joaquin Estuary Newsletter, Winter 1996.

Figure 12. Sacramento River at Bryte Bend EC

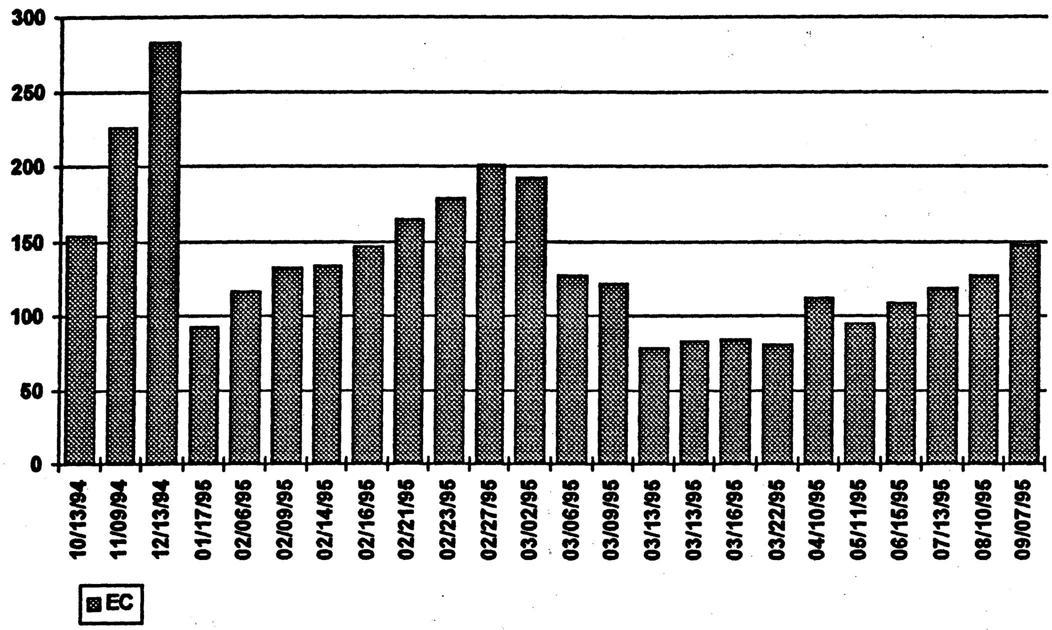


Figure 13. American River at WTP Intake EC

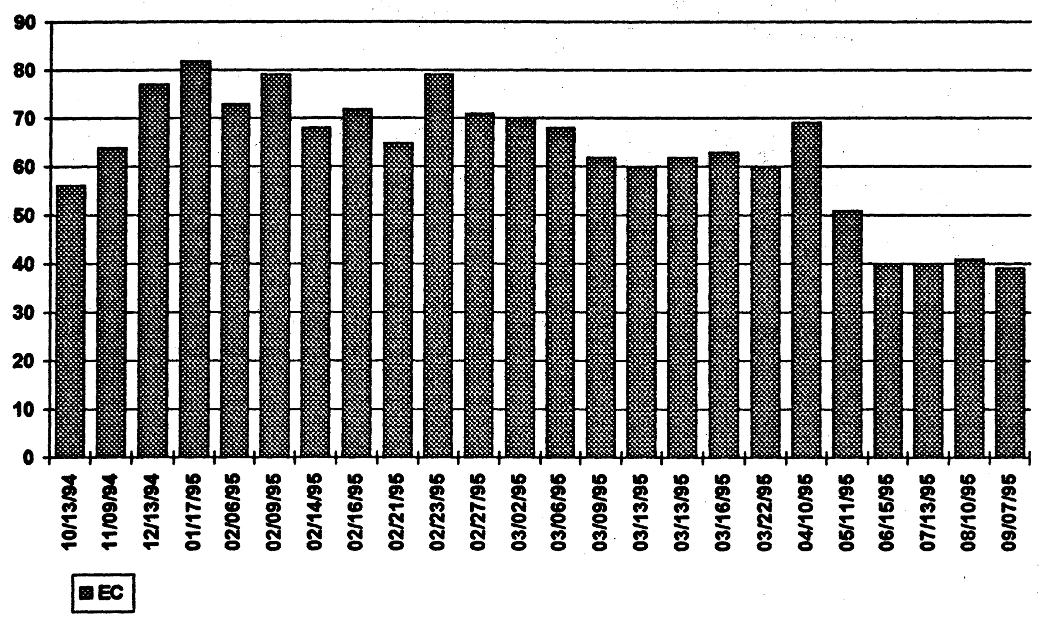


Figure 14. Sacramento River at Greenes Landing EC

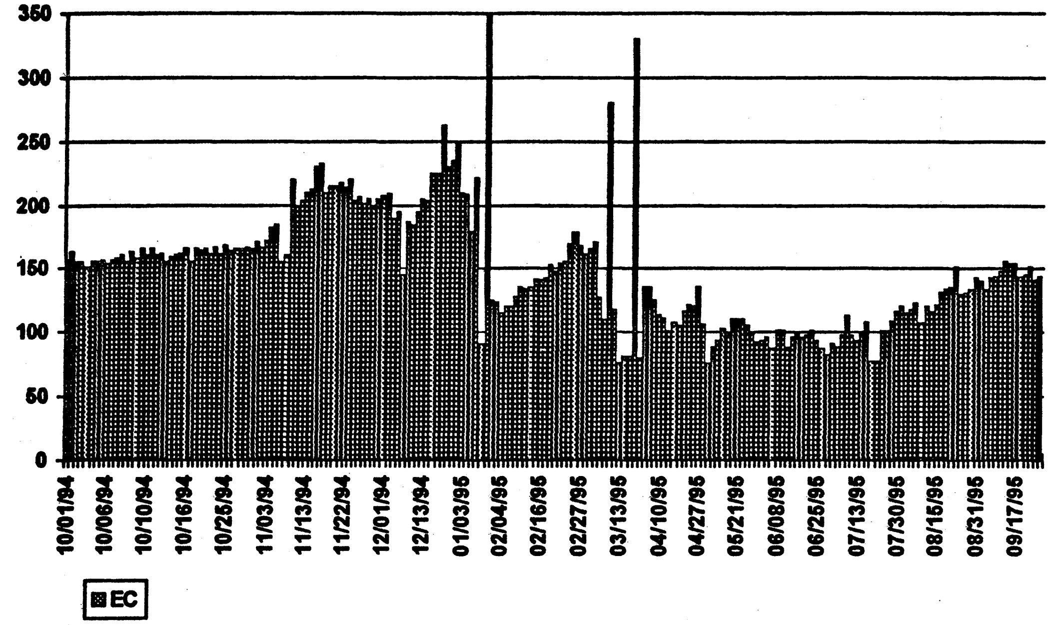


Figure 15. Barker North Bay EC

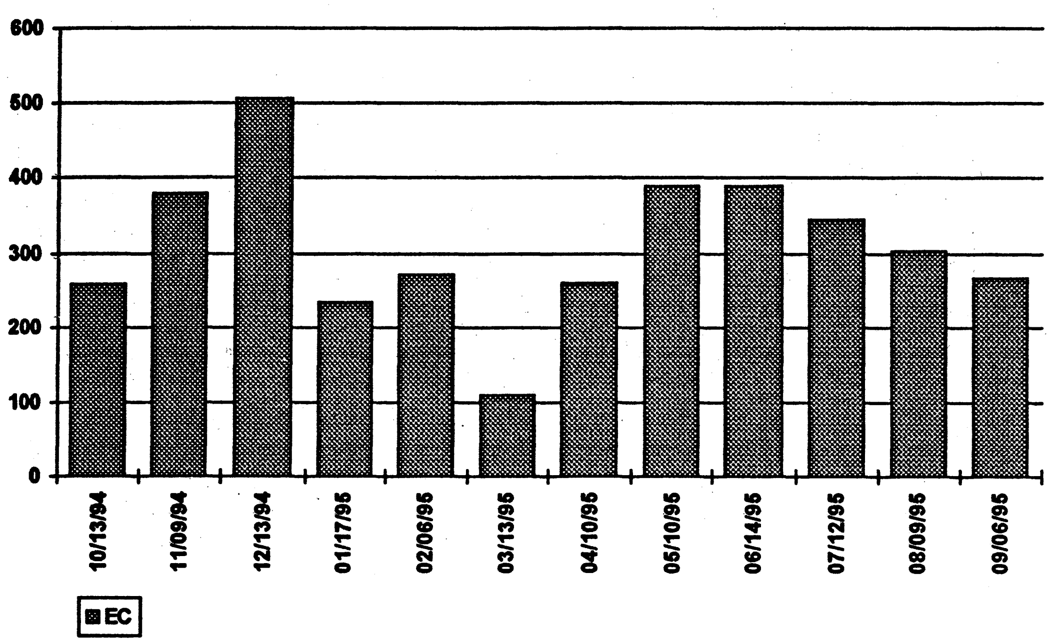


Figure 16. Sacramento River at Mallard Island EC

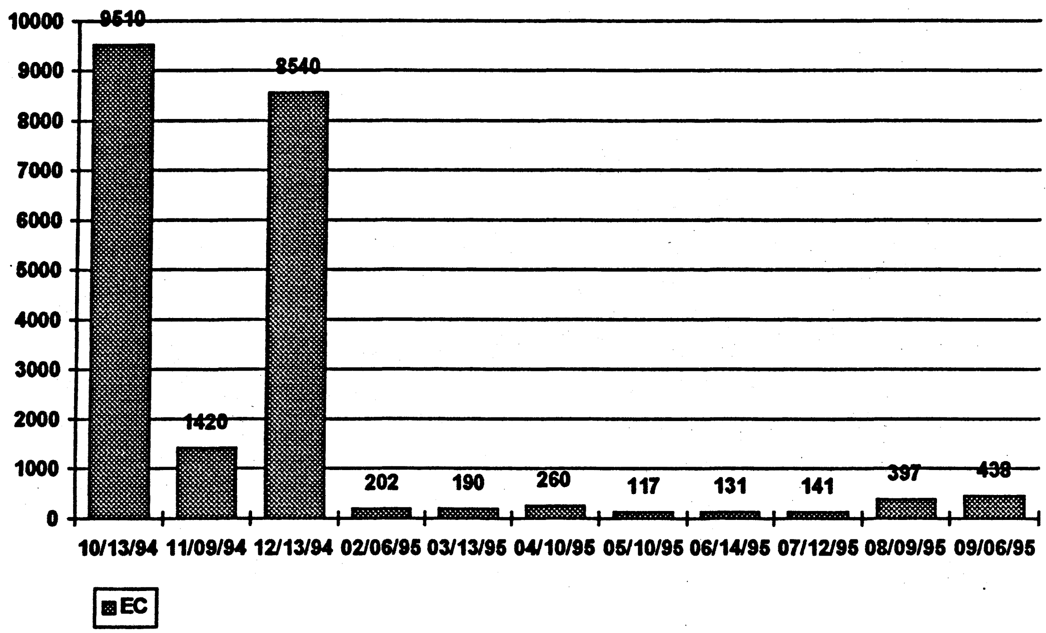


Figure 17. Old River at Bacon Island EC

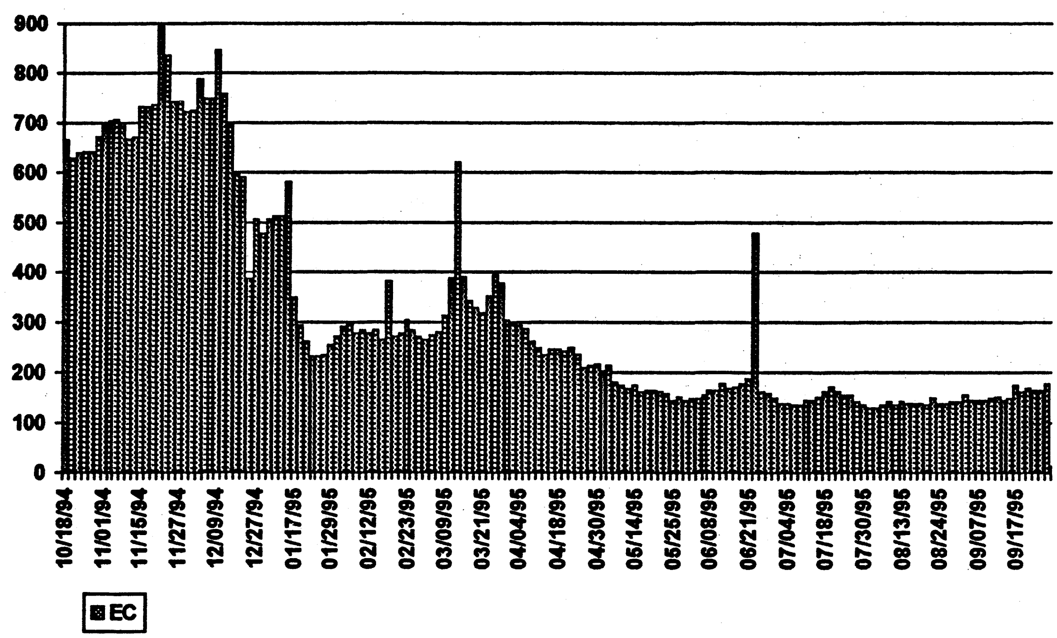


Figure 18. Old River at Station 09 EC

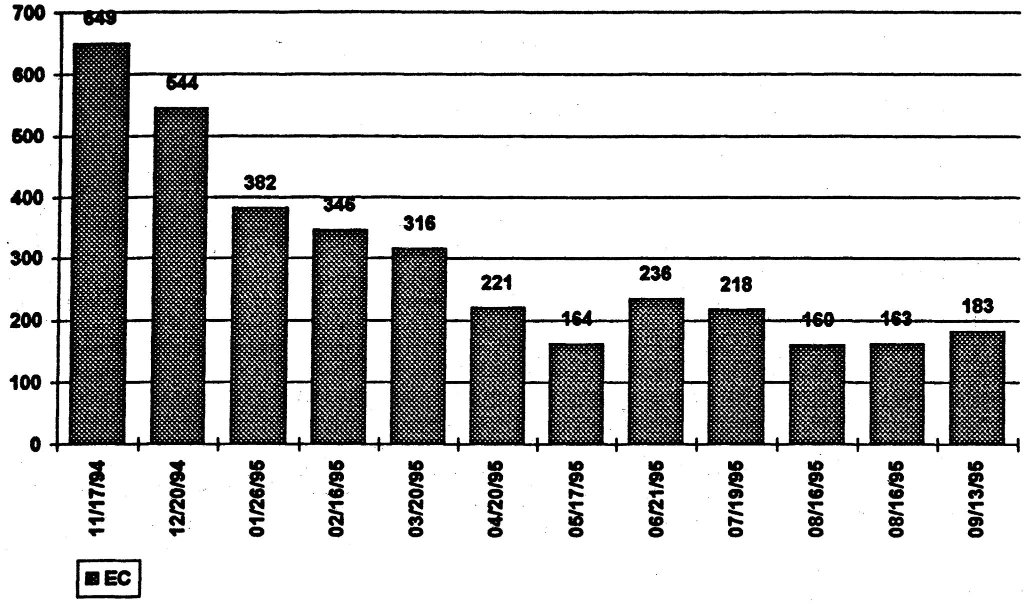


Figure 19. Middle River at Borden Highway EC

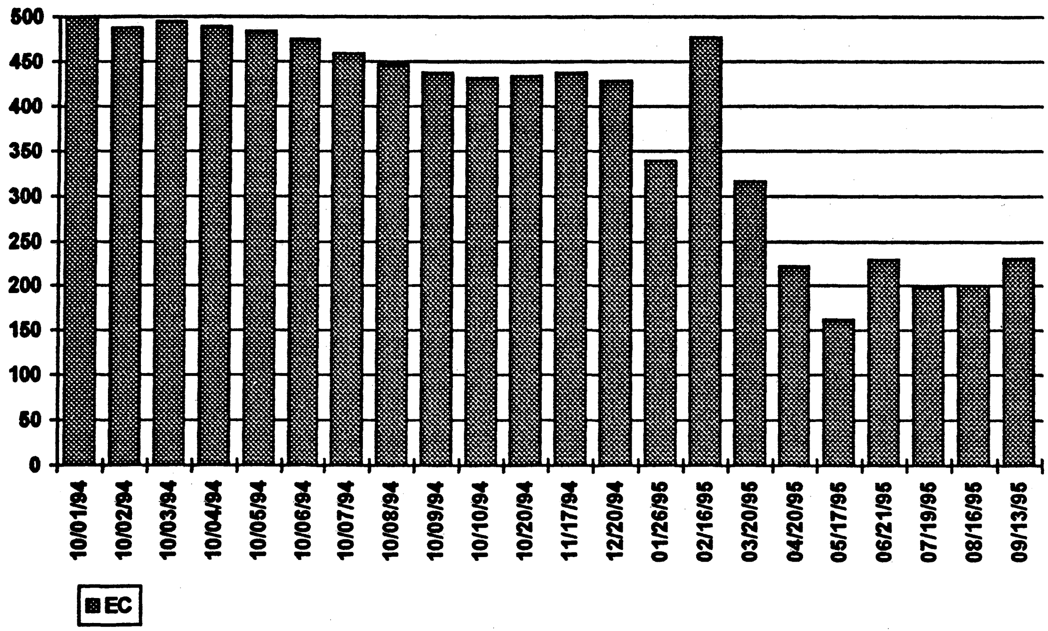


Figure 20. **San Joaquin River at Mossdale EC**

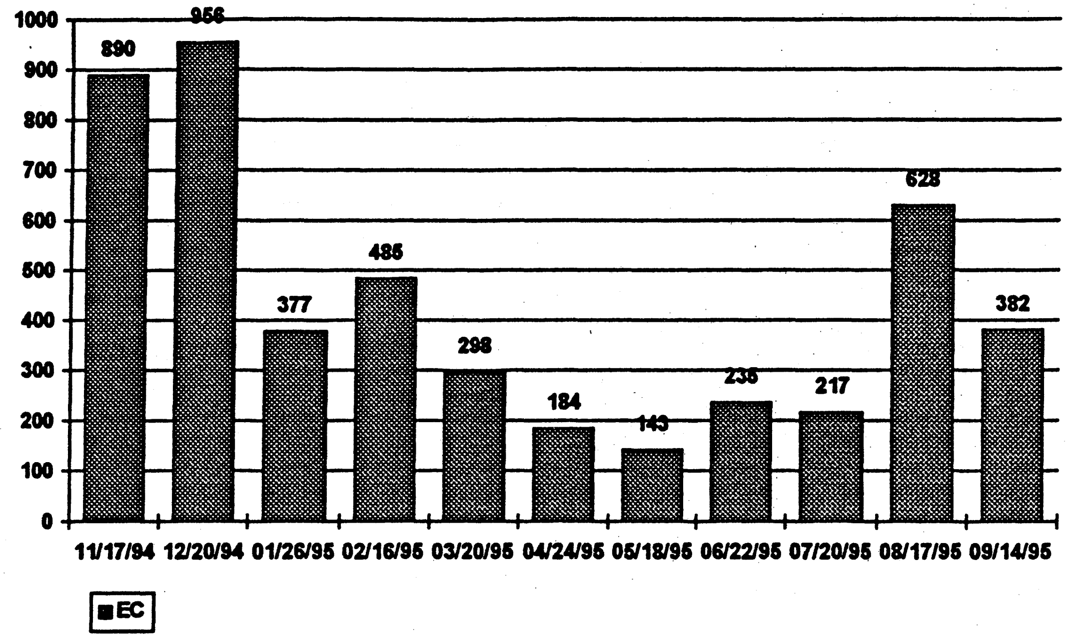


Figure 21. CCWD Pumping Plant No. 1 EC

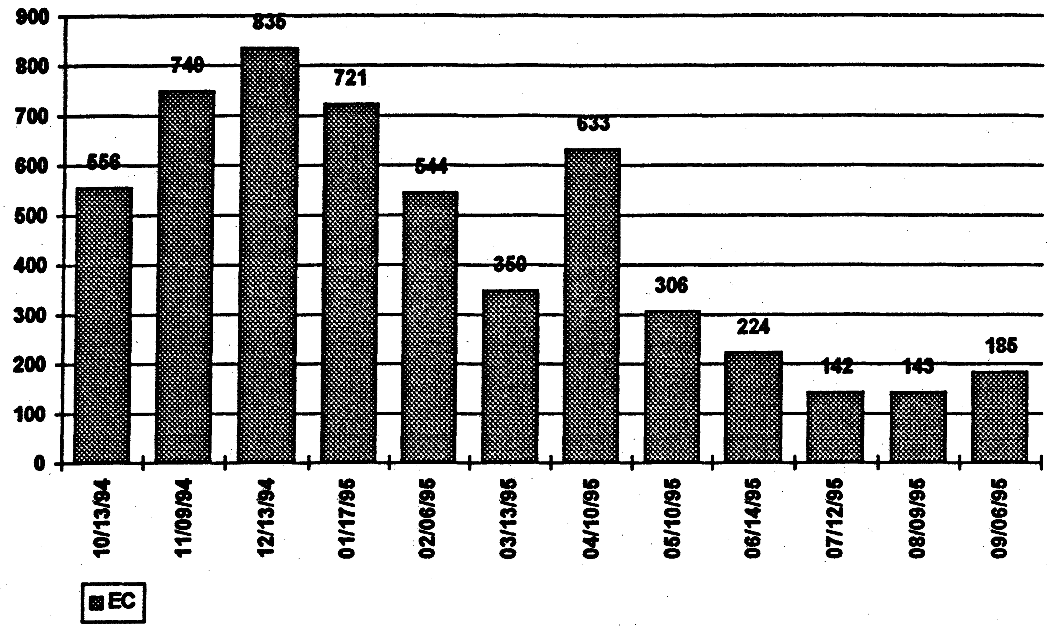


Figure 22. Harvey O. Banks Headworks EC

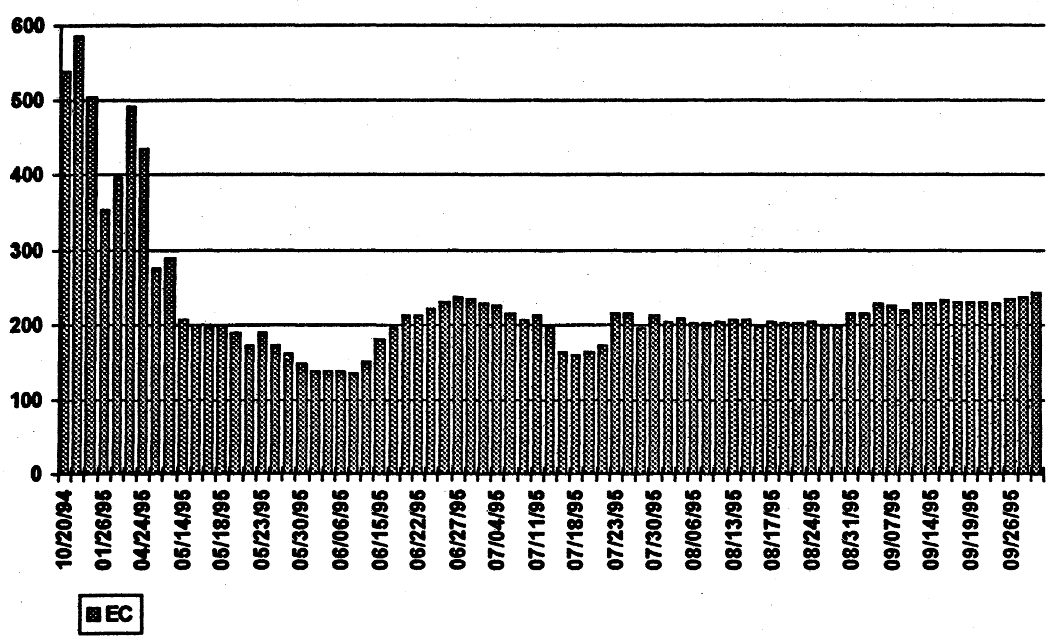


Figure 23. DMC Intake EC

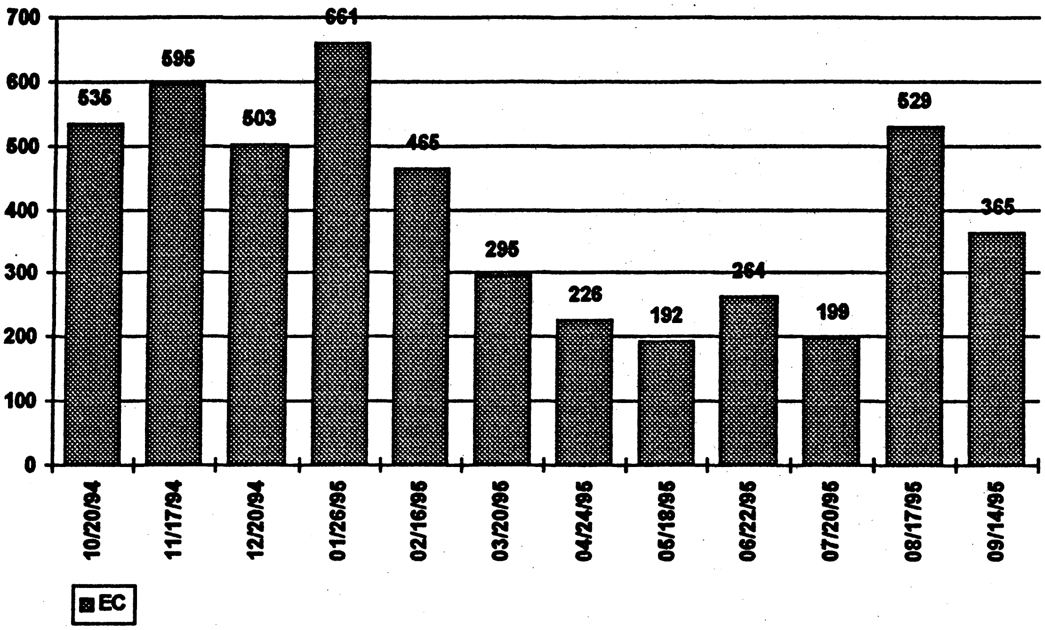


Figure 24. Sacramento River at Greenes Landing DOC (mg/L)

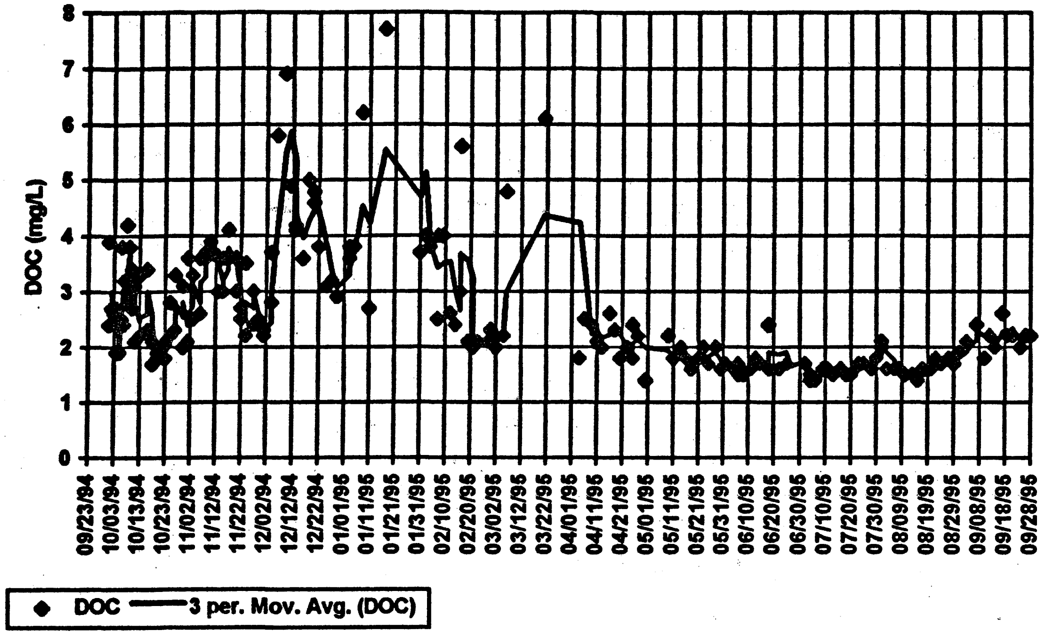


Figure 25. Old River at Bacon Island DOC (mg/L)

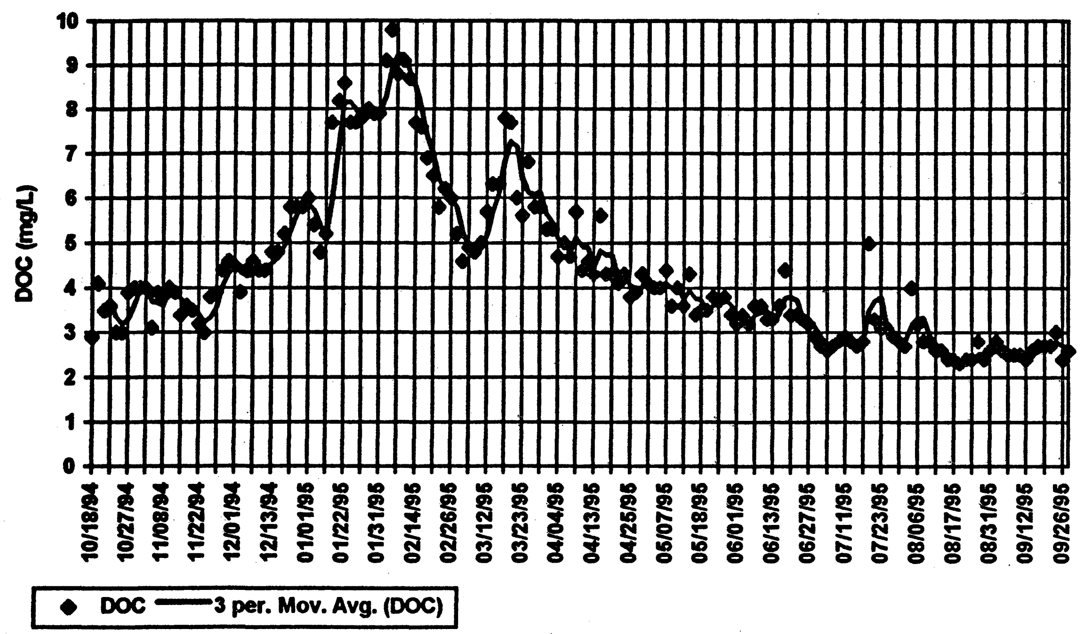


Figure 26. Harvey O. Banks Headworks DOC (mg/L)

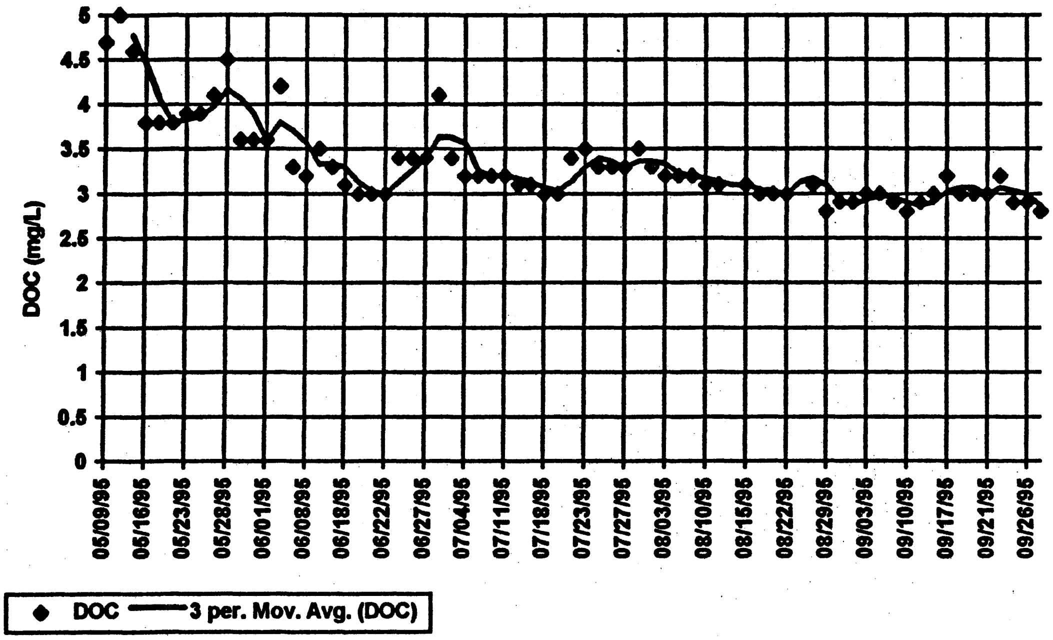


Figure 27. Sacramento River at Greenes Landing TTHMFP (µg/L)

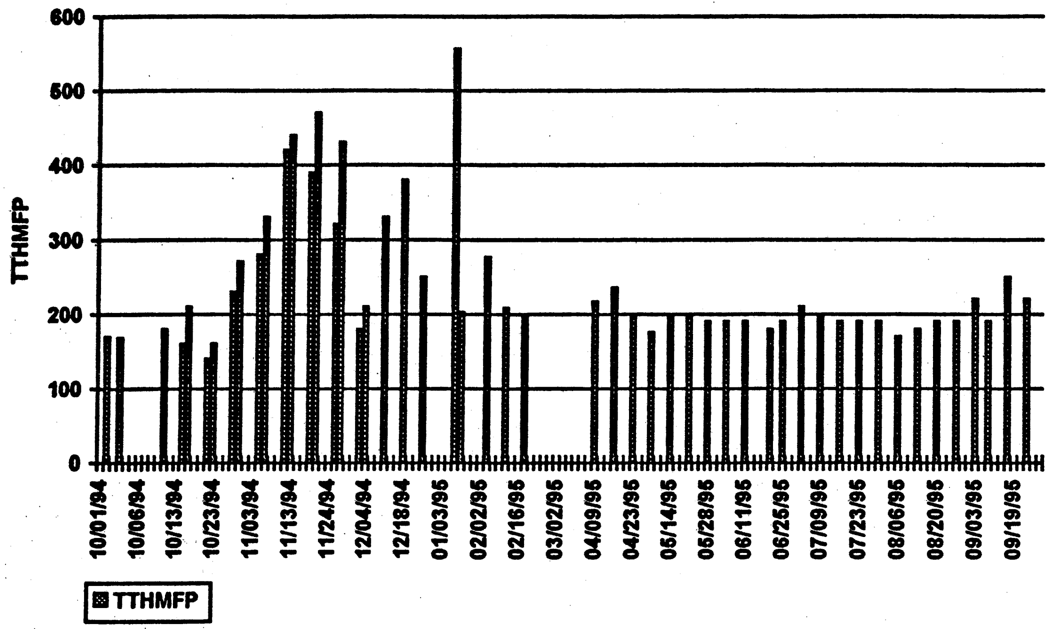


Figure 28. Old River at Bacon Island TTHMFP (µg/L)

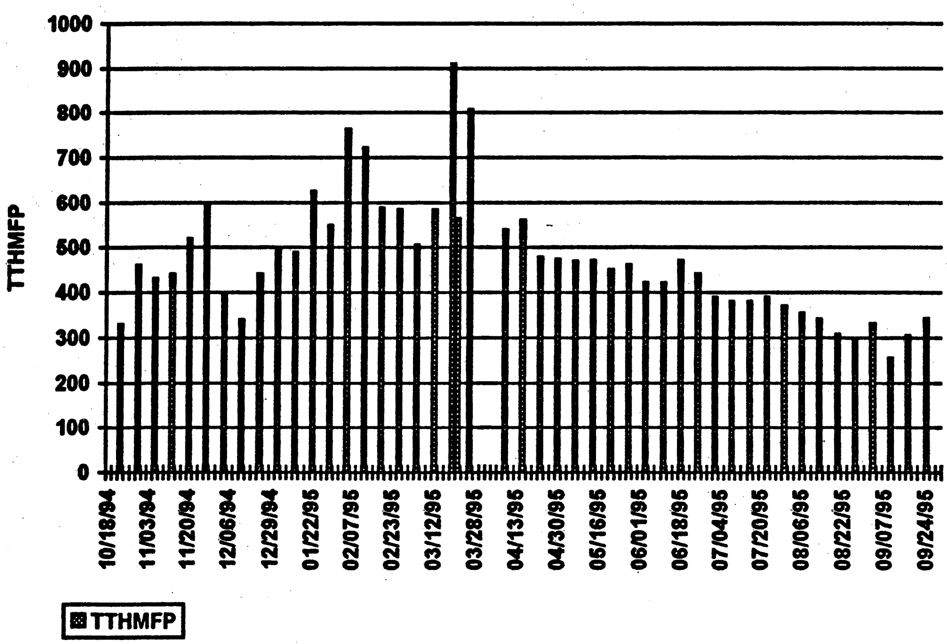


Figure 29. Harvey O. Banks Headworks TTHMFP (µg/L)

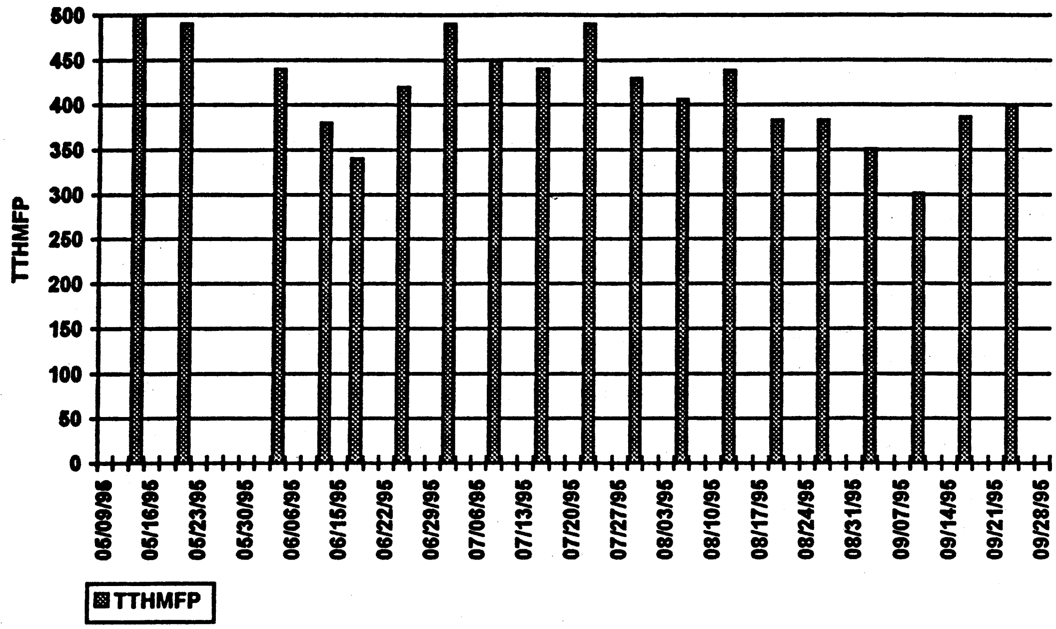


Table 19. MWQI Field Sampling Schedule for WY1995

Group	Site or station	Oct 94	Nov 94	Dec 94	Jan 95	Feb 95	Mar 95	Apr 95	May 95	Jun 95	Jul95	Aug 95	Sep 95
1	Sacramento River at Bryte Bend	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)
2a	American River Water Treatment Plant Intake	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)
1	Sacramento River at Greenes Landing	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)
3	Barker No. Bay Pump Station	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)
3	Sacramento River at Mallard Is.	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)
3	Middle River at Borden Highway	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)
4	Rock Sl. at Old River or Old River at Bacon	GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)
4	Banks Headworks	GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)	GM(DMSH)
2a	DMC Intake	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)	GM(DM)
2b	Stn 9 (Old River near Highway 4)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)
2b	CCWD PP#1	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)	GM(DMH)
4	San Joaquin River near Vernalis or at Mossdale	GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A3(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)	A2(D) W(T) GM(DMSH)
5	Pescadero Tract drain	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)
6	Twitchell Is. drain \1	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)	A3(D) W(MT)
6	Twitchell Is. siphons (4-8 stns) \1	W(DMT) (8 stns)	G3(DMT) (4 stns)	G3(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)	W(DMT) (4 stns)
5	Bacon Is. drain	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)
5	Venice Is. drain	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)
5	Staten Is. drain	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)	GM(DH)
7	Benicia \2	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)	GM(B)

(See Page 12-18 for notations on Table 19.)

Notations to Table 19.

Group column refers to stations with same sampling schedule.

\1 Refer to Delta Island Water Use Study water quality sampling plan for details.

\2 Samples collected in Carquinez Strait near Benicia by DWR Delta Monitoring and Compliance Branch staff of the Environmental Services Office.

Sampling frequency codes (note: not all codes used):

A2 Samples collected by automated sampler twice per week.

A3 Samples collected by automated sampler three times per week.

GM Monthly collected grab samples or one from autosampler.

GS Semi-monthly collected grab samples or from autosampler.

G3 Grab samples 3 times per week

W Weekly sample.

Laboratory parameter codes in parentheses following sampling frequency code:

B Samples for bromide analysis.

D Samples for DOC, UVA, and EC measurements.

M Samples for standard mineral analyses.

S Samples for SDS and THMFP testing.

H Samples for HAA6FP and THMFP testing.

T Samples for THMFP test.

Note: The SDS and HAA6FP tests were not implemented because of limited laboratory capability and lack of a standard method.

Table 20. Field Parameters

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C942042	AMERICAN	10/13/94	11:24 AM	7.8	8.2	56	19.9	1
C942137	AMERICAN	11/9/94	2:10 PM	7.7	9.63	64	14.2	
C942362	AMERICAN	12/13/94	3:05 PM	7.6		77	9.5	
C950121	AMERICAN	1/17/95	12:35 PM	7.3	10.1	82	10.2	
C950316	AMERICAN	2/6/95	1:19 PM	6.6	12.1	73	10.3	
C950459	AMERICAN	2/9/95	12:35 PM	7.2	9.1	79	10.7	
C950467	AMERICAN	2/14/95	1:00 PM	6.5	12	68	9.2	
C950474	AMERICAN	2/16/95	3:01 PM	6.7	10.5	72	9.9	
C950475	AMERICAN	2/16/95	3:01 PM	6.7	10.5	72	9.9	
C950483	AMERICAN	2/21/95	11:32 AM	6.7	10.9	65	11.7	
C950490	AMERICAN	2/23/95	9:42 AM	7	10.8	79	10.6	
C950491	AMERICAN	2/23/95	9:42 AM	7	10.8	79	10.6	
C950499	AMERICAN	2/27/95	12:00 PM	7	11.1	71	11.0	
C950523	AMERICAN	3/2/95	12:07 PM	7.7	12	70	11.5	
C950524	AMERICAN	3/2/95	12:07 PM	7.7	12	70	11.5	
C950583	AMERICAN	3/6/95	7:39 AM	8.4	8.8	68	9.0	
C950629	AMERICAN	3/9/95	11:12 AM	7.2	11.6	62	11.6	
C950630	AMERICAN	3/9/95	11:12 AM	7.2	11.6	62	11.6	
C950645	AMERICAN	3/13/95	3:15 PM	7.6	9.2	60	11.4	
C950650	AMERICAN	3/13/95	3:15 PM	7.6	9.2	62	11.4	
C950671	AMERICAN	3/16/95	8:46 AM	7.6	12.2	63	10.1	
C950672	AMERICAN	3/16/95	8:46 AM	7.6	12.2	63	10.1	
C950715	AMERICAN	3/22/95	11:19 AM	6.6	11.7	60	11.0	
C950807	AMERICAN	4/10/95	2:20 PM	7.9	10.5	69	16.2	
C951179	AMERICAN	5/11/95	11:00 AM	7.6	10.5	51	14.1	
C951512	AMERICAN	6/15/95	12:20 PM	7.6	10.6	40	16.7	
C951773	AMERICAN	7/13/95	11:32 AM	6.6	10	40	19.8	
C951970	AMERICAN	8/10/95	10:00 AM	7.1	8.6	41	20.8	
C952233	AMERICAN	9/7/95	10:10 AM	7.5	9.9	39	21.1	
C942172	BACON01	11/17/94	2:30 PM	7.3	6.7	562	11.8	
C942414	BACON01	12/20/94	2:55 PM	6.8	8.5	956	9.1	
C942417	BACON01	12/20/94	2:55 PM	6.8	8.5	580	9.1	
C950205	BACON01	1/26/95	11:14 AM	6.2	5.2	1280	12.6	
C950403	BACON01	2/16/95	1:05 PM	6.2	7.8	941	12.1	
C950691	BACON01	3/20/95	10:25 AM	6.7	6.2	1111	15.4	
C950877	BACON01	4/20/95	9:41 AM	7.4	6.9	627	15.1	
C951219	BACON01	5/17/95	9:54 AM	7	10.3	639	19.5	
C951568	BACON01	6/21/95	11:15 AM	7.1	6.1	441	21.5	
C951816	BACON01	7/19/95	9:25 AM	6.7	3.5	340	21.9	
C952013	BACON01	8/16/95	9:46 AM	7	6.1	281	23.9	
C952302	BACON01	9/13/95	12:26 PM	7.2	4.8	518	21.0	
C942070	BANKS	10/20/94	9:40 AM	8	8.7	538	16.8	4
C942175	BANKS	11/17/94	10:10 AM	8.2	9.9	584	11.2	4
C942420	BANKS	12/20/94	12:15 PM	7.6	10.9	503	8.1	6
C950208	BANKS	1/26/95	9:54 AM	7.1	7.1	353	10.9	21
C950406	BANKS	2/16/95	11:25 AM	7.2	9.1	395	11.5	10
C950694	BANKS	3/20/95	9:02 AM	7.5	8.6	490	14.6	4
C950880	BANKS	4/24/95	8:20 AM	7.8	9.1	434	17.4	3
C951365	BANKS	5/9/95	12:00 PM			275	16.2	
C951366	BANKS	5/11/95	10:00 PM			289	15.8	
C951367	BANKS	5/14/95	8:00 AM			206	15.4	
C951375	BANKS	5/16/95	12:00 PM			199	15.6	
C951225	BANKS	5/18/95	10:30 AM	7.3	9	196	19.5	6
C951376	BANKS	5/18/95	10:00 PM			200	15.2	
C951377	BANKS	5/21/95	8:00 AM			189	15.2	
C951354	BANKS	5/23/95	12:00 PM			190	22.8	
C951355	BANKS	5/23/95	12:00 PM			171	22.8	
C951356	BANKS	5/25/95	10:00 PM			173	22.2	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C951357	BANKS	5/28/95	8:00 AM			162	22.2	
C951447	BANKS	5/30/95	12:00 PM			148	17.6	
C951448	BANKS	5/30/95	12:00 PM			148	17.6	
C951449	BANKS	6/1/95	10:00 PM			138	16.4	
C951450	BANKS	6/4/95	8:00 AM			138	16.5	
C951492	BANKS	6/6/95	12:00 PM			137	18.5	
C951493	BANKS	6/8/95	8:00 PM			135	18.0	
C951494	BANKS	6/11/95	4:00 AM			150	18.0	
C951557	BANKS	6/15/95	10:00 PM			181	19.1	
C951558	BANKS	6/18/95	8:00 AM			196	19.0	
C951604	BANKS	6/20/95	12:00 PM			213	24.0	
C951605	BANKS	6/20/95	12:00 PM			213	24.0	
C951575	BANKS	6/22/95	9:55 AM	7.4	8.4	212	22.4	9
C951606	BANKS	6/22/95	10:00 PM			221	23.8	
C951607	BANKS	6/25/95	8:00 AM			231	24.3	
C951716	BANKS	6/27/95	12:00 PM			237	19.7	
C951717	BANKS	6/27/95	12:00 PM			237	19.7	
C951718	BANKS	6/29/95	10:00 PM			234	19.3	
C951719	BANKS	7/2/95	8:00 AM			228	19.2	
C951753	BANKS	7/4/95	12:00 PM			225	19.6	
C951754	BANKS	7/6/95	10:00 PM			216	18.5	
C951755	BANKS	7/9/95	8:00 AM			206	18.5	
C951804	BANKS	7/11/95	12:00 PM			213	23.8	
C951805	BANKS	7/13/95	10:00 PM			198	23.6	
C951806	BANKS	7/16/95	8:00 AM			163	24.0	
C951851	BANKS	7/18/95	12:00 PM			160	20.7	
C951852	BANKS	7/18/95	12:00 PM			160	20.7	
C951822	BANKS	7/20/95	10:38 AM	7.8	7.2	164	22.5	11
C951853	BANKS	7/20/95	10:00 PM			172	19.7	
C951854	BANKS	7/23/95	8:00 AM			216	19.8	
C951913	BANKS	7/25/95	12:00 PM			215	27.4	
C951914	BANKS	7/25/95	12:00 PM			215	27.4	
C951915	BANKS	7/27/95	10:00 PM			195	27.6	
C951916	BANKS	7/30/95	8:00 AM			212	28.3	
C951950	BANKS	8/1/95	12:00 PM			205	25.0	
C951951	BANKS	8/3/95	10:00 PM			208	24.4	
C951952	BANKS	8/6/95	8:00 AM			202	25.2	
C952001	BANKS	8/8/95	12:00 PM			202	26.0	
C952002	BANKS	8/10/95	10:00 PM			205	26.1	
C952003	BANKS	8/13/95	8:00 AM			206	26.0	
C952048	BANKS	8/15/95	12:00 PM			207	24.1	
C952049	BANKS	8/15/95	12:00 PM			207	24.1	
C952019	BANKS	8/17/95	9:15 AM	7.9	10.9	197	22.2	
C952050	BANKS	8/17/95	10:00 PM			204	24.0	
C952051	BANKS	8/20/95	8:00 AM			203	24.4	
C952111	BANKS	8/22/95	12:00 PM			202	19.7	
C952112	BANKS	8/24/95	10:00 PM			205	19.3	
C952113	BANKS	8/27/95	8:00 AM			197	19.2	
C952212	BANKS	8/29/95	12:00 PM			197	21.1	
C952213	BANKS	8/29/95	12:00 PM			197	21.1	
C952214	BANKS	8/31/95	10:00 PM			215	20.4	
C952215	BANKS	9/3/95	8:00 AM			215	20.4	
C952286	BANKS	9/5/95	12:00 PM			228	23.4	
C952287	BANKS	9/7/95	10:00 PM			226	24.1	
C952288	BANKS	9/10/95	8:00 AM			219	25.2	
C952346	BANKS	9/12/95	12:00 PM			227	24.8	
C952311	BANKS	9/14/95	9:43 AM	7.6	6.8	227	22.8	5
C952347	BANKS	9/14/95	10:00 PM			232	24.7	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C952348	BANKS	9/17/95	8:00 AM			231	25.0	
C952393	BANKS	9/19/95	12:00 PM			231	17.3	
C952394	BANKS	9/19/95	12:00 PM			231	17.3	
C952395	BANKS	9/21/95	10:00 PM			230	17.3	
C952396	BANKS	9/24/95	8:00 AM			228	17.3	
C952483	BANKS	9/26/95	12:00 PM			234	22.0	
C952484	BANKS	9/26/95	12:00 PM			236	22.2	
C952485	BANKS	9/28/95	10:00 PM			243	22.4	
C942044	BARKERNOBAY	10/13/94	6:30 AM	7.1	7.5	259	16.3	19
C942130	BARKERNOBAY	11/9/94	7:45 AM	7.5	8.3	378	11.5	10
C942354	BARKERNOBAY	12/13/94	7:45 AM	7.4	9.9	506	9.0	9
C942355	BARKERNOBAY	12/13/94	7:45 AM	7.4	9.9	506	9.0	9
C950114	BARKERNOBAY	1/17/95	2:45 PM	7.3	5.8	234	12.3	132
C950309	BARKERNOBAY	2/6/95	7:30 AM	6.8	4.1	270	13.5	50
C950638	BARKERNOBAY	3/13/95	8:30 AM	8	6.6	109	14.9	180
C950800	BARKERNOBAY	4/10/95	1:19 PM	7.3	7.7	261	19.4	38
C951169	BARKERNOBAY	5/10/95	8:21 AM	7.6	8.6	390	17.4	15
C951502	BARKERNOBAY	6/14/95	8:00 AM	7.2	7.5	389	18.3	20
C951763	BARKERNOBAY	7/12/95	9:00 AM	7.7	7.5	345	21.0	28
C951960	BARKERNOBAY	8/9/95	8:50 AM	7.1	6.1	303	26.4	
C952223	BARKERNOBAY	9/6/95	8:30 AM	7.2	6.4	267	21.3	
C942067	CLIFTON	10/20/94	9:05 AM	7.9	8.8	456	16.8	8
C942071	CLIFTON	10/20/94	9:05 AM	7.9	8.8	456	16.8	8
C942041	CONCOSPP1	10/13/94	9:08 AM	7.7	8.1	556	18.0	4
C942046	CONCOSPP1	10/13/94	9:08 AM	7.7	8.1	556	18.0	4
C942132	CONCOSPP1	11/9/94	10:00 AM	8.1	10	749	12.4	4
C942357	CONCOSPP1	12/13/94	10:30 AM	7.5	10.4	835	9.3	3
C950113	CONCOSPP1	1/17/95	1:40 PM	8	8	721	11.5	7
C950116	CONCOSPP1	1/17/95	1:40 PM	8	8	721	11.5	6
C950311	CONCOSPP1	2/6/95	9:50 AM	7.2	7.5	544	13.1	16
C950637	CONCOSPP1	3/13/95	11:50 AM	7.6	7	350	14.7	9
C950640	CONCOSPP1	3/13/95	11:50 AM	7.6	7	350	14.7	8
C950799	CONCOSPP1	4/10/95	10:50 AM	7.9	8.6	633	16.6	7
C950802	CONCOSPP1	4/10/95	10:50 AM	7.9	8.6	633	16.6	7
C951168	CONCOSPP1	5/10/95	10:16 AM	7.6	8.6	306	18.9	7
C951171	CONCOSPP1	5/10/95	10:16 AM	7.6	8.6	306	18.9	7
C951504	CONCOSPP1	6/14/95	11:15 AM	7.4	7	224	21.1	10
C951765	CONCOSPP1	7/12/95	10:31 AM	7.2	7.6	142	22.9	8
C951959	CONCOSPP1	8/9/95	11:32 AM	6.7	7.5	143	25.8	
C951962	CONCOSPP1	8/9/95	11:32 AM	6.7	7.5	143	25.8	
C952225	CONCOSPP1	9/6/95	11:50 AM	7.4	7.6	185	24.6	6
C942072	DMC	10/20/94	10:15 AM	7.8	8.8	535	17.0	8
C942176	DMC	11/17/94	10:50 AM	7.9	10.2	595	11.6	4
C942421	DMC	12/20/94	11:45 AM	7.6	10.9	503	8.5	8
C950209	DMC	1/26/95	9:13 AM	7.6	5.7	661	11.3	76
C950407	DMC	2/16/95	11:05 AM	7.2	9.5	465	10.9	13
C950695	DMC	3/20/95	8:46 AM	7.6	7.7	295	14.9	31
C950881	DMC	4/24/95	8:49 AM	7.8	8.6	226	16.5	19
C951224	DMC	5/18/95	10:11 AM	7.8	8.6	192	18.7	17
C951574	DMC	6/22/95	9:23 AM	7.3	7.9	264	21.6	20
C951821	DMC	7/20/95	11:00 AM	7.5	7.2	199	22.0	25
C952018	DMC	8/17/95	8:53 AM	7.8	6.8	529	22.1	
C952310	DMC	9/14/95	9:13 AM	7.9	6.4	365	22.7	19
C941995	GREENES	10/1/94	11:55 AM			163	2.4	
C942009	GREENES	10/1/94	12:05 PM			157	19.2	
C942010	GREENES	10/2/94	12:05 PM			155	19.2	
C942011	GREENES	10/3/94	12:05 PM			155	19.0	
C942020	GREENES	10/4/94	1:00 PM			156	4.8	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C942034	GREENES	10/4/94	1:12 PM			152	17.7	
C942021	GREENES	10/5/94	1:00 PM			155	4.6	
C942035	GREENES	10/5/94	1:12 PM			157	17.3	
C942022	GREENES	10/6/94	1:00 PM			157	4.6	
C942036	GREENES	10/6/94	1:12 PM			154	17.4	
C942023	GREENES	10/7/94	1:00 PM			160	4.1	
C942037	GREENES	10/7/94	1:12 PM			158	17.5	
C942024	GREENES	10/8/94	1:00 PM			163	3.5	
C942038	GREENES	10/8/94	1:12 PM			156	17.5	
C942025	GREENES	10/9/94	1:00 PM			165	3.0	
C942039	GREENES	10/9/94	1:12 PM			158	17.5	
C942026	GREENES	10/10/94	11:20 AM			165	2.6	
C942040	GREENES	10/10/94	1:12 PM			160	17.2	
C942053	GREENES	10/11/94	12:08 PM			160	5.1	
C942054	GREENES	10/11/94	12:09 PM			162	5.2	
C942057	GREENES	10/11/94	12:09 PM			160	14.8	
C942047	GREENES	10/13/94	10:30 AM	7.9	8	159	19.0	4
C942055	GREENES	10/13/94	10:09 PM			160	4.0	
C942058	GREENES	10/13/94	10:09 PM			155	14.8	
C942056	GREENES	10/16/94	8:09 AM			166	3.2	
C942059	GREENES	10/16/94	8:09 AM			162	14.7	
C942082	GREENES	10/18/94	12:00 PM			166	5.7	
C942085	GREENES	10/18/94	12:00 PM			155	17.1	
C942083	GREENES	10/20/94	10:00 PM			166	4.5	
C942086	GREENES	10/20/94	10:00 PM			164	17.2	
C942084	GREENES	10/23/94	8:00 AM			167	3.7	
C942087	GREENES	10/23/94	8:00 AM			162	17.1	
C942099	GREENES	10/25/94	12:00 PM			168	6.3	
C942102	GREENES	10/25/94	12:00 PM			162	13.5	
C942100	GREENES	10/27/94	10:00 PM			165	4.6	
C942103	GREENES	10/27/94	10:00 PM			164	14.1	
C942101	GREENES	10/30/94	8:00 AM			167	4.3	
C942104	GREENES	10/30/94	8:00 AM			166	14.4	
C942112	GREENES	11/1/94	12:00 PM			171	3.6	
C942116	GREENES	11/1/94	12:00 PM			171	3.6	
C942119	GREENES	11/1/94	12:00 PM			166	9.7	
C942117	GREENES	11/3/94	10:00 PM			172	3.4	
C942120	GREENES	11/3/94	10:00 PM			167	10.5	
C942118	GREENES	11/6/94	8:00 AM			185	3.1	
C942121	GREENES	11/6/94	8:00 AM			182	10.7	
C942156	GREENES	11/8/94	12:00 PM			156	6.2	
C942159	GREENES	11/8/94	12:00 PM			161	9.7	
C942136	GREENES	11/9/94	1:20 PM	7.5	10	220	12.8	7
C942157	GREENES	11/10/94	10:00 PM			203	4.4	
C942160	GREENES	11/10/94	10:00 PM			200	9.0	
C942158	GREENES	11/13/94	8:00 AM			212	3.2	
C942161	GREENES	11/13/94	8:00 AM			209	8.8	
C942193	GREENES	11/15/94	1:00 PM			232	3.9	
C942197	GREENES	11/15/94	1:00 PM			232	3.9	
C942200	GREENES	11/15/94	1:00 PM			229	8.8	
C942198	GREENES	11/17/94	11:00 PM			214	3.1	
C942201	GREENES	11/17/94	11:00 PM			209	8.4	
C942199	GREENES	11/20/94	9:00 AM			217	2.9	
C942202	GREENES	11/20/94	9:00 AM			215	8.3	
C942214	GREENES	11/22/94	12:00 PM			219	2.6	
C942217	GREENES	11/22/94	12:00 PM			213	6.9	
C942215	GREENES	11/24/94	10:00 PM			206	2.7	
C942218	GREENES	11/24/94	10:00 PM			203	6.8	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C942216	GREENES	11/27/94	8:00 AM			204	2.5	
C942219	GREENES	11/27/94	8:00 AM			201	6.9	
C942285	GREENES	11/29/94	12:00 PM			205	5.4	
C942288	GREENES	11/29/94	12:00 PM			199	8.0	
C942286	GREENES	12/1/94	10:00 PM			208	3.7	
C942289	GREENES	12/1/94	10:00 PM			207	8.0	
C942287	GREENES	12/4/94	8:00 AM			190	3.2	
C942290	GREENES	12/4/94	8:00 AM			195	8.1	
C942334	GREENES	12/6/94	12:00 PM			146	4.1	
C942335	GREENES	12/9/94	11:00 PM			187	3.3	
C942336	GREENES	12/11/94	8:00 AM			184	3.1	
C942361	GREENES	12/13/94	2:10 PM	7.5		195	10.0	8
C942366	GREENES	12/13/94	2:00 PM			205	4.3	
C942370	GREENES	12/13/94	2:00 PM			205	4.3	
C942371	GREENES	12/16/94	12:00 AM			203	3.3	
C942372	GREENES	12/18/94	10:00 AM			224	3.0	
C942390	GREENES	12/20/94	12:00 PM			225	3.5	
C942394	GREENES	12/20/94	12:00 PM			225	3.5	
C942395	GREENES	12/22/94	10:00 PM			262	3.0	
C942396	GREENES	12/25/94	8:00 AM			229	2.5	
C950005	GREENES	12/27/94	12:00 PM			235	4.3	
C950006	GREENES	12/29/94	10:00 PM			249	3.7	
C950043	GREENES	1/3/95	1:00 PM			209	4.9	
C950047	GREENES	1/3/95	1:00 PM			209	4.9	
C950048	GREENES	1/5/95	11:00 PM			208	3.9	
C950049	GREENES	1/8/95	9:00 AM			180	3.1	
C950007	GREENES	1/11/95	8:00 AM			221	2.6	
C950120	GREENES	1/17/95	9:15 AM	7.8	8.6	92	10.0	72
C950160	GREENES	1/17/95	12:00 PM			350	11.4	
C950324	GREENES	1/31/95	12:00 PM			126	10.7	
C950325	GREENES	2/2/95	10:00 PM			124	10.6	
C950326	GREENES	2/4/95	8:00 AM			116	10.4	
C950315	GREENES	2/6/95	12:30 PM	7	9.9	120	11.6	46
C950360	GREENES	2/7/95	12:00 PM			120	9.7	
C950364	GREENES	2/7/95	12:00 PM			120	9.7	
C950365	GREENES	2/9/95	10:00 PM			128	9.5	
C950460	GREENES	2/9/95	12:00 PM	7.5	8	128	11.4	
C950366	GREENES	2/12/95	8:00 AM			135	9.1	
C950415	GREENES	2/14/95	1:00 PM			135	12.4	
C950466	GREENES	2/14/95	3:13 PM	6.7	10.8	142	10.2	
C950468	GREENES	2/14/95	3:13 PM	6.8	11	134	10.2	
C950416	GREENES	2/16/95	11:00 PM			143	12.5	
C950476	GREENES	2/16/95	2:10 PM	7.1	9.7	142	10.0	
C950417	GREENES	2/19/95	9:00 AM			153	12.5	
C950451	GREENES	2/21/95	12:00 PM			154	13.2	
C950455	GREENES	2/21/95	12:00 PM			154	13.2	
C950484	GREENES	2/21/95	12:23 PM	7.2	10.1	148	12.6	
C950456	GREENES	2/23/95	10:00 PM			169	12.9	
C950492	GREENES	2/23/95	10:25 AM	7.6	9.9	155	12.1	
C950457	GREENES	2/26/95	8:00 AM			178	12.9	
C950498	GREENES	2/27/95	12:50 PM	7.3	9.9	168	13.0	
C950500	GREENES	2/27/95	12:50 PM	7.3	9.9	168	13.0	
C950586	GREENES	2/28/95	2:00 PM			162	12.4	
C950590	GREENES	2/28/95	2:00 PM			162	12.4	
C950525	GREENES	3/2/95	10:52 AM	7.6	10.9	170	13.0	
C950591	GREENES	3/2/95	12:00 AM			165	11.6	
C950592	GREENES	3/5/95	10:00 AM			128	11.5	
C950584	GREENES	3/6/95	8:16 AM	8.3	10.7	111	9.8	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C950653	GREENES	3/7/95	12:00 PM			280	14.7	
C950631	GREENES	3/9/95	10:16 AM	6.8	10.9	118	12.7	
C950644	GREENES	3/13/95	2:00 PM	7.4	8.5	81	11.7	32
C950649	GREENES	3/13/95	10:08 AM	6.9	11	76	11.9	
C950651	GREENES	3/13/95	10:08 AM	6.9	11	76	11.9	
C950673	GREENES	3/16/95	7:53 AM	7.6	11.2	81	10.6	
C950721	GREENES	3/21/95	12:00 PM			330	11.6	
C950716	GREENES	3/22/95	12:15 PM	7.3	10.9	80	11.2	
C950815	GREENES	4/4/95	12:00 PM			136	14.0	
C950816	GREENES	4/6/95	10:00 PM			135	14.0	
C950817	GREENES	4/9/95	8:00 AM			126	14.0	
C950806	GREENES	4/10/95	7:56 AM	7	9.7	114	13.1	29
C950889	GREENES	4/11/95	12:00 PM			112	12.0	
C950890	GREENES	4/13/95	10:00 PM			101	11.9	
C950891	GREENES	4/16/95	8:00 AM			108	11.9	
C950904	GREENES	4/18/95	12:00 PM			106	16.6	
C950905	GREENES	4/20/95	10:00 PM			117	16.7	
C950906	GREENES	4/23/95	8:00 AM			122	16.7	
C951128	GREENES	4/25/95	12:00 PM			121	17.1	
C951132	GREENES	4/25/95	12:00 PM			121	17.1	
C951133	GREENES	4/27/95	10:00 PM			135	16.8	
C951134	GREENES	4/30/95	8:00 AM			107	16.7	
C951371	GREENES	5/9/95	12:00 PM			76	16.3	
C951178	GREENES	5/11/95	9:26 AM	7.8	9.6	89	15.4	15
C951372	GREENES	5/11/95	10:00 PM			94	16.1	
C951373	GREENES	5/14/95	8:00 AM			103	16.4	
C951374	GREENES	5/16/95	12:00 PM			99	18.2	
C951381	GREENES	5/16/95	12:00 PM			99	18.2	
C951382	GREENES	5/18/95	10:00 PM			111	17.6	
C951383	GREENES	5/21/95	8:00 AM			111	17.7	
C951361	GREENES	5/23/95	12:00 PM			111	21.9	
C951362	GREENES	5/25/95	10:00 PM			105	21.9	
C951363	GREENES	5/28/95	8:00 AM			100	21.5	
C951454	GREENES	5/30/95	12:00 PM			93	16.8	
C951455	GREENES	6/1/95	10:00 PM			94	17.1	
C951456	GREENES	6/4/95	8:00 AM			96	17.2	
C951491	GREENES	6/6/95	12:00 PM			88	21.9	
C951498	GREENES	6/6/95	12:00 PM			88	21.9	
C951499	GREENES	6/8/95	10:00 PM			101	20.4	
C951500	GREENES	6/11/95	8:00 AM			101	20.8	
C951562	GREENES	6/13/95	1:30 PM			89	19.9	
C951511	GREENES	6/15/95	11:30 AM	7.4	9.5	96	17.3	9
C951563	GREENES	6/15/95	11:30 PM			100	19.5	
C951564	GREENES	6/18/95	9:30 AM			98	19.4	
C951611	GREENES	6/18/95	12:00 PM			97	24.1	
C951612	GREENES	6/22/95	10:00 PM			102	24.5	
C951613	GREENES	6/25/95	8:00 AM			94	24.5	
C951723	GREENES	6/27/95	12:00 PM			88	20.0	
C951724	GREENES	6/29/95	10:00 PM			83	19.8	
C951725	GREENES	7/2/95	8:00 AM			91	19.5	
C951752	GREENES	7/4/95	12:00 PM			89	19.8	
C951759	GREENES	7/4/95	12:00 PM			89	19.8	
C951760	GREENES	7/6/95	10:00 PM			98	20.2	
C951761	GREENES	7/9/95	8:00 AM			113	20.0	
C951810	GREENES	7/11/95	12:00 PM			98	22.0	
C951772	GREENES	7/13/95	10:36 AM	7.1	8.8	100	20.2	8
C951811	GREENES	7/13/95	10:00 PM			94	22.2	
C951812	GREENES	7/16/95	8:00 AM			108	22.2	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C951858	GREENES	7/18/95	12:00 PM			78	20.0	
C951859	GREENES	7/20/95	10:00 PM			78	22.0	
C951860	GREENES	7/23/95	8:00 AM			101	22.5	
C951920	GREENES	7/25/95	4:00 PM			102	26.3	
C951921	GREENES	7/28/95	2:00 AM			109	26.4	
C951922	GREENES	7/30/95	12:00 PM			117	26.3	
C951949	GREENES	8/1/95	12:00 PM			120	24.4	
C951956	GREENES	8/1/95	12:00 PM			120	24.4	
C951957	GREENES	8/3/95	10:00 PM			115	23.9	
C951958	GREENES	8/6/95	8:00 AM			118	23.9	
C952007	GREENES	8/8/95	12:05 PM			123	26.4	
C951969	GREENES	8/10/95	9:00 AM	7	8.2	108	22.3	
C952008	GREENES	8/10/95	10:05 PM			120	25.6	
C952009	GREENES	8/13/95	8:05 AM			117	25.9	
C952055	GREENES	8/15/95	12:00 PM			122	28.7	
C952056	GREENES	8/17/95	10:00 PM			132	28.8	
C952057	GREENES	8/20/95	8:00 AM			134	28.8	
C952110	GREENES	8/22/95	12:00 PM			152	24.9	
C952117	GREENES	8/22/95	12:00 PM			135	24.8	
C952118	GREENES	8/24/95	10:00 PM			130	25.3	
C952119	GREENES	8/27/95	8:00 AM			132	25.3	
C952219	GREENES	8/29/95	12:00 PM			134	24.9	
C952220	GREENES	8/31/95	10:00 PM			143	25.7	
C952221	GREENES	9/3/95	8:00 AM			141	25.2	
C952232	GREENES	9/7/95	9:30 AM	7.5	9	134	22.2	8
C952285	GREENES	9/7/95	10:00 PM			143	21.0	
C952293	GREENES	9/7/95	10:00 PM			144	21.1	
C952294	GREENES	9/10/95	8:00 AM			148	21.2	
C952352	GREENES	9/12/95	12:00 PM			155	23.3	
C952353	GREENES	9/14/95	10:00 PM			154	23.6	
C952354	GREENES	9/17/95	8:00 AM			154	23.6	
C952400	GREENES	9/19/95	12:00 PM			144	19.9	
C952401	GREENES	9/21/95	10:00 PM			145	19.9	
C952402	GREENES	9/24/95	8:00 AM			152	19.8	
C952490	GREENES	9/26/95	12:00 PM			142	20.5	
C952491	GREENES	9/28/95	10:00 PM			144	20.8	
C942050	JERSEYPP01	10/13/94	8:43 AM	8	6.4	2120	15.4	15
C942133	JERSEYPP01	11/9/94	10:35 AM	6.9	4.9	2460	11.2	19
C942358	JERSEYPP01	12/13/94	10:00 AM	6.7	8.4	2350	10.3	20
C950641	JERSEYPP01	3/13/95	11:15 AM	7.1	7.4	2910	14.7	6
C951505	JERSEYPP01	6/14/95	1:40 PM	7.5	5.4	521	19.0	16
C951645	JERSEYPP01	6/14/95						
C951766	JERSEYPP01	7/12/95	10:10 AM	7.6	5.6	451	20.7	15
C951963	JERSEYPP01	8/9/95	11:57 AM	7.3	5.9	290	24.2	
C952226	JERSEYPP01	9/6/95	11:25 AM	7.1	6.3	365	25.6	11
C942048	MALLARDIS	10/13/94	7:54 AM	7.4	8.2	9510	18.2	20
C942131	MALLARDIS	11/9/94	9:10 AM	7.7	9.7	1420	13.9	17
C942356	MALLARDIS	12/13/94	9:08 AM	7.7	10.6	8540	13.0	16
C950310	MALLARDIS	2/6/95	9:10 AM	7.3	9.4	202	12.5	40
C950639	MALLARDIS	3/13/95	10:15 AM	7.9	7.9	190	13.7	54
C950801	MALLARDIS	4/10/95	11:45 AM	7.7	9.3	260	16.5	12
C951170	MALLARDIS	5/10/95	9:27 AM	7.8	9.7	117	16.2	16
C951501	MALLARDIS	6/14/95	9:10 AM	7.5	8.3	131	18.2	21
C951503	MALLARDIS	6/14/95	9:10 AM	7.5	8.3	131	18.2	21
C951762	MALLARDIS	7/12/95	10:31 AM	7.1	7.4	141	22.8	8
C951961	MALLARDIS	8/9/95	10:50 AM	8.6	9.8	397	25.5	
C952222	MALLARDIS	9/6/95	10:15 AM	7.7	7.7	438	24.6	18
C952224	MALLARDIS	9/6/95	10:15 AM	7.2	7.7	438	24.6	18

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C942069	MAZE	10/20/94	11:30 AM	7.7	8.6	536	16.9	21
C941988	MIDDLER	10/1/94	9:00 AM			500	17.7	
C941989	MIDDLER	10/2/94	9:00 AM			487	17.8	
C941990	MIDDLER	10/3/94	9:00 AM			495	17.6	
C942013	MIDDLER	10/4/94	9:00 AM			490	16.3	
C942014	MIDDLER	10/5/94	9:00 AM			483	16.7	
C942015	MIDDLER	10/6/94	9:00 AM			475	16.9	
C942016	MIDDLER	10/7/94	9:00 AM			458	16.9	
C942017	MIDDLER	10/8/94	9:00 AM			446	16.9	
C942018	MIDDLER	10/9/94	9:00 AM			437	16.8	
C942019	MIDDLER	10/10/94	9:00 AM			432	16.6	
C942074	MIDDLER	10/20/94	7:30 AM	7.8	8.1	434	16.8	6
C942173	MIDDLER	11/17/94	1:00 PM	7.9	9.8	438	12.3	4
C942418	MIDDLER	12/20/94	2:00 PM	7.6	10.5	429	8.5	7
C950206	MIDDLER	1/26/95	10:39 AM	7	9.2	338	11.1	21
C950404	MIDDLER	2/16/95	12:25 PM	7	6.3	477	11.7	10
C950692	MIDDLER	3/20/95	9:50 AM	7.3	7.9	315	15.0	23
C950878	MIDDLER	4/20/95	9:12 AM	7.5	11.3	223	14.1	11
C951218	MIDDLER	5/17/95	9:25 AM	7.1	8	163	18.0	12
C951567	MIDDLER	6/21/95	10:30 AM	7.3	7.6	230	21.4	12
C951813	MIDDLER	7/19/95	8:45 AM	7.4	6.1	199	24.8	12
C951815	MIDDLER	7/19/95	8:45 AM	7.4	6.1	199	24.8	11
C952012	MIDDLER	8/16/95	9:07 AM	7.5	7.9	201	24.6	
C952301	MIDDLER	9/13/95	11:44 AM	7.8	7.4	231	23.4	
C942075	MRIVBACON	10/20/94	6:45 AM	7.7	7.7	471	17.2	6
C942043	NATOMAS	10/13/94	12:00 PM	8	10.6	573	20.1	30
C942078	OLDRIVBACISL	10/18/94	12:00 PM			665	15.1	
C942079	OLDRIVBACISL	10/18/94	12:00 PM			665	15.1	
C942080	OLDRIVBACISL	10/20/94	10:00 PM			629	15.1	
C942081	OLDRIVBACISL	10/23/94	8:00 AM			638	15.0	
C942095	OLDRIVBACISL	10/25/94	12:00 PM			642	14.3	
C942096	OLDRIVBACISL	10/25/94	12:00 PM			642	14.3	
C942097	OLDRIVBACISL	10/27/94	10:00 PM			643	14.1	
C942098	OLDRIVBACISL	10/30/94	10:00 PM			670	13.9	
C942113	OLDRIVBACISL	11/1/94	12:00 PM			695	12.2	
C942114	OLDRIVBACISL	11/3/94	10:00 PM			704	11.8	
C942115	OLDRIVBACISL	11/6/94	8:00 AM			708	11.7	
C942152	OLDRIVBACISL	11/8/94	12:00 PM			695	8.0	
C942153	OLDRIVBACISL	11/8/94	12:00 PM			695	8.0	
C942154	OLDRIVBACISL	11/10/94	10:00 PM			667	7.6	
C942155	OLDRIVBACISL	11/13/94	8:00 AM			671	7.6	
C942194	OLDRIVBACISL	11/15/94	12:00 PM			732	7.8	
C942171	OLDRIVBACISL	11/17/94	2:05 PM	7.9	10.4	732	11.7	4
C942195	OLDRIVBACISL	11/17/94	10:00 PM			737	7.5	
C942196	OLDRIVBACISL	11/20/94	8:00 AM			893	7.2	
C942210	OLDRIVBACISL	11/22/94	12:00 PM			835	5.6	
C942211	OLDRIVBACISL	11/22/94	12:00 PM			835	5.6	
C942212	OLDRIVBACISL	11/24/94	10:00 PM			743	5.5	
C942213	OLDRIVBACISL	11/27/94	8:00 AM			742	5.2	
C942281	OLDRIVBACISL	11/29/94	12:00 PM			724	9.9	
C942282	OLDRIVBACISL	11/29/94	12:00 PM			724	9.9	
C942283	OLDRIVBACISL	12/1/94	10:00 PM			725	8.1	
C942284	OLDRIVBACISL	12/4/94	8:00 AM			786	8.1	
C942330	OLDRIVBACISL	12/6/94	2:00 PM			750	6.9	
C942331	OLDRIVBACISL	12/6/94	2:00 PM			747	6.9	
C942332	OLDRIVBACISL	12/9/94	8:00 PM			844	6.6	
C942333	OLDRIVBACISL	12/11/94	10:00 AM			757	6.6	
C942367	OLDRIVBACISL	12/13/94	12:00 PM			697	8.5	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C942368	OLDRIVBACISL	12/15/94	10:00 PM			596	8.2	
C942369	OLDRIVBACISL	12/18/94	8:00 AM			590	8.1	
C942416	OLDRIVBACISL	12/20/94	2:25 PM	7.6	10.6	388	8.5	7
C950001	OLDRIVBACISL	12/27/94	12:00 PM			505	7.7	
C950002	OLDRIVBACISL	12/27/94	12:00 PM			505	7.7	
C950003	OLDRIVBACISL	12/29/94	10:00 PM			478	8.7	
C950004	OLDRIVBACISL	1/1/95	8:00 AM			506	7.9	
C950044	OLDRIVBACISL	1/3/95	12:00 PM			513	14.3	
C950045	OLDRIVBACISL	1/5/95	10:00 PM			513	14.3	
C950046	OLDRIVBACISL	1/8/95	8:00 AM			581	14.2	
C950161	OLDRIVBACISL	1/17/95	12:00 PM			350	11.4	
C950162	OLDRIVBACISL	1/19/95	10:00 PM			293	11.2	
C950163	OLDRIVBACISL	1/22/95	8:00 AM			262	11.2	
C950213	OLDRIVBACISL	1/24/95	12:00 PM			233	13.3	
C950214	OLDRIVBACISL	1/24/95	12:00 PM			233	13.3	
C950204	OLDRIVBACISL	1/26/95	11:29 AM	6.8	6.5	235	11.0	24
C950215	OLDRIVBACISL	1/26/95	10:00 PM			231	13.3	
C950216	OLDRIVBACISL	1/29/95	8:00 AM			254	13.2	
C950320	OLDRIVBACISL	1/31/95	12:00 PM			270	10.4	
C950321	OLDRIVBACISL	1/31/95	12:00 PM			270	10.4	
C950322	OLDRIVBACISL	2/2/95	10:00 PM			290	10.3	
C950323	OLDRIVBACISL	2/5/95	8:00 AM			299	10.2	
C950361	OLDRIVBACISL	2/7/95	12:00 PM			277	9.0	
C950362	OLDRIVBACISL	2/9/95	10:00 PM			285	8.9	
C950363	OLDRIVBACISL	2/12/95	8:00 AM			277	8.5	
C950411	OLDRIVBACISL	2/14/95	12:00 PM			283	11.7	
C950412	OLDRIVBACISL	2/14/95	12:00 PM			283	11.7	
C950402	OLDRIVBACISL	2/16/95	12:45 PM	6.9	7.2	381	12.5	11
C950413	OLDRIVBACISL	2/16/95	10:00 PM			263	11.6	
C950414	OLDRIVBACISL	2/19/95	8:00 AM			272	11.4	
C950452	OLDRIVBACISL	2/21/95	12:00 PM			278	13.5	
C950453	OLDRIVBACISL	2/23/95	10:00 PM			303	13.2	
C950454	OLDRIVBACISL	2/26/95	8:00 AM			283	13.1	
C950587	OLDRIVBACISL	2/28/95	12:00 PM			270	11.6	
C950588	OLDRIVBACISL	3/2/95	10:00 PM			265	11.1	
C950589	OLDRIVBACISL	3/5/95	8:00 AM			273	10.6	
C950654	OLDRIVBACISL	3/7/95	12:00 PM			281	14.7	
C950655	OLDRIVBACISL	3/9/95	10:00 PM			312	14.2	
C950656	OLDRIVBACISL	3/12/95	8:00 AM			387	14.2	
C950699	OLDRIVBACISL	3/14/95	12:00 PM			620	11.2	
C950700	OLDRIVBACISL	3/14/95	12:00 PM			620	11.2	
C950701	OLDRIVBACISL	3/16/95	10:00 PM			391	11.3	
C950702	OLDRIVBACISL	3/19/95	8:00 AM			342	11.4	
C950690	OLDRIVBACISL	3/20/95	10:34 AM	7.1	7.5	329	15.0	26
C950722	OLDRIVBACISL	3/21/95	10:00 PM			319	11.4	
C950723	OLDRIVBACISL	3/23/95	8:00 AM			353	11.2	
C950724	OLDRIVBACISL	3/26/95	8:00 AM			394	11.0	
C950769	OLDRIVBACISL	3/28/95	12:00 PM			378	15.1	
C950770	OLDRIVBACISL	3/28/95	12:00 PM			378	15.1	
C950771	OLDRIVBACISL	3/30/95	10:00 PM			303	15.5	
C950772	OLDRIVBACISL	4/2/95	9:00 AM			301	15.5	
C950811	OLDRIVBACISL	4/4/95	12:00 PM			294	13.5	
C950812	OLDRIVBACISL	4/4/95	12:00 PM			294	13.5	
C950813	OLDRIVBACISL	4/6/95	10:00 PM			286	13.7	
C950814	OLDRIVBACISL	4/9/95	8:00 AM			260	13.7	
C950885	OLDRIVBACISL	4/11/95	12:00 PM			248	11.0	
C950886	OLDRIVBACISL	4/11/95	12:00 PM			248	11.0	
C950887	OLDRIVBACISL	4/13/95	10:00 PM			237	11.1	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C950888	OLDRIVBACISL	4/16/95	8:00 AM			244	11.2	
C950900	OLDRIVBACISL	4/18/95	12:00 PM			245	14.7	
C950901	OLDRIVBACISL	4/18/95	12:00 PM			245	14.7	
C950876	OLDRIVBACISL	4/20/95	9:45 AM	7.5	9.8	243	14.3	10
C950902	OLDRIVBACISL	4/20/95	10:00 PM			247	15.2	
C950903	OLDRIVBACISL	4/23/95	8:00 AM			234	15.1	
C951129	OLDRIVBACISL	4/25/95	12:00 PM			211	18.0	
C951130	OLDRIVBACISL	4/27/95	10:00 PM			214	17.4	
C951131	OLDRIVBACISL	4/30/95	8:00 AM			215	17.1	
C951161	OLDRIVBACISL	5/2/95	12:00 PM			204	14.9	
C951162	OLDRIVBACISL	5/2/95	12:00 PM			204	14.9	
C951163	OLDRIVBACISL	5/4/95	10:00 PM			213	14.7	
C951164	OLDRIVBACISL	5/7/95	8:00 AM			180	14.7	
C951364	OLDRIVBACISL	5/9/95	12:00 PM			173	16.3	
C951368	OLDRIVBACISL	5/9/95	12:00 PM			173	16.3	
C951369	OLDRIVBACISL	5/11/95	10:00 PM			168	16.0	
C951370	OLDRIVBACISL	5/14/95	8:00 AM			174	16.0	
C951378	OLDRIVBACISL	5/16/95	12:00 PM			161	17.3	
C951220	OLDRIVBACISL	5/17/95	10:04 AM	7.2	8	166	18.0	10
C951379	OLDRIVBACISL	5/18/95	10:00 PM			164	17.0	
C951380	OLDRIVBACISL	5/21/95	8:00 AM			161	16.9	
C951358	OLDRIVBACISL	5/23/95	12:00 PM			157	20.8	
C951359	OLDRIVBACISL	5/25/95	10:00 PM			145	20.7	
C951360	OLDRIVBACISL	5/28/95	8:00 AM			152	20.6	
C951451	OLDRIVBACISL	5/30/95	12:00 PM			145	17.9	
C951452	OLDRIVBACISL	6/1/95	8:00 AM			149	17.4	
C951453	OLDRIVBACISL	6/4/95	10:00 PM			150	17.1	
C951495	OLDRIVBACISL	6/6/95	12:00 PM			156	21.0	
C951496	OLDRIVBACISL	6/8/95	10:00 PM			163	20.6	
C951497	OLDRIVBACISL	6/11/95	8:00 AM			164	20.4	
C951555	OLDRIVBACISL	6/13/95	12:00 PM			176	18.9	
C951559	OLDRIVBACISL	6/13/95	12:00 PM			176	18.9	
C951560	OLDRIVBACISL	6/15/95	10:00 PM			169	18.5	
C951561	OLDRIVBACISL	6/18/95	8:00 AM			170	18.5	
C951608	OLDRIVBACISL	6/20/95	12:00 PM			176	25.0	
C951565	OLDRIVBACISL	6/21/95	12:51 PM	7.5	7.6	188	23.5	12
C951569	OLDRIVBACISL	6/21/95	12:51 PM	7.5	7.6	188	23.5	13
C951609	OLDRIVBACISL	6/22/95	10:00 PM			476	23.8	
C951610	OLDRIVBACISL	6/25/95	8:00 AM			162	23.9	
C951720	OLDRIVBACISL	6/27/95	12:00 PM			159	20.0	
C951721	OLDRIVBACISL	6/29/95	10:00 PM			149	19.9	
C951722	OLDRIVBACISL	7/2/95	8:00 AM			140	19.8	
C951756	OLDRIVBACISL	7/4/95	12:00 PM			138	19.8	
C951757	OLDRIVBACISL	7/6/95	10:00 PM			135	19.7	
C951758	OLDRIVBACISL	7/9/95	8:00 AM			134	19.5	
C951803	OLDRIVBACISL	7/11/95	12:00 PM			144	21.9	
C951807	OLDRIVBACISL	7/11/95	12:00 PM			144	21.9	
C951808	OLDRIVBACISL	7/13/95	10:00 PM			146	22.1	
C951809	OLDRIVBACISL	7/16/95	8:00 AM			151	21.9	
C951855	OLDRIVBACISL	7/18/95	12:00 PM			161	20.2	
C951817	OLDRIVBACISL	7/19/95	9:35 AM	7	6.6	170	24.7	9
C951856	OLDRIVBACISL	7/20/95	10:00 PM			162	20.0	
C951857	OLDRIVBACISL	7/23/95	8:00 AM			156	20.2	
C951917	OLDRIVBACISL	7/25/95	12:00 PM			154	26.2	
C951918	OLDRIVBACISL	7/27/95	10:00 PM			143	26.5	
C951919	OLDRIVBACISL	7/30/95	8:00 AM			136	26.3	
C951953	OLDRIVBACISL	8/1/95	12:00 PM			129	24.1	
C951954	OLDRIVBACISL	8/3/95	10:00 PM			130	24.0	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C951955	OLDRIVBACISL	8/6/95	8:00 AM			136	23.9	
C952000	OLDRIVBACISL	8/8/95	12:00 PM			142	24.5	
C952004	OLDRIVBACISL	8/8/95	12:00 PM			142	24.5	
C952005	OLDRIVBACISL	8/10/95	10:00 PM			137	24.5	
C952006	OLDRIVBACISL	8/13/95	8:00 AM			142	24.7	
C952052	OLDRIVBACISL	8/15/95	12:00 PM			139	22.7	
C952014	OLDRIVBACISL	8/16/95	9:57 AM	7.2	8.6	140	24.9	
C952053	OLDRIVBACISL	8/17/95	10:00 PM			140	22.9	
C952054	OLDRIVBACISL	8/20/95	8:00 AM			136	22.8	
C952114	OLDRIVBACISL	8/22/95	12:00 PM			149	20.2	
C952115	OLDRIVBACISL	8/24/95	10:00 PM			139	20.2	
C952116	OLDRIVBACISL	8/27/95	8:00 AM			139	19.9	
C952216	OLDRIVBACISL	8/29/95	12:00 PM			141	19.2	
C952217	OLDRIVBACISL	8/31/95	10:00 PM			142	19.1	
C952218	OLDRIVBACISL	9/3/95	8:00 AM			154	18.8	
C952289	OLDRIVBACISL	9/5/95	12:00 PM			144	20.0	
C952290	OLDRIVBACISL	9/7/95	10:00 PM			145	20.0	
C952291	OLDRIVBACISL	9/10/95	8:00 AM			146	20.3	
C952345	OLDRIVBACISL	9/12/95	12:00 PM			150	22.5	
C952349	OLDRIVBACISL	9/12/95	12:00 PM			151	22.6	
C952303	OLDRIVBACISL	9/13/95	12:41 PM	7.5	8.4	146	23.6	
C952350	OLDRIVBACISL	9/14/95	10:00 PM			150	22.6	
C952351	OLDRIVBACISL	9/17/95	8:00 AM			174	22.3	
C952397	OLDRIVBACISL	9/19/95	12:00 PM			161	18.2	
C952398	OLDRIVBACISL	9/21/95	10:00 PM			167	18.4	
C952399	OLDRIVBACISL	9/24/95	8:00 AM			166	18.0	
C952487	OLDRIVBACISL	9/26/95	12:00 PM			165	19.6	
C952488	OLDRIVBACISL	9/28/95	10:00 PM			176	19.8	
C942177	PESCADERO01	11/17/94	9:30 AM	8.1	10.3	1008	9.9	
C942422	PESCADERO01	12/20/94	11:00 AM	7.7	9.8	1332	9.3	
C950202	PESCADERO01	1/26/95	8:40 AM	7.3	5.9	1810	10.3	
C950210	PESCADERO01	1/26/95	8:40 AM	7.3	5.9	1810	10.3	
C950408	PESCADERO01	2/16/95	10:40 AM	6.6	5.8	2270	10.1	
C950696	PESCADERO01	3/20/95	8:20 AM	6.9	7	2210	15.4	
C950874	PESCADERO01	4/24/95	9:27 AM	7.7	9	720	17.5	
C950882	PESCADERO01	4/24/95	9:27 AM	7.7	9	720	17.5	
C951223	PESCADERO01	5/18/95	9:45 AM	7.1	6.9	545	20.7	
C951573	PESCADERO01	6/22/95	8:42 AM	7.4	8.1	1005	20.3	
C951820	PESCADERO01	7/20/95	9:00 AM	7.4	6.3	730	22.0	
C952017	PESCADERO01	8/17/95	8:22 AM	7.7	6.8	880	20.0	
C952307	PESCADERO01	9/14/95	8:30 AM	7.01	3.5	1160	20.0	
C952309	PESCADERO01	9/14/95	8:30 AM	7.2	3.7	1164	21.0	
C942073	ROCKSL	10/20/94	8:15 AM	8.5	8.8	655	16.5	5
C942045	SACRRIOVISTA	10/13/94	7:00 AM	7.8	7.9	184	17.5	7
C942049	SACWSACINT	10/13/94	12:19 PM	8.3	8.6	154	18.2	5
C942138	SACWSACINT	11/9/94	3:15 PM	7.6	10.3	226	12.0	9
C942363	SACWSACINT	12/13/94	3:30 PM	7.4		283	9.4	
C950122	SACWSACINT	1/17/95	8:20 AM	7.1	8.7	93	9.9	80
C950317	SACWSACINT	2/6/95	1:43 PM	7	10.1	116	11.5	46
C950458	SACWSACINT	2/9/95	10:45 AM	7.4	8	132	10.7	
C950461	SACWSACINT	2/9/95	10:45 AM	7.4	8	132	10.7	
C950469	SACWSACINT	2/14/95	1:45 PM	7.3	11	133	10.0	
C950477	SACWSACINT	2/16/95	3:32 PM	6.6	9.8	146	10.0	
C950482	SACWSACINT	2/21/95	1:19 PM	7.4	10	165	13.4	
C950485	SACWSACINT	2/21/95	1:19 PM	7.4	10	165	13.4	
C950493	SACWSACINT	2/23/95	11:18 AM	7.6	9.8	179	12.0	
C950501	SACWSACINT	2/27/95	1:50 PM	7.5	9.9	201	13.2	
C950526	SACWSACINT	3/2/95	12:30 PM	7.4	10.6	193	13.2	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C950582	SACWSACINT	3/6/95	6:50 AM	7	8.1	127	10.8	
C950585	SACWSACINT	3/6/95	6:50 AM	7	8.1	127	10.8	
C950632	SACWSACINT	3/9/95	11:35 AM	7.4	11.2	121	12.7	
C950646	SACWSACINT	3/13/95	3:50 PM	7.5	8.2	79	12.0	32
C950652	SACWSACINT	3/13/95	11:38 AM	7.4	10.7	83	11.5	
C950674	SACWSACINT	3/16/95	9:15 AM	7.5	10.9	84	11.1	
C950714	SACWSACINT	3/22/95	1:19 PM	7.4	10.8	81	11.5	
C950717	SACWSACINT	3/22/95	1:19 PM	7.4	10.8	81	11.5	
C950808	SACWSACINT	4/10/95	2:40 PM	7.6	10.1	112	14.4	24
C951180	SACWSACINT	5/11/95	11:15 AM	7.5	9.2	95	15.1	19
C951513	SACWSACINT	6/15/95	12:50 PM	7.4	9.7	109	17.4	10
C951769	SACWSACINT	7/13/95	12:08 PM	7	8.7	118	21.2	10
C951774	SACWSACINT	7/13/95	12:08 PM	7	8.7	118	21.2	10
C951966	SACWSACINT	8/10/95	10:42 AM	7.7	8.5	127	22.1	
C951971	SACWSACINT	8/10/95	10:42 AM	7.7	8.5	127	22.1	
C952229	SACWSACINT	9/7/95	10:47 AM	7.6	9.2	147	23.3	11
C952234	SACWSACINT	9/7/95	10:47 AM	7.6	9.5	147	23.3	11
C942169	SJRMOSSDALE	11/17/94	8:40 AM	8.4	10.1	890	11.3	8
C942170	SJRMOSSDALE	11/17/94	8:40 AM	8.4	10.1	890	11.3	8
C942415	SJRMOSSDALE	12/20/94	10:23 AM	7.5	9.8	956	11.0	12
C950203	SJRMOSSDALE	1/26/95	8:02 AM	7.3	8.8	377	11.0	200
C950400	SJRMOSSDALE	2/16/95	8:45 AM	7.2	10.9	485	10.1	15
C950401	SJRMOSSDALE	2/16/95	8:45 AM	7.2	10.9	485	10.1	16
C950689	SJRMOSSDALE	3/20/95	7:56 AM	7.2	7.2	298	14.9	24
C950875	SJRMOSSDALE	4/24/95	9:57 AM	7.5	9.1	184	17.3	14
C951221	SJRMOSSDALE	5/18/95	8:57 AM	6.7	8.8	143	18.1	14
C951222	SJRMOSSDALE	5/18/95	8:57 AM	6.7	8.8	143	18.1	14
C951571	SJRMOSSDALE	6/22/95	8:00 AM	7.1	8.8	235	20.0	20
C951572	SJRMOSSDALE	6/22/95	8:00 AM	7.1	8.8	235	20.0	20
C951818	SJRMOSSDALE	7/20/95	8:30 AM	7.6	6.9	217	22.9	25
C951819	SJRMOSSDALE	7/20/95	8:30 AM	7.6	6.9	217	22.9	25
C952015	SJRMOSSDALE	8/17/95	7:40 AM	7.1	7.1	628	21.7	
C952016	SJRMOSSDALE	8/17/95	7:40 AM	7.1	7.1	628	21.7	
C952308	SJRMOSSDALE	9/14/95	8:04 AM	7.2	7.2	382	20.5	22
C942129	STATENPP02	11/9/94	12:30 PM	7	2.9	608	11.5	
C942135	STATENPP02	11/9/94	12:30 PM	7	2.9	608	11.5	
C942360	STATENPP02	12/13/94	1:20 PM	6.9	9.5	1082	11.4	
C950119	STATENPP02	1/17/95	10:10 AM	7.4	6.5	831	9.5	
C950314	STATENPP02	2/6/95	11:50 AM	6.4	5.6	1004	13.0	
C950643	STATENPP02	3/13/95	1:03 PM	6.6	4.7	966	14.7	
C950805	STATENPP02	4/10/95	8:39 AM	7	8.1	1580	12.4	
C951508	STATENPP02	6/15/95	10:45 AM	6.8	4	436	19.4	
C951510	STATENPP02	6/15/95	10:45 AM	6.8	4	436	19.4	
C951771	STATENPP02	7/13/95	9:31 AM	6.9	7.4	123	21.9	
C951968	STATENPP02	8/10/95	8:10 AM	6.5	5.5	180	20.9	
C952231	STATENPP02	9/7/95	8:41 AM	6.9	5.8	528	21.5	
C942174	STATION09	11/17/94	12:35 PM	7.9	10.5	649	12.1	4
C942419	STATION09	12/20/94	1:30 PM	7.8	10.4	544	8.4	8
C950207	STATION09	1/26/95	10:22 AM	7.1	9.9	382	11.0	24
C950405	STATION09	2/16/95	11:50 AM	7.1	8.9	346	11.8	12
C950688	STATION09	3/20/95	9:29 AM	7.5	7.6	316	14.9	27
C950693	STATION09	3/20/95	9:29 AM	7.5	7.6	316	14.9	28
C950879	STATION09	4/20/95	8:57 AM	7	10.4	221	13.9	13
C951216	STATION09	5/17/95	9:22 AM	6.8	8	164	17.8	
C951217	STATION09	5/17/95	9:22 AM	6.8	8	164	17.8	
C951566	STATION09	6/21/95	9:40 AM	6.9	7.4	236	21.7	19
C951814	STATION09	7/19/95	8:20 AM	6.9	6.4	218	25.3	14
C952010	STATION09	8/16/95	8:49 AM	6.9	7.6	160	24.9	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C952011	STATION09	8/16/95	8:44 AM	7	7.7	163	25.1	
C952299	STATION09	9/13/95	11:06 AM	7.8	7.7	183	23.0	
C952300	STATION09	9/13/95	11:06 AM	7.8	7.7	183	23.0	
C942002	TWITCHELLPP01	10/1/94	10:30 AM			754	17.3	
C942003	TWITCHELLPP01	10/2/94	10:30 AM			750	17.3	
C942004	TWITCHELLPP01	10/3/94	10:30 AM			771	17.1	
C942012	TWITCHELLPP01	10/4/94	11:20 AM			776	17.7	
C942027	TWITCHELLPP01	10/4/94	11:20 AM			776	17.4	
C942028	TWITCHELLPP01	10/5/94	11:20 AM			830	17.1	
C942029	TWITCHELLPP01	10/6/94	11:20 AM			830	17.4	
C942030	TWITCHELLPP01	10/7/94	11:20 AM			836	17.5	
C942031	TWITCHELLPP01	10/8/94	11:20 AM			816	17.2	
C942032	TWITCHELLPP01	10/9/94	11:20 AM			826	16.5	
C942033	TWITCHELLPP01	10/10/94	11:20 AM			825	16.3	
C942060	TWITCHELLPP01	10/12/94	10:00 AM			809	15.2	
C942061	TWITCHELLPP01	10/12/94	10:00 AM			809	15.2	
C942062	TWITCHELLPP01	10/14/94	8:00 PM			776	15.2	
C942063	TWITCHELLPP01	10/17/94	6:00 AM					25
C942088	TWITCHELLPP01	10/19/94	12:00 PM			967	16.0	
C942089	TWITCHELLPP01	10/19/94	12:00 PM			967	16.0	
C942090	TWITCHELLPP01	10/21/94	10:00 PM			965	15.3	
C942091	TWITCHELLPP01	10/24/94	8:00 AM			908	15.0	23
C942105	TWITCHELLPP01	10/26/94	12:00 PM			921	12.7	
C942106	TWITCHELLPP01	10/26/94	12:00 PM			921	12.7	
C942107	TWITCHELLPP01	10/28/94	10:00 PM			915	12.4	
C942108	TWITCHELLPP01	10/31/94	8:00 AM			925	11.5	28
C942122	TWITCHELLPP01	11/2/94	12:00 PM			897	12.2	
C942123	TWITCHELLPP01	11/2/94	12:00 PM			897	12.2	
C942124	TWITCHELLPP01	11/4/94	10:00 PM			897	12.4	
C942125	TWITCHELLPP01	11/7/94	8:00 AM			1325	12.3	18
C942162	TWITCHELLPP01	11/9/94	12:00 PM			1110	7.3	
C942163	TWITCHELLPP01	11/9/94	12:00 PM			1144	7.3	
C942164	TWITCHELLPP01	11/11/94	10:00 PM			1107	6.8	
C942165	TWITCHELLPP01	11/16/94	8:00 AM	7	6.9	1045	6.8	24
C942203	TWITCHELLPP01	11/16/94	12:00 PM			1024	10.0	
C942204	TWITCHELLPP01	11/16/94	12:00 PM			1024	10.0	
C942205	TWITCHELLPP01	11/18/94	10:00 PM			1037	8.2	
C942206	TWITCHELLPP01	11/21/94	8:00 AM	6.8	8.5	1029	6.9	18
C942291	TWITCHELLPP01	11/30/94	11:07 AM			1201	8.4	
C942292	TWITCHELLPP01	11/30/94	11:07 AM			1201	8.4	
C942293	TWITCHELLPP01	12/2/94	11:07 AM			1214	9.2	
C942294	TWITCHELLPP01	12/5/94	11:07 AM			1336	7.7	16
C942337	TWITCHELLPP01	12/7/94	11:00 AM			1309	6.3	
C942338	TWITCHELLPP01	12/7/94	11:00 AM			1309	6.3	
C942339	TWITCHELLPP01	12/9/94	7:00 PM			1286	6.0	
C942340	TWITCHELLPP01	12/12/94	7:00 AM			1266	5.9	22
C942373	TWITCHELLPP01	12/14/94	12:00 PM			1292	7.9	
C942374	TWITCHELLPP01	12/14/94	12:00 PM			1292	7.9	
C942375	TWITCHELLPP01	12/16/94	10:00 PM			1383	7.1	
C942376	TWITCHELLPP01	12/19/94	8:00 AM			1230	7.0	10
C950008	TWITCHELLPP01	12/28/94	12:00 PM			1365	9.3	
C950009	TWITCHELLPP01	12/28/94	12:00 PM			1365	9.3	
C950010	TWITCHELLPP01	12/30/94	10:00 PM			1280	8.9	
C950011	TWITCHELLPP01	1/4/95	8:00 AM			1215	8.8	105
C950050	TWITCHELLPP01	1/4/95	12:00 PM			1265	11.6	
C950051	TWITCHELLPP01	1/4/95	12:00 PM			1262	11.5	
C950052	TWITCHELLPP01	1/6/95	10:00 PM			1460	11.4	
C950053	TWITCHELLPP01	1/9/95	8:00 AM			1336	11.5	25

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C950125	TWITCHELLPP01	1/11/95	12:00 PM			1120	7.9	
C950126	TWITCHELLPP01	1/11/95	12:00 PM			1120	7.9	
C950127	TWITCHELLPP01	1/13/95	10:00 PM			1372	7.9	
C950128	TWITCHELLPP01	1/18/95	8:00 AM			1525	7.6	13
C950167	TWITCHELLPP01	1/18/95	12:00 PM			1889	11.2	
C950168	TWITCHELLPP01	1/18/95	12:00 PM			1656	11.7	
C950169	TWITCHELLPP01	1/20/95	10:00 PM			1835	11.5	
C950170	TWITCHELLPP01	1/23/95	8:00 AM			1889	11.2	9
C950275	TWITCHELLPP01	1/25/95	11:00 AM			1856	13.9	
C950276	TWITCHELLPP01	1/25/95	11:00 AM			1856	13.9	
C950277	TWITCHELLPP01	1/27/95	9:00 PM			1649	13.7	
C950278	TWITCHELLPP01	1/30/95	7:00 AM	6.4	4.6	1764	14.4	8
C950327	TWITCHELLPP01	2/1/95	12:00 PM			1915	10.7	
C950328	TWITCHELLPP01	2/1/95	12:00 PM			1915	10.7	
C950329	TWITCHELLPP01	2/3/95	10:00 PM			1980	10.6	
C950330	TWITCHELLPP01	2/6/95	8:00 AM			1933	10.7	15
C950367	TWITCHELLPP01	2/8/95	12:00 PM			1430	8.5	
C950368	TWITCHELLPP01	2/8/95	12:00 PM			1430	8.5	
C950369	TWITCHELLPP01	2/10/95	10:00 PM			1588	8.9	
C950370	TWITCHELLPP01	2/13/95	8:00 AM			1863	8.8	
C950430	TWITCHELLPP01	2/15/95	12:00 PM			1374	12.7	
C950431	TWITCHELLPP01	2/15/95	12:00 PM			1374	12.7	
C950506	TWITCHELLPP01	2/15/95	10:40 AM	6.3	7.5	1328	12.3	13
C950432	TWITCHELLPP01	2/17/95	10:00 PM			1346	12.5	
C950433	TWITCHELLPP01	2/20/95	8:00 AM			1716	12.5	
C950507	TWITCHELLPP01	2/22/95	11:30 AM	6.5	4.8	16	13.8	19
C950508	TWITCHELLPP01	2/22/95	12:00 PM			1648	14.6	
C950509	TWITCHELLPP01	2/22/95	12:00 PM			1648	14.6	
C950510	TWITCHELLPP01	2/24/95	10:00 PM			1552	13.7	
C950511	TWITCHELLPP01	2/27/95	8:00 AM			1646	13.2	
C950512	TWITCHELLPP01	3/1/95	11:50 AM	6.6	5.6	1576	15.4	30
C950593	TWITCHELLPP01	3/1/95	12:15 PM			1599	12.5	
C950594	TWITCHELLPP01	3/1/95	12:15 PM			1599	12.5	
C950595	TWITCHELLPP01	3/3/95	10:15 PM			1808	12.3	
C950596	TWITCHELLPP01	3/5/95	8:15 AM			1842	12.2	
C950597	TWITCHELLPP01	3/8/95	8:31 AM	6.2	4.6	1820	13.1	25
C950660	TWITCHELLPP01	3/8/95	12:00 PM			1453	13.2	
C950661	TWITCHELLPP01	3/8/95	12:00 PM			1453	13.2	
C950662	TWITCHELLPP01	3/10/95	10:00 PM			1523	12.7	
C950663	TWITCHELLPP01	3/15/95	8:00 AM			1661	12.0	
C950664	TWITCHELLPP01	3/15/95	9:35 AM	6.3	4.9	1760	13.7	13
C950706	TWITCHELLPP01	3/15/95	12:00 PM			1764	9.0	
C950707	TWITCHELLPP01	3/15/95	12:00 PM			1764	9.0	
C950708	TWITCHELLPP01	3/17/95	10:00 PM			1919	8.8	
C950709	TWITCHELLPP01	3/20/95	8:00 AM			1807	8.7	
C950710	TWITCHELLPP01	3/22/95	10:08 AM	6.4	7.6	1406	13.6	28
C950728	TWITCHELLPP01	3/22/95	12:00 PM			1690	12.2	
C950729	TWITCHELLPP01	3/22/95	12:00 PM			1690	12.2	
C950730	TWITCHELLPP01	3/24/95	10:00 PM			1460	12.3	
C950731	TWITCHELLPP01	3/27/95	8:00 AM			1694	12.0	
C950732	TWITCHELLPP01	3/29/95	11:15 AM	6.2	8.5	1851	14.0	19
C950776	TWITCHELLPP01	3/29/95	12:00 PM			1846	16.4	
C950777	TWITCHELLPP01	3/29/95	12:00 PM			1846	16.4	
C950778	TWITCHELLPP01	3/31/95	10:00 PM			1541	16.4	
C950779	TWITCHELLPP01	4/3/95	8:00 AM			1492	16.4	
C950780	TWITCHELLPP01	4/5/95	10:00 AM	6.2	5.1	1346	18.2	29
C950818	TWITCHELLPP01	4/5/95	12:00 PM			1374	16.3	
C950819	TWITCHELLPP01	4/5/95	12:00 PM			1374	16.3	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C950820	TWITCHELLPP01	4/7/95	10:00 PM			1347	15.7	
C950821	TWITCHELLPP01	4/10/95	8:00 AM			1339	15.5	
C950822	TWITCHELLPP01	4/12/95	8:54 AM	6.7	17.2	1246	16.7	28
C950892	TWITCHELLPP01	4/12/95	12:00 PM			1282	11.8	
C950893	TWITCHELLPP01	4/12/95	12:00 PM			1282	11.8	
C950894	TWITCHELLPP01	4/14/95	10:00 PM			1179	11.8	
C950895	TWITCHELLPP01	4/17/95	8:00 AM			1154	11.3	
C950896	TWITCHELLPP01	4/19/95	10:00 AM	6.7	8.5	1046	12.6	26
C950907	TWITCHELLPP01	4/19/95	12:00 PM			1029	14.9	
C950908	TWITCHELLPP01	4/19/95	12:00 PM			1029	14.9	
C950909	TWITCHELLPP01	4/21/95	10:00 PM			1059	15.0	
C950910	TWITCHELLPP01	4/24/95	8:00 AM			1050	14.8	
C950911	TWITCHELLPP01	4/26/95	10:10 AM	7	7.3	1066	14.7	28
C951102	TWITCHELLPP01	4/26/95	12:00 PM			1083	17.6	
C951103	TWITCHELLPP01	4/26/95	12:00 PM			1083	17.6	
C951104	TWITCHELLPP01	4/28/95	10:00 PM			1060	17.1	
C951106	TWITCHELLPP01	5/1/95	8:00 AM	6.8	5.3	1013	17.2	31
C951135	TWITCHELLPP01	5/1/95	12:00 PM			1017	13.8	
C951136	TWITCHELLPP01	5/1/95	12:00 PM			1017	13.8	
C951137	TWITCHELLPP01	5/3/95	10:00 PM			1075	13.8	
C951138	TWITCHELLPP01	5/6/95	8:00 AM			991	13.5	
C951139	TWITCHELLPP01	5/8/95	8:17 AM	7	6	907	16.4	29
C951183	TWITCHELLPP01	5/8/95	12:00 PM			930	14.0	
C951184	TWITCHELLPP01	5/8/95	12:00 PM			930	14.0	
C951185	TWITCHELLPP01	5/10/95	10:00 PM			824	13.8	
C951186	TWITCHELLPP01	5/13/95	8:00 AM			854	13.7	
C951269	TWITCHELLPP01	5/15/95	12:00 PM			913	16.4	
C951270	TWITCHELLPP01	5/15/95	12:00 PM			913	16.4	
C951271	TWITCHELLPP01	5/17/95	10:00 PM			986	15.8	
C951272	TWITCHELLPP01	5/20/95	8:00 AM			1002	15.6	
C951273	TWITCHELLPP01	5/22/95	11:56 AM	6.7	5.7	868	18.5	35
C951328	TWITCHELLPP01	5/22/95	12:00 PM			955	19.3	
C951329	TWITCHELLPP01	5/22/95	12:00 PM			955	19.3	
C951330	TWITCHELLPP01	5/24/95	10:00 PM			783	19.5	
C951331	TWITCHELLPP01	5/27/95	8:00 AM			895	18.9	
C951332	TWITCHELLPP01	5/30/95	9:30 AM	7.2	4	932	20.5	28
C951401	TWITCHELLPP01	5/31/95	10:00 PM			847	16.9	
C951403	TWITCHELLPP01	5/31/95	10:00 PM			847	16.9	
C951404	TWITCHELLPP01	6/5/95	8:00 AM			884	17.1	
C951405	TWITCHELLPP01	6/5/95	10:56 AM	7	5	510	19.1	36
C951465	TWITCHELLPP01	6/5/95	12:00 PM			741	17.7	
C951466	TWITCHELLPP01	6/5/95	12:00 PM			741	17.7	
C951467	TWITCHELLPP01	6/7/95	10:00 PM			774	16.9	
C951468	TWITCHELLPP01	6/10/95	8:00 AM			763	16.9	
C951469	TWITCHELLPP01	6/12/95	9:23 AM	7.2	5	762	20.0	24
C951516	TWITCHELLPP01	6/12/95	12:00 PM			789	15.1	
C951517	TWITCHELLPP01	6/12/95	12:00 PM			789	15.1	
C951518	TWITCHELLPP01	6/14/95	10:00 PM			740	15.1	
C951519	TWITCHELLPP01	6/17/95	8:00 AM			817	14.9	
C951520	TWITCHELLPP01	6/19/95	9:00 AM	7	5.9	677	18.3	34
C951578	TWITCHELLPP01	6/19/95	12:00 PM			716	26.4	
C951579	TWITCHELLPP01	6/19/95	12:00 PM			716	26.4	
C951580	TWITCHELLPP01	6/21/95	10:00 PM			879	26.9	
C951581	TWITCHELLPP01	6/24/95	8:00 AM			782	26.8	
C951582	TWITCHELLPP01	6/26/95	10:13 AM	7.1		785	23.5	31
C951690	TWITCHELLPP01	6/26/95	12:00 PM			785	17.8	
C951691	TWITCHELLPP01	6/26/95	12:00 PM			785	17.8	
C951692	TWITCHELLPP01	6/28/95	10:00 PM			720	17.9	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C951693	TWITCHELLPP01	7/1/95	8:00 AM			674	17.8	
C951694	TWITCHELLPP01	7/3/95	9:07 AM	6.8	5.8	657	19.4	38
C951730	TWITCHELLPP01	7/10/95	10:40 AM	7.7	5.8	627	20.8	27
C951777	TWITCHELLPP01	7/10/95	12:00 PM			632	22.1	
C951778	TWITCHELLPP01	7/10/95	12:00 PM			632	22.1	
C951779	TWITCHELLPP01	7/12/95	10:00 PM			364	22.2	
C951780	TWITCHELLPP01	7/15/95	8:00 AM			607	22.1	
C951781	TWITCHELLPP01	7/17/95	10:30 AM	7.1	5.4	523	20.9	29
C951825	TWITCHELLPP01	7/17/95	12:00 PM			563	19.7	
C951826	TWITCHELLPP01	7/17/95	12:00 PM			563	19.7	
C951827	TWITCHELLPP01	7/19/95	10:00 PM			528	19.3	
C951828	TWITCHELLPP01	7/22/95	8:00 AM			622	18.9	
C951829	TWITCHELLPP01	7/24/95	9:45 AM	6.7	5.4	588	19.9	22
C951875	TWITCHELLPP01	7/24/95	12:00 PM			635	24.2	
C951876	TWITCHELLPP01	7/24/95	12:00 PM			635	24.2	
C951877	TWITCHELLPP01	7/26/95	10:00 PM			463	24.3	
C951878	TWITCHELLPP01	7/29/95	8:00 AM			503	24.8	
C951879	TWITCHELLPP01	7/31/95	10:36 AM	5.8	4.5	337	23.5	22
C951923	TWITCHELLPP01	7/31/95	12:00 PM			430	22.5	
C951924	TWITCHELLPP01	7/31/95	12:00 PM			430	22.5	
C951925	TWITCHELLPP01	8/2/95	10:00 PM			532	22.5	
C951926	TWITCHELLPP01	8/5/95	8:00 AM			549	22.1	
C951927	TWITCHELLPP01	8/7/95	12:39 PM	6.9	4.6	535	22.4	
C951974	TWITCHELLPP01	8/7/95	11:58 AM			531	24.3	
C951975	TWITCHELLPP01	8/7/95	11:58 AM			531	24.3	
C952131	TWITCHELLPP01	8/7/95	12:39 PM	6.9	4.6	535	22.4	
C951976	TWITCHELLPP01	8/9/95	9:52 PM			451	24.0	
C951977	TWITCHELLPP01	8/12/95	7:52 AM			457	24.2	
C951978	TWITCHELLPP01	8/14/95	9:40 AM	6.8	4.1	413	22.2	
C952022	TWITCHELLPP01	8/14/95	12:00 PM			415	20.9	
C952023	TWITCHELLPP01	8/14/95	12:00 PM			415	20.9	
C952024	TWITCHELLPP01	8/16/95	10:00 PM			414	21.0	
C952025	TWITCHELLPP01	8/19/95	8:00 AM			381	21.0	
C952026	TWITCHELLPP01	8/21/95	9:10 AM	6.6	6.8	406	20.8	
C952084	TWITCHELLPP01	8/21/95	12:00 PM			560	19.0	
C952085	TWITCHELLPP01	8/21/95	12:00 PM			580	18.5	
C952086	TWITCHELLPP01	8/23/95	10:00 PM			485	18.8	
C952087	TWITCHELLPP01	8/26/95	8:00 AM			539	18.9	
C952088	TWITCHELLPP01	8/28/95	7:51 AM	6.6	5.1	450	19.2	19
C952186	TWITCHELLPP01	8/28/95	12:00 PM			650	20.4	
C952187	TWITCHELLPP01	8/28/95	12:00 PM			633	21.6	
C952188	TWITCHELLPP01	8/30/95	10:00 PM			474	20.3	
C952189	TWITCHELLPP01	9/2/95	8:00 AM			629	20.3	
C952190	TWITCHELLPP01	9/5/95	10:30 AM	6.9	7	668	23.3	23
C952237	TWITCHELLPP01	9/6/95	10:00 PM			652	19.3	
C952238	TWITCHELLPP01	9/6/95	10:00 PM			652	19.3	
C952239	TWITCHELLPP01	9/9/95	8:00 AM			663	18.7	
C952241	TWITCHELLPP01	9/11/95	11:59 AM	6.6	4.6	583	19.5	24
C952319	TWITCHELLPP01	9/11/95	12:00 PM			621	20.6	
C952320	TWITCHELLPP01	9/11/95	12:00 PM			631	21.0	
C952321	TWITCHELLPP01	9/13/95	10:00 PM			622	20.7	
C952322	TWITCHELLPP01	9/18/95	8:00 AM			640	20.5	
C952323	TWITCHELLPP01	9/18/95	8:23 AM	7.2	4.3	665	20.3	28
C952367	TWITCHELLPP01	9/18/95	12:00 PM			657	18.8	
C952368	TWITCHELLPP01	9/18/95	12:00 PM			658	18.9	
C952369	TWITCHELLPP01	9/20/95	10:00 PM			716	19.0	
C952370	TWITCHELLPP01	9/23/95	8:00 AM			640	19.0	
C952371	TWITCHELLPP01	9/25/95	9:05 AM	6.6	4.6	648	18.6	

Table 20. Field Parameters (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	SampTime	pH	DO mg/L	EC umhos/cm	Temp C	Turb NTU
C952453	TWITCHELLPP01	9/25/95	12:00 PM			699	20.0	
C952454	TWITCHELLPP01	9/25/95	12:00 PM			711	20.0	
C952455	TWITCHELLPP01	9/27/95	10:00 PM			702	20.5	
C952456	TWITCHELLPP01	9/30/95	8:00 AM			577	20.0	
C942359	VENICE	12/13/94	11:55 AM	6.6	5.3	415	9.9	
C950118	VENICE	1/17/95	11:20 AM	7.2	2.9	710	10.6	
C951175	VENICE	5/11/95	8:10 AM	6.7	4.6	737	17.1	
C951176	VENICE	5/11/95	8:10 AM	6.7	4.6	737	17.1	
C951509	VENICE	6/15/95	9:30 AM	7.1	3.4	539	19.6	
C942068	VERNALIS	10/20/94	11:00 AM	7.9	8.9	322	15.7	18

Table 21. THMFP Data

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	EC umhos/cm	Turb. NTU	Color	TOC mg/L	DOC mg/L	UVA Abs./cm	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L
C942042	AMERICAN	10/13/94	57	1	5	NA	1.5	0.031	5	<10	130	<10	13
C942137	AMERICAN	11/9/94				NA	2.3	0.059	8	<10	280	<10	29
C942362	AMERICAN	12/13/94				NA	2.1	0.051	<10	<10	130	<10	13
C950121	AMERICAN	1/17/95				NA	2.2	0.078	<10	<10	150	<10	15
C950316	AMERICAN	2/6/95				NA	2.4	0.084	<10	<10	190	<10	19
C950459	AMERICAN	2/9/95				2.9	2.4	0.082					
C950467	AMERICAN	2/14/95				1.9	6.3	0.050					
C950474	AMERICAN	2/16/95				1.8	2.4	0.048					
C950475	AMERICAN	2/16/95				1.8	2.0	0.048					
C950483	AMERICAN	2/21/95				1.9	1.7	0.052					
C950490	AMERICAN	2/23/95				2.1	1.9	0.049					
C950491	AMERICAN	2/23/95				1.9	1.6	0.051					
C950499	AMERICAN	2/27/95				2.0	1.8	0.053					
C950523	AMERICAN	3/2/95				2.0	1.9	0.055					
C950524	AMERICAN	3/2/95				2.0	1.9	0.056					
C950583	AMERICAN	3/6/95				1.7	1.6	0.051					
C950629	AMERICAN	3/9/95				2.0	1.8	0.048					
C950630	AMERICAN	3/9/95				1.9	1.8	0.048					
C950645	AMERICAN	3/13/95					2.3	0.085	<10	<10	210	<10	21
C950650	AMERICAN	3/13/95				2.4	2.0	0.075					
C950671	AMERICAN	3/16/95				2.7	2.4	0.082					
C950672	AMERICAN	3/16/95				2.7	2.4	0.090					
C950715	AMERICAN	3/22/95				2.3	2.1	0.070					
C950807	AMERICAN	4/10/95					1.6	0.073	<10	<10	190	<10	19
C951179	AMERICAN	5/11/95					1.5	0.051	<10	<10	180	<10	18
C951512	AMERICAN	6/15/95					1.6	0.045	<10	<10	190	<10	19
C951773	AMERICAN	7/13/95					1.5	0.042	<10	<10	210	<10	21
C951970	AMERICAN	8/10/95					1.4	0.044	<10	<10	160	<10	16
C952233	AMERICAN	9/7/95					1.4	0.037	<10	<10	190	<10	19
C942172	BACON01	11/17/94		NA			7.8	0.359	200	<10	1100	38	130
C942414	BACON01	12/20/94		NA			17.5	0.767	140	<10	1100	13	120
C942417	BACON01	12/20/94		NA			17.7	0.761	150	<10	1200	14	130
C950205	BACON01	1/26/95		NA			25.7	0.930	130	<10	1600	11	170
C950403	BACON01	2/16/95		NA			16.4	0.618	130	<10	1300	12	140
C950691	BACON01	3/20/95		NA			21.0	0.864	180	<10	2000	18	220
C950877	BACON01	4/20/95		NA			10.1	0.475	190	<10	990	30	120
C951219	BACON01	5/17/95		NA			13.5	0.609	210	<10	1200	25	140
C951568	BACON01	6/21/95		NA			9.1	0.423	42	<10	420	<10	45
C951816	BACON01	7/19/95		NA			15.8	0.914	140	<10	1730	<10	180
C952013	BACON01	8/16/95		NA			14.4	0.822	86	<10	1720	<10	179
C952302	BACON01	9/13/95		NA			8.6	0.436	160	<10	810	13	94
C942070	BANKS	10/20/94	524	4	15		2.9	0.089	110	<10	180	64	30
C942175	BANKS	11/17/94	569	4	20		2.7	0.097	140	<10	260	47	39
C942420	BANKS	12/20/94	543	6	30		4.6	0.154	120	<10	250	49	37
C950208	BANKS	1/26/95	346	21	100		9.2	0.343	56	<10	640	<10	68
C950406	BANKS	2/16/95	404	10	50		7.6	0.271	82	<10	580	10	65
C950694	BANKS	3/20/95	488	4	30		5.2	0.167	110	<10	450	27	55
C950880	BANKS	4/24/95	437	3	25		4.9	0.151	92	<10	430	17	51
C951225	BANKS	5/18/95	197	6	25		3.5	0.124	42	<10	360	<10	39
C951575	BANKS	6/22/95	211	9	35		3.1	0.104	58	<10	310	10	36
C951822	BANKS	7/20/95	163	11	35		3.0	0.106	38	<10	380	<10	41
C952019	BANKS	8/17/95	199	20	40		2.7	0.109	110	<10	290	37	39
C952311	BANKS	9/14/95	220	NA	NA		2.6	0.095	42	<10	260	<10	29
C942044	BARKERNOBAY	10/13/94	262	19	40		2.8	0.099	26	<10	260	<10	28
C942130	BARKERNOBAY	11/9/94	371	10	50		7.7	0.234	35	<10	920	<10	95
C942354	BARKERNOBAY	12/13/94	417	9	30		5.0	0.149	37	<10	310	<10	34
C942355	BARKERNOBAY	12/13/94	414	9	30		5.0	0.151	37	<10	320	<10	35
C950114	BARKERNOBAY	1/17/95	272	132	400		17.0	0.882	22	<10	1100	<10	110

Table 21. THMFP Data (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	EC umhos/cm	Turb. NTU	Color	TOC mg/L	DOC mg/L	UVA Abs./cm	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L
C950309	BARKERNOBAY	2/6/95	287	50	250		15.7	0.767	35	<10	1200	<10	120
C950638	BARKERNOBAY	3/13/95	122	180	400		12.2	0.744	19	<10	1000	<10	100
C950800	BARKERNOBAY	4/10/95	256	38	150		11.4	0.562	50	<10	1300	<10	130
C951169	BARKERNOBAY	5/10/95	400	15	60		6.6	0.236	52	<10	680	<10	72
C951502	BARKERNOBAY	6/14/95	387	20	60		5.7	0.159	54	<10	520	<10	56
C951763	BARKERNOBAY	7/12/95	347	28	80		4.2	0.158	56	<10	530	<10	57
C951960	BARKERNOBAY	8/9/95	299	34	60		4.6	0.163	38	<10	550	<10	58
C952223	BARKERNOBAY	9/6/95	274				4.0	0.130	36	<10	440	<10	47
C942067	CLIFTON	10/20/94	444	8	15		2.9	0.085	92	<10	200	43	29
C942071	CLIFTON	10/20/94	451	8	30		2.7	0.085	92	<10	190	41	28
C942041	CONCOSPP1	10/13/94	567	4	20		2.3	0.079	98	5	130	67	24
C942046	CONCOSPP1	10/13/94	569	4	15		2.3	0.079	96	5	130	68	24
C942132	CONCOSPP1	11/9/94	988	4	15		2.9	0.088	140	16	190	110	36
C942357	CONCOSPP1	12/13/94	814	3	20		3.6	0.113	130	17	120	110	29
C950113	CONCOSPP1	1/17/95	710	7	40		6.4	0.232	130	<10	300	49	43
C950116	CONCOSPP1	1/17/95	709	6	35		6.5	0.217	130	<10	300	50	43
C950311	CONCOSPP1	2/6/95	533	16	80		9.1	0.336	98	<10	640	13	72
C950637	CONCOSPP1	3/13/95	322	9	40		5.5	0.210	66	<10	430	8	49
C950640	CONCOSPP1	3/13/95	322	8	60		5.7	0.199	67	<10	470	8	53
C950799	CONCOSPP1	4/10/95	640	7	50		6.6	0.226	140	<10	610	25	73
C950802	CONCOSPP1	4/10/95	635	7	50		6.6	0.243	130	<10	540	30	66
C951168	CONCOSPP1	5/10/95	316	7	30		3.9	0.128	64	<10	370	7	42
C951171	CONCOSPP1	5/10/95	307	7	30		3.8	0.128	65	<10	400	7	45
C951504	CONCOSPP1	6/14/95	214	10	35		4.2	0.131	23	<10	250	<10	27
C951765	CONCOSPP1	7/12/95	146	8	30		2.8	0.107	25	<10	340	<10	36
C951959	CONCOSPP1	8/9/95	148	8	25		2.8	0.101	24	<10	310	<10	33
C951962	CONCOSPP1	8/9/95	150	8	25		2.8	0.098	25	<10	310	<10	33
C952225	CONCOSPP1	9/6/95	187	NA	NA		2.7	0.092	25	<10	300	<10	32
C942072	DMC	10/20/94	522	8	20		2.7	0.085	110	5	170	63	29
C942176	DMC	11/17/94	545	4	25		2.8	0.096	78	<10	260	46	35
C942421	DMC	12/20/94	473	8	40		5.2	0.177	100	<10	320	29	41
C950209	DMC	1/26/95	643	76	150		8.4	0.249	87	<10	550	14	63
C950407	DMC	2/16/95	448	13	50		4.4	0.130	80	<10	320	18	39
C950695	DMC	3/20/95	298	31	100		5.7	0.205	50	<10	590	<10	63
C950881	DMC	4/24/95	225	19	60		3.9	0.111	45	<10	380	<10	42
C951224	DMC	5/18/95	191	17	40		3.4	0.116	40	<10	380	<10	41
C951574	DMC	6/22/95	262	20	40		3.2	0.104	47	<10	320	<10	36
C951821	DMC	7/20/95	198	25	40		3.0	0.098	47	<10	380	<10	42
C952018	DMC	8/17/95	533	26	40		2.9	0.095	120	<10	290	41	40
C952310	DMC	9/14/95	365	NA	NA		2.8	NA	74	<10	240	11	30
C942047	GREENES	10/13/94	176	4	10		1.5	0.038	10	<10	130	<10	14
C942136	GREENES	11/9/94	222	7	15		3.4	0.084	20	<10	360	<10	38
C942361	GREENES	12/13/94	195	8	30		4.0	0.105	14	<10	270	<10	28
C950120	GREENES	1/17/95	103	72	150		4.8	0.219	6	<10	300	<10	31
C950315	GREENES	2/6/95	144	46	100		3.7	0.129	12	<10	280	<10	29
C950460	GREENES	2/9/95				3.5	2.8	0.109					
C950466	GREENES	2/14/95				2.9	3.7	0.058					
C950468	GREENES	2/14/95				2.9	2.8	0.059					
C950476	GREENES	2/16/95				2.2	5.6	0.057					
C950484	GREENES	2/21/95				2.2	2.0	0.062					
C950492	GREENES	2/23/95				2.3	2.1	0.066					
C950500	GREENES	2/27/95				2.2	2.1	0.068					
C950525	GREENES	3/2/95				2.2	2.0	0.060					
C950584	GREENES	3/6/95				2.9	2.4	0.097					
C950644	GREENES	3/13/95	91	32	60	NA	2.6	0.101	6	<10	240	<10	25
C950649	GREENES	3/13/95				3.2	2.8	0.094					
C950651	GREENES	3/13/95				3.6	2.7	0.093					
C950673	GREENES	3/16/95				2.8	2.5	0.095					

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	EC umhos/cm	Turb. NTU	Color	TOC mg/L	DOC mg/L	UVA Abs./cm	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L
C950716	GREENES	3/22/95				2.6	2.4	0.094					
C950806	GREENES	4/10/95	113	29	50	2.1	2.1	0.113	5	<10	210	<10	21
C951178	GREENES	5/11/95	90	15	35		1.8	0.072	<10	<10	190	<10	19
C951511	GREENES	6/15/95	99	9	20		1.8	0.049	7	<10	170	<10	18
C951772	GREENES	7/13/95	97	8	15		1.5	0.045	<10	<10	180	<10	18
C951969	GREENES	8/10/95	111	6	10		1.6	0.052	<10	<10	180	<10	18
C952232	GREENES	9/7/95	136	8	20		1.8	0.054	<10	<10	210	<10	21
C942050	JERSEYPP01	10/13/94	2160	15	60		5.6	0.285	290	130	170	420	69
C942133	JERSEYPP01	11/9/94	2390	19	200		25.3	1.150	940	30	2200	470	320
C942358	JERSEYPP01	12/13/94	2340	20	200		28.3	1.410	570	<10	1400	220	200
C950641	JERSEYPP01	3/13/95	2870	6	500		75.2	3.580	830	<10	6800	110	750
C951505	JERSEYPP01	6/14/95	531	16	160		10.2	0.543	170	<10	1000	26	120
C951645	JERSEYPP01	6/14/95						0.054					
C951766	JERSEYPP01	7/12/95	452	15	350		9.4	0.519	160	<10	920	14	110
C951963	JERSEYPP01	8/9/95	285	14	70		5.0	0.264	100	<10	580	<10	66
C952226	JERSEYPP01	9/6/95	364	11	80		5.2	0.271	120	<10	570	14	67
C942048	MALLARDIS	10/13/94	9590	20	30		2.2	0.059	40	250	0	180	25
C942131	MALLARDIS	11/9/94	13800	17	15		2.3	0.064	32	230	140	140	35
C942356	MALLARDIS	12/13/94	8370	16	30		3.1	0.083	57	260	10	200	29
C950310	MALLARDIS	2/6/95	199	40	100		5.5	0.178	25	<10	380	<10	40
C950639	MALLARDIS	3/13/95	186	54	60		4.2	0.156	32	<10	340	<10	37
C950801	MALLARDIS	4/10/95	255	12	50		3.8	0.143	47	<10	400	<10	44
C951170	MALLARDIS	5/10/95	120	16	35		2.2	0.086	14	<10	250	<10	26
C951501	MALLARDIS	6/14/95	126	21	40		3.2	0.084	23	<10	240	<10	26
C951503	MALLARDIS	6/14/95	131	21	40		2.3	0.078	52	<10	390	<10	43
C951762	MALLARDIS	7/12/95	144	8	35		2.8	0.107	27	<10	340	<10	36
C951961	MALLARDIS	8/9/95	392	23	40		2.1	0.072	110	<10	160	53	27
C952222	MALLARDIS	9/6/95	445	NA	30		1.9	0.064	100	<10	150	60	26
C952224	MALLARDIS	9/6/95	446	18	30		1.9	0.064	100	<10	150	58	26
C942069	MAZE	10/20/94	527	21	30		3.2	0.084	93	<10	250	32	34
C942074	MIDDLER	10/20/94	428	6	20		2.7	0.085	88	<10	200	36	29
C942173	MIDDLER	11/17/94	428	4	20		2.9	0.100	110	<10	320	28	42
C942418	MIDDLER	12/20/94	424	7	40		6.0	0.210	95	<10	400	19	48
C950206	MIDDLER	1/26/95	332	21	120		10.7	0.384	54	<10	690	<10	73
C950404	MIDDLER	2/16/95	472	10	50		7.3	0.257	99	<10	550	16	64
C950692	MIDDLER	3/20/95	316	23	70		6.2	0.236	58	<10	600	<10	65
C950878	MIDDLER	4/20/95	231	11	50		4.0	0.142	44	<10	420	<10	45
C951218	MIDDLER	5/17/95	165	12	35		3.7	0.138	35	<10	370	<10	40
C951567	MIDDLER	6/21/95	227	12	35		3.6	0.117	52	<10	370	6	41
C951813	MIDDLER	7/19/95	203	12	35		3.2	0.119	51	<10	390	<10	43
C951815	MIDDLER	7/19/95	201	11	40		3.2	0.118	50	<10	380	<10	42
C952012	MIDDLER	8/16/95	210	9	25		2.8	0.108	42	<10	320	<10	35
C952301	MIDDLER	9/13/95	230	6	25		2.5	0.091	44	<10	250	<10	28
C942075	MRIVBACON	10/20/94	464	6	15	NA	2.8	0.088	88	<10	210	37	30
C942043	NATOMAS	10/13/94	581	30	60		6.5	0.179	66	<10	590	9	65
C942171	OLDRIVBACISL	11/17/94	674	4	20		2.5	0.092	160	20	210	120	41
C942416	OLDRIVBACISL	12/20/94	384	7	30		5.3	0.180	82	<10	360	16	43
C950204	OLDRIVBACISL	1/26/95	234	24	120		7.6	0.299	31	<10	520	<10	55
C950402	OLDRIVBACISL	2/16/95	386	11	50		7.3	0.245	78	<10	560	8	63
C950690	OLDRIVBACISL	3/20/95	308	26	175		6.8	0.274	62	<10	650	<10	70
C950876	OLDRIVBACISL	4/20/95	249	10	50		4.0	0.139	45	<10	430	<10	47
C951220	OLDRIVBACISL	5/17/95	166	10	35		3.3	0.124	42	<10	380	<10	41
C951565	OLDRIVBACISL	6/21/95	188	12	35		3.7	0.145	49	<10	410	5	45
C951569	OLDRIVBACISL	6/21/95	185	13	40		3.8	0.154	120	<10	960	14	110
C951817	OLDRIVBACISL	7/19/95	171	9	30		3.0	0.122	36	<10	350	<10	38
C952014	OLDRIVBACISL	8/16/95	137	6	25		2.7	0.098	20	<10	300	<10	32
C952303	OLDRIVBACISL	9/13/95	145	6	NA		2.2	0.079	18	<10	270	<10	28
C942177	PESCADERO01	11/17/94					2.6	0.085	160	17	280	77	45

Table 21. THMFP Data (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	EC umhos/cm	Turb. NTU	Color	TOC mg/L	DOC mg/L	UVA Abs./cm	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L
C942422	PESCADERO01	12/20/94					3.4	0.078					
C950202	PESCADERO01	1/26/95					4.6	0.106	130	20	130	110	30
C950210	PESCADERO01	1/26/95					4.6	0.106	140	20	150	110	33
C950408	PESCADERO01	2/16/95					3.2	0.127	110	34	69	100	22
C950696	PESCADERO01	3/20/95					3.2	0.156	130	58	79	140	28
C950874	PESCADERO01	4/24/95					4.7	0.138	140	<10	380	49	51
C950882	PESCADERO01	4/24/95					4.7	0.136	140	<10	380	49	51
C951223	PESCADERO01	5/18/95					5.6	0.157	200	6	390	100	60
C951573	PESCADERO01	6/22/95					4.0	0.108	150	8	270	100	44
C951820	PESCADERO01	7/20/95					4.7	0.145	180	<10	460	72	64
C952017	PESCADERO01	8/17/95					4.3	0.135	180	<10	360	83	54
C952307	PESCADERO01	9/14/95					7.9	0.242	280	<10	650	100	92
C952309	PESCADERO01	9/14/95					8.1	0.245	280	<10	640	110	91
C942073	ROCKSL	10/20/94	636	5	15		2.4	0.077	110	9	130	86	27
C942045	SACRRIOVISTA	10/13/94	192	7	15		1.7	0.053	22	<10	150	<10	17
C942049	SACWSACINT	10/13/94	157	5	10		1.2	0.033	10	<10	110	<10	12
C942138	SACWSACINT	11/9/94	226	9	20		3.0	0.078	24	<10	350	<10	37
C942363	SACWSACINT	12/13/94	283	25	25		3.6	0.101	23	<10	250	<10	27
C950122	SACWSACINT	1/17/95	96	80	200		4.8	0.197	5	<10	330	<10	34
C950317	SACWSACINT	2/6/95	133	46	60		3.0	0.110	6	<10	240	<10	25
C950458	SACWSACINT	2/9/95				3.4	3.6	0.125					
C950461	SACWSACINT	2/9/95				3.4		0.101					
C950469	SACWSACINT	2/14/95				2.7	2.9	0.056					
C950477	SACWSACINT	2/16/95				2.5	2.3	0.054					
C950482	SACWSACINT	2/21/95				2.3	2.0	0.059					
C950485	SACWSACINT	2/21/95				2.2	2.1	0.060					
C950493	SACWSACINT	2/23/95				2.2	2.0	0.065					
C950501	SACWSACINT	2/27/95				2.4	2.0	0.064					
C950526	SACWSACINT	3/2/95				2.3	2.0	0.064					
C950582	SACWSACINT	3/6/95				3.6	3.0	0.130					
C950585	SACWSACINT	3/6/95				3.8	3.0	0.129					
C950632	SACWSACINT	3/9/95				2.3	1.9	0.060					
C950646	SACWSACINT	3/13/95	77	32	60		2.7	0.112	5	<10	280	<10	29
C950652	SACWSACINT	3/13/95				3.9	2.6	0.094					
C950674	SACWSACINT	3/16/95				2.6	2.3	0.083					
C950714	SACWSACINT	3/22/95				2.8	2.4	0.099					
C950717	SACWSACINT	3/22/95				2.9	2.4	0.098					
C950808	SACWSACINT	4/10/95	112	24	50		2.0	0.078	<10	<10	180	<10	18
C951180	SACWSACINT	5/11/95	97	19	35		1.5	0.060	<10	<10	180	<10	18
C951513	SACWSACINT	6/15/95	111	10	20		1.6	0.048	10	<10	170	<10	18
C951769	SACWSACINT	7/13/95	116	10	15		1.4	0.045	<10	<10	170	<10	17
C951774	SACWSACINT	7/13/95	118	10	10		1.4	0.046	<10	<10	170	<10	17
C951966	SACWSACINT	8/10/95	132	9	20		1.5	0.050	<10	<10	170	<10	17
C951971	SACWSACINT	8/10/95	129	9	15		1.5	0.050	<10	<10	170	<10	17
C952229	SACWSACINT	9/7/95	156	11	25		1.9	0.057	<10	<10	220	<10	22
C952234	SACWSACINT	9/7/95	155	11	25		1.9	0.057	<10	<10	210	<10	21
C942169	SJRMOSSDALE	11/17/94	871	8	20		2.8	0.077	140	13	260	70	41
C942170	SJRMOSSDALE	11/17/94	796	8	20		2.7	0.076	140	13	260	70	41
C942415	SJRMOSSDALE	12/20/94	946	12	25		3.2	0.072	90	5	120	67	23
C950203	SJRMOSSDALE	1/26/95	383	200	250		10.6	0.388	47	<10	760	<10	80
C950400	SJRMOSSDALE	2/16/95	480	15	35		3.9	0.118	77	<10	260	21	33
C950401	SJRMOSSDALE	2/16/95	487	16	35		4.0	0.108	77	<10	260	21	33
C950689	SJRMOSSDALE	3/20/95	301	24	70		5.7	0.213	51	<10	600	<10	64
C950875	SJRMOSSDALE	4/24/95	184	14	40		3.5	0.111	33	<10	380	<10	41
C951221	SJRMOSSDALE	5/18/95	143	14	35		3.3	0.114	26	<10	400	<10	42
C951222	SJRMOSSDALE	5/18/95	143	14	35		3.3	0.113	25	<10	380	<10	40
C951571	SJRMOSSDALE	6/22/95	237	20	35		3.3	0.098	50	<10	320	7	36
C951572	SJRMOSSDALE	6/22/95	240	20	30		3.3	0.098	49	<10	320	7	36

Table 21. THMFP Data (cont.)

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	EC umhos/cm	Turb. NTU	Color	TOC mg/L	DOC mg/L	UVA Abs./cm	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L
C951818	SJRMOSSDALE	7/20/95	214	25	40		3.0	0.099	47	<10	370	<10	41
C951819	SJRMOSSDALE	7/20/95	218	25	40		3.0	0.100	50	<10	370	<10	41
C952015	SJRMOSSDALE	8/17/95	610	29	40		2.9	0.095	130	<10	300	56	43
C952016	SJRMOSSDALE	8/17/95	633	31	40		2.9	0.095	130	<10	310	51	44
C952308	SJRMOSSDALE	9/14/95	387	NA	35		2.7	0.083	81	<10	240	16	31
C942129	STATENPP02	11/9/94					59.3	2.330	270	<10	5600	<10	580
C942135	STATENPP02	11/9/94					59.8	2.300					
C942360	STATENPP02	12/13/94					46.1	2.060	410	<10	2800	50	320
C950119	STATENPP02	1/17/95					42.5	1.700	210	<10	2400	<10	260
C950314	STATENPP02	2/6/95					56.4	2.350	360	<10	3600	30	390
C950643	STATENPP02	3/13/95					51.8	1.960	380	<10	4000	30	430
C950805	STATENPP02	4/10/95					37.1	1.510	400	<10	1700	80	210
C951508	STATENPP02	6/15/95					9.8	0.455	180	<10	890	39	110
C951510	STATENPP02	6/15/95					10.0	0.456	180	<10	890	39	110
C951771	STATENPP02	7/13/95					6.6	0.334	40	<10	770	<10	80
C951968	STATENPP02	8/10/95					8.9	0.471	70		920		
C952231	STATENPP02	9/7/95					8.2	0.355	270		730	85	
C942174	STATION09	11/17/94	588	4	20		2.7	0.096	150	15	240	78	40
C942419	STATION09	12/20/94	538	8	30		5.1	0.173	120	<10	300	48	42
C950207	STATION09	1/26/95	375	24	100		8.8	0.331	63	<10	560	7	61
C950405	STATION09	2/16/95	352	12	60		8.1	0.285	71	<10	650	6	71
C950688	STATION09	3/20/95	301	27	100		5.9	0.222	54	<10	610	<10	65
C950693	STATION09	3/20/95	314	28	70		5.9	0.218	52	<10	620	<10	66
C950879	STATION09	4/20/95	226	13	50		3.9	0.137	45	<10	450	<10	49
C951216	STATION09	5/17/95	168	14	35		3.4	0.117	32	<10	380	<10	41
C951217	STATION09	5/17/95	165	40	40		3.4	0.117	32	<10	370	<10	40
C951566	STATION09	6/21/95	229	19	60		3.7	0.136	41	<10	420	<10	45
C951814	STATION09	7/19/95	216	14	40		3.4	0.135	51	<10	410	<10	45
C952010	STATION09	8/16/95	174	10	30		2.8	0.111	30	<10	340	<10	36
C952011	STATION09	8/16/95	171	10	30		2.8	0.110	32	<10	340	<10	37
C952299	STATION09	9/13/95	194	8	20		2.4	0.089	30	<10	250	<10	27
C952300	STATION09	9/13/95	187	7	20		2.5	0.089	30	<10	250	<10	27
C942165	TWITCHELLPP01	11/16/94	1020	24	125		16.0	0.653	400	<10	1500	72	180
C942206	TWITCHELLPP01	11/21/94	982	18	150		12.7	0.602	400	<10	1400	130	180
C950278	TWITCHELLPP01	1/30/95	1740	8	250		46.3	1.900	420	<10	3400	40	380
C950506	TWITCHELLPP01	2/15/95	1340	13	250		40.0	1.730	350	<10	2900	40	320
C950507	TWITCHELLPP01	2/22/95	1580	19	300		34.0	1.440	400	<10	2300	60	260
C950512	TWITCHELLPP01	3/1/95	1540	30	300		31.7	1.350	450	<10	2300	100	270
C950597	TWITCHELLPP01	3/8/95	1790	25	250		39.0	1.670	470	<10	3000	80	341
C950664	TWITCHELLPP01	3/15/95	1730	13	300		48.4	2.170	410	<10	3800	50	420
C950710	TWITCHELLPP01	3/22/95	1480	28	250		38.7	1.630	480	<10	3300	90	370
C950732	TWITCHELLPP01	3/29/95	1850	19	300		43.6	1.870	460	<10	3800	70	420
C950780	TWITCHELLPP01	4/5/95	1330	29	300		25.8	1.170	NA	NA	NA	NA	NA
C950822	TWITCHELLPP01	4/12/95	1260	28	70		27.8	1.220	460	<10	2700	50	310
C950896	TWITCHELLPP01	4/19/95	1050	26	250		24.4	1.060	350	<10	2000	50	230
C950911	TWITCHELLPP01	4/26/95	1070	28	250		22.9	1.030	270	<10	1600	40	180
C951106	TWITCHELLPP01	5/1/95	992	31	350		21.2	1.050	350	<10	1700	60	200
C951139	TWITCHELLPP01	5/8/95	922	29	300		19.4	1.000	310	<10	1700	40	200
C951273	TWITCHELLPP01	5/22/95	863	35	300		16.8	0.917	330	<10	1600	64	190
C951332	TWITCHELLPP01	5/30/95	912	28	250		19.2	1.050	340	<10	1800	60	210
C951405	TWITCHELLPP01	6/5/95	501	36	200		12.7	0.536	150	<10	1100	21	120
C951469	TWITCHELLPP01	6/12/95	783	24	300		15.5	0.822	290	<10	1400	61	170
C951520	TWITCHELLPP01	6/19/95	680	34	250		12.1	0.609	250	<10	1100	64	130
C951582	TWITCHELLPP01	6/26/95	771	31	300		18.3	0.806	250	<10	1800	38	200
C951694	TWITCHELLPP01	7/3/95	665	38	250		9.8	0.491	300	<10	880	79	120
C951730	TWITCHELLPP01	7/10/95	612	27	250		9.3	0.523	310	<10	870	80	120
C951781	TWITCHELLPP01	7/17/95	514	29	150		11.3	0.618	220	<10	1290	<10	150
C951829	TWITCHELLPP01	7/24/95	567	22	200		14.8	0.767	230	<10	1430	<10	160

Blank cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	EC umhos/cm	Turb. NTU	Color	TOC mg/L	DOC mg/L	UVA Abs./cm	CHBrCl2 mg/L	CHBr3 mg/L	CHCl3 mg/L	CHBr2Cl mg/L	TFPC mg/L
C951879	TWITCHELLPP01	7/31/95	330	22	120		8.9	0.458	130	<10	850	<10	95
C951927	TWITCHELLPP01	8/7/95	535	25	250		12.9	0.742	250	<10	1430	23	145
C951978	TWITCHELLPP01	8/14/95	407	14	160		10.1	0.572	180	<20	1200	<20	121
C952026	TWITCHELLPP01	8/21/95	400	16	160		10.8	0.618	180	<20	1280	<20	129
C952088	TWITCHELLPP01	8/28/95	472	19	250		15.7	0.893	200	<20	1620	<20	163
C952190	TWITCHELLPP01	9/5/95	614	23	200		14.1	0.795	320	<20	1390	41	142
C952241	TWITCHELLPP01	9/11/95	578	24	250		9.4	0.497	250	<10	750	57	79
C952323	TWITCHELLPP01	9/18/95	664	28	250		7.6	0.411	290	<10	630	110	70
C952371	TWITCHELLPP01	9/25/95	644	36	200		5.5	0.304	250	<10	470	100	53
C942359	VENICE	12/13/94		NA			23.7	1.080	90	<10	1700	<10	180
C950118	VENICE	1/17/95		NA			49.9	2.350	140	<10	3300	<10	340
C951175	VENICE	5/11/95		NA			49.9	2.720	260	<10	4400	<10	460
C951176	VENICE	5/11/95		NA			50.4	2.730	350	<10	5700	<10	600
C951509	VENICE	6/15/95		NA			26.8	1.430	250	<10	2700	10	290
C942068	VERNALIS	10/20/94	317	18	20		2.6	0.068	57	<10	230	12	28

Table 22. Minor Elements Data

Blanks cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	As mg/L	Ba mg/L	Cr mg/L	Cu mg/L	Mn mg/L	Hg mg/L	Ni mg/L	Se mg/L	Zn mg/L
C942070	BANKS	10/20/94	0.002			<0.005				<0.002	
C942175	BANKS	11/17/94	0.002			<0.005				<0.002	
C942420	BANKS	12/20/94	0.002			<0.005				<0.002	
C950208	BANKS	1/26/95	0.002			<0.005				<0.002	
C950406	BANKS	2/16/95	0.002			<0.005				<0.002	
C950694	BANKS	3/20/95	0.001			<0.005				<0.002	
C950880	BANKS	4/24/95	0.002			<0.005				<0.002	
C951225	BANKS	5/18/95	0.002			<0.005				<0.002	
C951575	BANKS	6/22/95	0.002	<0.05	<0.005	<0.005	0.037	<0.001	<0.005	<0.002	<0.005
C951822	BANKS	7/20/95	0.002								
C952019	BANKS	8/17/95	0.002								
C952311	BANKS	9/14/95	0.002				0.009				0.008
C942044	BARKERNOBAY	10/13/94	0.002			<0.005				<0.002	
C942130	BARKERNOBAY	11/9/94	0.002			<0.005				<0.002	
C942354	BARKERNOBAY	12/13/94	0.002			<0.005				<0.002	
C942355	BARKERNOBAY	12/13/94	0.002			<0.005				<0.002	
C950114	BARKERNOBAY	1/17/95	0.003			0.008				<0.002	
C950309	BARKERNOBAY	2/6/95	0.003			<0.005				<0.002	
C950638	BARKERNOBAY	3/13/95	0.002			0.006				<0.002	
C950800	BARKERNOBAY	4/10/95	0.003			0.006				<0.002	
C951169	BARKERNOBAY	5/10/95	0.002			<0.005				<0.002	
C951502	BARKERNOBAY	6/14/95	0.002	0.130	<0.005	<0.005	0.013	<0.001	<0.005	<0.002	0.021
C951763	BARKERNOBAY	7/12/95	0.003			<0.005				<0.002	
C951960	BARKERNOBAY	8/9/95	0.003								
C952223	BARKERNOBAY	9/6/95	0.003	0.060			0.014				0.011
C942041	CONCOSPP1	10/13/94	0.002			<0.005				<0.002	
C942046	CONCOSPP1	10/13/94	0.002			<0.005				<0.002	
C942132	CONCOSPP1	11/9/94	0.002			<0.005				<0.002	
C942357	CONCOSPP1	12/13/94	0.002			<0.005				<0.002	
C950113	CONCOSPP1	1/17/95	0.002			<0.005				<0.002	
C950116	CONCOSPP1	1/17/95	0.002			<0.005				<0.002	
C950311	CONCOSPP1	2/6/95	0.002			<0.005				<0.002	
C950637	CONCOSPP1	3/13/95	0.001			<0.005				<0.002	
C950640	CONCOSPP1	3/13/95	0.001			<0.005				<0.002	
C950799	CONCOSPP1	4/10/95	0.002			<0.005				<0.002	
C950802	CONCOSPP1	4/10/95	0.002			<0.005				<0.002	
C951168	CONCOSPP1	5/10/95	0.002			<0.005				<0.002	
C951171	CONCOSPP1	5/10/95	0.002			<0.005				<0.002	
C951504	CONCOSPP1	6/14/95	0.002	<0.05	<0.005	<0.005	0.013	<0.001	<0.005	<0.002	0.011
C951765	CONCOSPP1	7/12/95	0.002			<0.005				<0.002	
C951959	CONCOSPP1	8/9/95	0.002								
C951962	CONCOSPP1	8/9/95	0.002								
C952225	CONCOSPP1	9/6/95	0.002				0.018				
C942072	DMC	10/20/94								<0.002	
C942176	DMC	11/17/94	0.002			<0.005				<0.002	
C942421	DMC	12/20/94	0.002			<0.005				<0.002	
C950209	DMC	1/26/95	0.002			<0.005				0.001	
C950407	DMC	2/16/95	0.002			<0.005				0.001	
C950695	DMC	3/20/95	0.002			<0.005				<0.002	
C950881	DMC	4/24/95	0.001			<0.005				<0.002	
C951224	DMC	5/18/95	0.002			<0.005				<0.002	
C951574	DMC	6/22/95	0.002	0.062	<0.005	<0.005	0.038	<0.001	<0.005	<0.002	0.007
C951821	DMC	7/20/95	0.002			0.007					
C952018	DMC	8/17/95	0.002							0.001	
C952310	DMC	9/14/95	0.002	0.070			0.023			0.001	0.026
C942047	GREENES	10/13/94	0.002			<0.005				<0.002	
C942136	GREENES	11/9/94	0.002			<0.005				<0.002	
C942361	GREENES	12/13/94	0.002			<0.005				<0.002	

Table 22. Minor Elements Data (cont.)

Blanks cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	As mg/L	Ba mg/L	Cr mg/L	Cu mg/L	Mn mg/L	Hg mg/L	Ni mg/L	Se mg/L	Zn mg/L
C950120	GREENES	1/17/95	0.001			<0.005				<0.002	
C950315	GREENES	2/6/95	0.001			<0.005				<0.002	
C950644	GREENES	3/13/95	<0.001			<0.005				<0.002	
C950806	GREENES	4/10/95	0.001			<0.005				<0.002	
C951178	GREENES	5/11/95	<0.001			<0.005				<0.002	
C951511	GREENES	6/15/95	<0.001			<0.005				<0.002	
C951772	GREENES	7/13/95	0.001			<0.005				<0.002	
C951969	GREENES	8/10/95	0.001								
C952232	GREENES	9/7/95	0.002								
C942133	JERSEYPP01	11/9/94	0.003			<0.005				<0.002	
C942358	JERSEYPP01	12/13/94	0.003			<0.005				<0.002	
C950641	JERSEYPP01	3/13/95	0.004			<0.005				<0.002	
C951505	JERSEYPP01	6/14/95	0.006			<0.005				<0.002	
C951766	JERSEYPP01	7/12/95	0.005			<0.005				<0.002	
C951963	JERSEYPP01	8/9/95	0.004								
C952226	JERSEYPP01	9/6/95	0.005								
C951762	MALLARDIS	7/12/95	0.002			<0.005				<0.002	
C942069	MAZE	10/20/94								<0.002	
C951565	OLDRIVBACISL	6/21/95	0.001	0.052	<0.005	<0.005	0.024	<0.001	<0.005	<0.002	0.006
C951569	OLDRIVBACISL	6/21/95	0.001	<0.05	<0.005	<0.005	0.022	<0.001	<0.005	<0.002	0.005
C952303	OLDRIVBACISL	9/13/95	0.002				0.007				0.013
C942049	SACWSACINT	10/13/94	0.002			<0.005				<0.002	
C942138	SACWSACINT	11/9/94	0.002			<0.005				<0.002	
C942363	SACWSACINT	12/13/94	0.002			<0.005				<0.002	
C950122	SACWSACINT	1/17/95	0.001			0.005				<0.002	
C950317	SACWSACINT	2/6/95	0.001			<0.005				<0.002	
C950646	SACWSACINT	3/13/95	0.000			<0.005				<0.002	
C950808	SACWSACINT	4/10/95	0.001			<0.005				<0.002	
C951180	SACWSACINT	5/11/95	0.001			<0.005				<0.002	
C951513	SACWSACINT	6/15/95	<0.001			<0.005				<0.002	
C951769	SACWSACINT	7/13/95	0.001			<0.005				<0.002	
C951774	SACWSACINT	7/13/95	0.001			<0.005				<0.002	
C951966	SACWSACINT	8/10/95	0.001								
C951971	SACWSACINT	8/10/95	0.001								
C952229	SACWSACINT	9/7/95	0.002								
C952234	SACWSACINT	9/7/95	0.002								
C942169	SJRMOSSDALE	11/17/94	0.001			<0.005				0.001	
C942170	SJRMOSSDALE	11/17/94	0.001			<0.005				0.001	
C942415	SJRMOSSDALE	12/20/94	0.001			<0.005				0.001	
C950203	SJRMOSSDALE	1/26/95	0.002			<0.005				<0.002	
C950400	SJRMOSSDALE	2/16/95	0.001			<0.005				0.002	
C950401	SJRMOSSDALE	2/16/95	0.001			<0.005				0.002	
C950689	SJRMOSSDALE	3/20/95	0.002			<0.005				<0.002	
C950875	SJRMOSSDALE	4/24/95	0.001			<0.005				<0.002	
C951221	SJRMOSSDALE	5/18/95	0.002			<0.005				<0.002	
C951222	SJRMOSSDALE	5/18/95	0.001			<0.005				<0.002	
C951571	SJRMOSSDALE	6/22/95	0.001			<0.005				<0.002	
C951572	SJRMOSSDALE	6/22/95	0.001			<0.005				<0.002	
C951818	SJRMOSSDALE	7/20/95	0.002								
C951819	SJRMOSSDALE	7/20/95	0.002								
C952015	SJRMOSSDALE	8/17/95	0.002							0.002	
C952016	SJRMOSSDALE	8/17/95	0.002							0.002	
C952308	SJRMOSSDALE	9/14/95	0.002							0.002	
C942068	VERNALIS	10/20/94	0.002			<0.005				<0.002	

Table 23. Mineral Data

Blanks cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	Na mg/L	Cl mg/L	Br mg/L	Hardness mg/L	Ca mg/L	Mg mg/L	K mg/L	Alk. mg/L	SO4 mg/L	B mg/L	TDS mg/L
C942042	AMERICAN	10/13/94	3	3	<0.01	20	5	2	0.6	22	2	<0.1	40
C942137	AMERICAN	11/9/94			<0.01								
C942362	AMERICAN	12/13/94			<0.01								
C950121	AMERICAN	1/17/95			<0.01								
C950316	AMERICAN	2/6/95			<0.01								
C950645	AMERICAN	3/13/95			<0.01								
C950807	AMERICAN	4/10/95			<0.01								
C951179	AMERICAN	5/11/95			<0.01								
C951512	AMERICAN	6/15/95			<0.01								
C951773	AMERICAN	7/13/95			<0.01								
C951970	AMERICAN	8/10/95			<0.01								
C942172	BACON01	11/17/94			0.25								
C942414	BACON01	12/20/94			0.25								
C942417	BACON01	12/20/94			0.24								
C950205	BACON01	1/26/95			0.21								
C950403	BACON01	2/16/95			0.16								
C950691	BACON01	3/20/95			0.18								
C950877	BACON01	4/20/95			0.32								
C951219	BACON01	5/17/95			0.26								
C951568	BACON01	6/21/95			0.20								
C951816	BACON01	7/19/95			0.14								
C952013	BACON01	8/16/95			0.09								
C952302	BACON01	9/13/95			0.20								
C942070	BANKS	10/20/94	64	89	0.28	104	17	15	3.3	75	28	0.1	287
C942175	BANKS	11/17/94	70	96	0.36	107	18	15	3.8	79	33	0.1	308
C942420	BANKS	12/20/94	63	91	0.30	109	19	15	4	71	34	0.1	294
C950208	BANKS	1/26/95	31	42	0.10	95	20	11	4.1	58	37	0.2	218
C950406	BANKS	2/16/95	38	48	0.10	105	22	12	3.7	63	50	0.2	245
C950694	BANKS	3/20/95	56	59	0.14	111	23	13	2.7	67	64	0.5	288
C950880	BANKS	4/24/95	46	57	0.19	100	20	12	2.5	67	52	0.4	255
C951225	BANKS	5/18/95	19	19	0.06	46	10	5	1.5	38	20	0.1	120
C951575	BANKS	6/22/95	17	22	0.06	50	12	5	1.4	36	26	0.1	136
C951822	BANKS	7/20/95	15	15	0.05	39	9	4	1.3	30	21	<0.1	101
C952019	BANKS	8/17/95	17	18	0.05	52	11	6	1.3	43	20		122
C952311	BANKS	9/14/95	19	20	0.06	59	12	7	1.4	52	18	0.1	134
C942044	BARKERNOB	10/13/94	19	14	0.03	88	14	13	1.9	96	14	0.1	152
C942130	BARKERNOB	11/9/94	35	38	0.05	96	17	13	3.5	96	27	0.2	211
C942354	BARKERNOB	12/13/94	38	46	0.06	126	19	19	2.7	103	35	0.1	237
C942355	BARKERNOB	12/13/94	38	44	0.06	124	20	18	2.8	103	35	0.1	233
C950114	BARKERNOB	1/17/95	27	22	0.02	71	12	10	3.4	84	17	0.3	204
C950309	BARKERNOB	2/6/95	31	24	0.04	70	10	11	2.3	81	17	0.3	190
C950638	BARKERNOB	3/13/95	22	5	<0.01	32	6	4	1.4	48	6	0.2	115
C950800	BARKERNOB	4/10/95	28	22	0.09	66	10	10	2.4	77	15	0.2	173
C951169	BARKERNOB	5/10/95	34	26	0.06	132	20	20	2.5	129	35	0.4	236
C951502	BARKERNOB	6/14/95	31	23	0.07	137	22	20	2.5	129	35	0.4	230
C951763	BARKERNOB	7/12/95	28	22	0.06	115	18	17	2.4	109	29	0.3	207
C951960	BARKERNOB	8/9/95	21	14	0.04	106	16	16	2	104	22	0.2	174
C952223	BARKERNOB	9/6/95	21	16	0.04	91	15	13	2	87	21	0.2	163
C942067	CLIFTON	10/20/94	52	70	0.19	100	17	14	3.1	74	27	0.1	246
C942071	CLIFTON	10/20/94	52	73	0.19	94	16	13	3	76	26	0.1	247
C942041	CONCOSPP1	10/13/94	71	106	0.34	101	14	16	3.3	76	26	0.2	308
C942046	CONCOSPP1	10/13/94	70	108	0.35	96	12	16	3.3	76	26	0.1	306
C942132	CONCOSPP1	11/9/94	87	229	0.52	251	36	39	9.1	72	46	0.2	520
C942357	CONCOSPP1	12/13/94	104	178	0.57	137	20	21	6.3	74	40	<0.1	437
C950113	CONCOSPP1	1/17/95	85	123	0.34	158	27	22	4.9	86	62	0.2	405
C950116	CONCOSPP1	1/17/95	84	118	0.35	158	27	22	4.8	87	65	0.2	413
C950311	CONCOSPP1	2/6/95	53	66	0.14	143	26	19	3.8	75	71	0.2	316
C950637	CONCOSPP1	3/13/95	28	32	0.08	94	18	12	2.4	64	35	0.2	185

Table 23. Mineral Data (cont.)

Blanks cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	Na mg/L	Cl mg/L	Br mg/L	Hardness mg/L	Ca mg/L	Mg mg/L	K mg/L	Alk. mg/L	SO4 mg/L	B mg/L	TDS mg/L
C950640	CONCOSPP1	3/13/95	28	33	0.08	97	19	12	2.4	66	35	0.2	191
C950799	CONCOSPP1	4/10/95	69	82	0.21	148	28	19	3.1	88	89	0.5	388
C950802	CONCOSPP1	4/10/95	69	76	0.22	146	27	19	3.1	85	89	0.5	370
C951168	CONCOSPP1	5/10/95	31	34	0.09	74	15	9	1.6	54	38	0.2	177
C951171	CONCOSPP1	5/10/95	31	34	0.09	74	15	9	1.6	54	38	0.2	182
C951504	CONCOSPP1	6/14/95	21	23	0.07	54	12	6	1.4	40	23	0.2	127
C951765	CONCOSPP1	7/12/95	11	11	0.04	43	9	5	1.2	38	12	<0.1	94
C951959	CONCOSPP1	8/9/95	11	11	0.04	43	9	5	1	39	12		92
C951962	CONCOSPP1	8/9/95	12	11	0.03	43	9	5	1	38	12		94
C952225	CONCOSPP1	9/6/95	14	14	0.04	56	11	7	1.2	55	15		113
C942072	DMC	10/20/94	64	94	0.28	104	17	15	3.2	73	28	0.1	283
C942176	DMC	11/17/94	66	88	0.36	103	18	14	3.5	67	37	0.1	294
C942421	DMC	12/20/94	51	75	0.22	108	20	14	3.4	71	34	0.1	263
C950209	DMC	1/26/95	70	74	0.18	157	33	18	7	101	86	0.4	388
C950407	DMC	2/16/95	48	54	0.12	107	23	12	1.6	58	65	0.3	260
C950695	DMC	3/20/95	28	23	0.05	78	18	8	3.2	49	50	0.2	188
C950881	DMC	4/24/95	20	23	0.12	54	12	6	1.6	39	28	0.1	136
C951224	DMC	5/18/95	17	19	0.06	48	11	5	1.3	34	21	<0.1	113
C951574	DMC	6/22/95	26	29	0.09	66	15	7	1.5	43	33	0.2	156
C951821	DMC	7/20/95	18	18	0.06	48	11	5	1.4	33	29	0.1	121
C952018	DMC	8/17/95	57	66	0.20	123	26	14	2.2	68	76	0.3	316
C952310	DMC	9/14/95	36	40	0.12	88	19	10	1.8	58	47	0.2	214
C942047	GREENES	10/13/94	10	10	0.01	59	12	7	1.5	62	8	<0.1	108
C942136	GREENES	11/9/94	16	11	0.03	72	14	9	2.2	77	14	<0.1	127
C942361	GREENES	12/13/94	12	8	0.04	72	14	9	2.4	72	10	0.2	122
C950120	GREENES	1/17/95	9	3	0.04	36	8	4	1	41	5	<0.1	80
C950315	GREENES	2/6/95	7	6	<0.01	54	12	6	1.1	51	8	<0.1	94
C950644	GREENES	3/13/95	4	3	<0.01	30	7	3	1.1	31	6	<0.1	63
C950806	GREENES	4/10/95	5	3	0.08	46	10	5	0.8	45	5	<0.1	77
C951178	GREENES	5/11/95	4	2	<0.01	36	8	4	0.7	37	3	<0.1	68
C951511	GREENES	6/15/95	4	3	<0.01	36	8	4	0.7	40	4	<0.1	63
C951772	GREENES	7/13/95	5	4	<0.01	36	8	4	0.7	38	4	<0.1	69
C951969	GREENES	8/10/95	6	3	<0.01	43	9	5	0.9	45	4		74
C952232	GREENES	9/7/95	8	5	0.02	50	10	6	1	52	6		86
C942050	JERSEYPP01	10/13/94	318	549	1.68	321	38	55	11	103	85	0.2	1150
C942133	JERSEYPP01	11/9/94	333	598	1.94	402	59	62	13	126	140	0.4	1330
C942358	JERSEYPP01	12/13/94	279	562	1.45	530	95	71	9.1	139	202	0.4	1320
C950641	JERSEYPP01	3/13/95	348	590	1.12	740	141	94	13	183	364	0.9	1850
C951505	JERSEYPP01	6/14/95	58	83	0.27	129	25	16	1.9	85	39	0.2	312
C951766	JERSEYPP01	7/12/95	45	68	0.21	113	22	14	1.8	75	37	0.2	277
C951963	JERSEYPP01	8/9/95	25	37	0.14	72	14	9	1.2	58	18		166
C952226	JERSEYPP01	9/6/95	33	54	0.17	94	18	12	1.7	68	23	0.1	209
C942048	MALLARDIS	10/13/94	1640	3010	9.72	1080	73	217	63	80	398	0.9	5530
C942131	MALLARDIS	11/9/94	2570	4510	15.90	1510	111	299	76	80	589	1.1	8070
C942356	MALLARDIS	12/13/94	1410	2610	8.78	977	83	187	68	78	334	0.6	4700
C950310	MALLARDIS	2/6/95	14	15	0.03	68	14	8	1.8	55	14	<0.1	126
C950639	MALLARDIS	3/13/95	13	14	0.04	66	13	8	1.7	50	15	<0.1	110
C950801	MALLARDIS	4/10/95	21	23	0.13	74	15	9	1.9	60	24	0.2	152
C951170	MALLARDIS	5/10/95	8	7	0.02	36	8	4	1	37	8	<0.1	80
C951501	MALLARDIS	6/14/95	9	9	0.03	36	8	4	1.1	38	8	<0.1	84
C951503	MALLARDIS	6/14/95	10	9	0.03	39	9	4	1.1	38	7	<0.1	84
C951762	MALLARDIS	7/12/95	11	11	0.04	43	9	5	1.2	38	12	<0.1	92
C951961	MALLARDIS	8/9/95	50	79	0.27	60	9	9	2.8	40	18		215
C952222	MALLARDIS	9/6/95	54	86	0.31	72	11	11	2.8	52	20		238
C952224	MALLARDIS	9/6/95	55	86	0.30	72	11	11	2.8	52	20		244
C942069	MAZE	10/20/94	59	71	0.17	115	23	14	3	84	55	0.2	299
C942074	MIDDLER	10/20/94	47	65	0.17	96	17	13	3	76	26	0.1	238
C942173	MIDDLER	11/17/94	47	65	0.20	94	18	12	3.1	71	29	0.1	236

Table 23. Mineral Data (cont.)

Blanks cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	Na mg/L	Cl mg/L	Br mg/L	Hardness mg/L	Ca mg/L	Mg mg/L	K mg/L	Alk. mg/L	SO4 mg/L	B mg/L	TDS mg/L
C942418	MIDDLER	12/20/94	43	67	0.18	100	20	12	3.5	68	31	0.1	237
C950206	MIDDLER	1/26/95	28	37	0.09	95	20	11	4.5	56	38	0.2	212
C950404	MIDDLER	2/16/95	46	64	0.14	125	27	14	3.6	66	57	0.2	280
C950692	MIDDLER	3/20/95	28	28	0.06	87	20	9	3.4	52	49	0.2	197
C950878	MIDDLER	4/20/95	21	22	0.11	57	13	6	1.7	41	27	0.1	138
C951218	MIDDLER	5/17/95	14	15	0.04	42	10	4	1.4	32	17	<0.1	97
C951567	MIDDLER	6/21/95	21	26	0.08	57	13	6	1.4	36	27	0.1	140
C951813	MIDDLER	7/19/95	19	21	0.06	52	11	6	1.4	45	24	0.1	124
C951815	MIDDLER	7/19/95	18	21	0.06	50	12	5	1.5	35	24	0.1	122
C952012	MIDDLER	8/16/95	18	19	0.06	54	12	6	1.4	44	21	0.1	125
C952301	MIDDLER	9/13/95	20	22	0.07	62	13	7	1.5	54	23	0.1	139
C942075	MRIVBACON	10/20/94	50	70	0.20	104	20	13	3.3	81	33	0.2	258
C942043	NATOMAS	10/13/94	46	47	0.10	214	36	30	2.3	203	31	0.2	336
C942171	OLDRIVBACI	11/17/94	88	146	0.54	106	16	16	4.4	63	31	<0.1	356
C942416	OLDRIVBACI	12/20/94	38	56	0.17	97	19	12	3.1	68	28	0.1	215
C950204	OLDRIVBACI	1/26/95	19	22	0.05	70	15	8	2.9	49	22	<0.1	156
C950402	OLDRIVBACI	2/16/95	37	44	0.10	100	22	11	3.6	62	47	0.2	233
C950690	OLDRIVBACI	3/20/95	31	29	0.06	88	19	10	3.9	53	42	0.2	190
C950876	OLDRIVBACI	4/20/95	23	24	0.12	62	13	7	1.8	44	29	0.2	147
C951220	OLDRIVBACI	5/17/95	15	14	0.05	39	9	4	1.4	33	18	<0.1	99
C951565	OLDRIVBACI	6/21/95	18	18	0.06	46	10	5	1.3	35	21	0.1	113
C951569	OLDRIVBACI	6/21/95	17	18	0.05	46	10	5	1.4	35	20	0.1	116
C951817	OLDRIVBACI	7/19/95	15	15	0.05	46	10	5	1.2	37	17	<0.1	106
C952014	OLDRIVBACI	8/16/95	10	8	0.03	43	9	5	1.1	41	9		88
C952303	OLDRIVBACI	9/13/95	10	8	0.02	56	19	2	1	52	8	<0.1	92
C942177	PESCADEROO	11/17/94			0.44								
C942422	PESCADEROO	12/20/94			0.60								
C950202	PESCADEROO	1/26/95			0.78								
C950210	PESCADEROO	1/26/95			0.76								
C950408	PESCADEROO	2/16/95			1.00								
C950696	PESCADEROO	3/20/95			0.91								
C950874	PESCADEROO	4/24/95			0.25								
C950882	PESCADEROO	4/24/95			0.24								
C951223	PESCADEROO	5/18/95			0.43								
C951573	PESCADEROO	6/22/95			0.45								
C951820	PESCADEROO	7/20/95			0.30								
C952017	PESCADEROO	8/17/95			0.34								
C952307	PESCADEROO	9/14/95			0.51								
C952309	PESCADEROO	9/14/95			0.52								
C942073	ROCKSL	10/20/94	82	128	0.41	108	15	17	4.1	70	25	0.1	338
C942045	SACRRIOVIS	10/13/94	14	13	0.03	60	11	8	1.6	63	9	<0.1	116
C942049	SACWSACIN	10/13/94	9	5	<0.01	56	11	7	1.3	65	5	<0.1	96
C942138	SACWSACIN	11/9/94	16	9	0.02	81	16	10	2.1	84	14	0.1	135
C942363	SACWSACIN	12/13/94	0	0	0.04	0	0	0	0	0	0	<0.1	0
C950122	SACWSACIN	1/17/95	4	3	0.03	36	8	4	1.9	39	5	<0.1	76
C950317	SACWSACIN	2/6/95	6	3	0.04	54	12	6	1	54	5	<0.1	84
C950646	SACWSACIN	3/13/95	3	2	<0.01	34	7	4	1.2	33	2	<0.1	54
C950808	SACWSACIN	4/10/95	5	3	0.07	46	10	5	0.9	45	5	<0.1	79
C951180	SACWSACIN	5/11/95	4	2	<0.01	39	9	4	0.8	42	4	<0.1	73
C951513	SACWSACIN	6/15/95	5	4	0.01	48	11	5	0.8	45	4	<0.1	75
C951769	SACWSACIN	7/13/95	5	4	0.01	46	10	5	0.8	46	5	<0.1	77
C951774	SACWSACIN	7/13/95	6	4	<0.01	46	10	5	0.8	48	5	<0.1	81
C951966	SACWSACIN	8/10/95	7	3	<0.01	50	10	6	0.9	54	6		84
C951971	SACWSACIN	8/10/95	7	4	0.01	50	10	6	0.9	54	5		84
C952229	SACWSACIN	9/7/95	9	5	0.02	59	12	7	1	63	7		99
C952234	SACWSACIN	9/7/95	9	5		59	12	7	1	63	7		98
C942169	SJRMOSSDA	11/17/94	106	127	0.41	188	39	22	2.7	119	114	0.4	509
C942170	SJRMOSSDA	11/17/94	99	114	0.41	172	36	20	2.6	108	99	0.4	459

Table 23. Mineral Data (cont.)

Blanks cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	Na mg/L	Cl mg/L	Br mg/L	Hardness mg/L	Ca mg/L	Mg mg/L	K mg/L	Alk. mg/L	SO4 mg/L	B mg/L	TDS mg/L
C942415	SJRMOSSDA	12/20/94	116	139	0.42	214	46	24	4	121	123	0.5	540
C950203	SJRMOSSDA	1/26/95	36	36	0.08	98	21	11	6.4	78	45	0.2	241
C950400	SJRMOSSDA	2/16/95	53	58	0.13	110	24	12	2.5	60	73	0.3	277
C950401	SJRMOSSDA	2/16/95	54	59	0.13	107	23	12	2.5	60	75	0.3	283
C950689	SJRMOSSDA	3/20/95	28	23	0.05	78	18	8	3.4	49	53	0.2	188
C950875	SJRMOSSDA	4/24/95	15	16	0.10	46	10	5	1.4	36	22	0.1	111
C951221	SJRMOSSDA	5/18/95	12	11	0.04	36	8	4	1.2	31	15	<0.1	90
C951222	SJRMOSSDA	5/18/95	13	11	0.03	36	8	4	1.2	31	14	<0.1	90
C951571	SJRMOSSDA	6/22/95	23	24	0.08	60	14	6	1.5	42	30	0.1	147
C951572	SJRMOSSDA	6/22/95	23	24	0.08	60	14	6	1.5	43	30	0.2	150
C951818	SJRMOSSDA	7/20/95	21	20	0.06	50	12	5	1.4	36	31	0.1	129
C951819	SJRMOSSDA	7/20/95	21	20	0.06	53	13	5	1.5	37	32	0.1	132
C952015	SJRMOSSDA	8/17/95	69	76	0.23	146	32	16	2.4	80	88	0.4	364
C952016	SJRMOSSDA	8/17/95	69	78	0.23	146	32	16	2.4	83	92	0.4	376
C952308	SJRMOSSDA	9/14/95	40	43	0.13	91	20	10	1.8	57	54	0.3	228
C942129	STATENPP02	11/9/94			0.40								
C942135	STATENPP02	11/9/94			0.41								
C942360	STATENPP02	12/13/94			0.72								
C950119	STATENPP02	1/17/95			0.39								
C950314	STATENPP02	2/6/95			0.52								
C950643	STATENPP02	3/13/95			0.41								
C950805	STATENPP02	4/10/95			1.14								
C951508	STATENPP02	6/15/95			0.30								
C951510	STATENPP02	6/15/95			0.30								
C951771	STATENPP02	7/13/95			0.05								
C951968	STATENPP02	8/10/95			0.07								
C952231	STATENPP02	9/7/95			0.44								
C942174	STATION09	11/17/94	75	118	0.45	102	16	15	3.9	64	29	0.1	312
C942419	STATION09	12/20/94	62	90	0.30	109	19	15	3.9	69	31	0.1	292
C950207	STATION09	1/26/95	35	48	0.12	100	20	12	3.7	59	40	0.2	230
C950405	STATION09	2/16/95	31	39	0.08	102	21	12	3.7	62	41	0.2	217
C950688	STATION09	3/20/95	29	25	0.05	82	18	9	3.5	48	49	0.2	188
C950693	STATION09	3/20/95	29	26	0.05	84	19	9	3.2	51	52	0.2	198
C950879	STATION09	4/20/95	20	21	0.11	54	12	6	1.7	41	27	0.2	139
C951216	STATION09	5/17/95	14	15	0.04	42	10	4	1.4	32	18	<0.1	103
C951217	STATION09	5/17/95	14	14	0.05	42	10	4	1.4	32	18	<0.1	102
C951566	STATION09	6/21/95	22	25	0.07	57	13	6	1.4	38	28	0.2	144
C951814	STATION09	7/19/95	20	22	0.06	54	12	6	1.4	40	24	0.1	132
C952010	STATION09	8/16/95	13	13	0.04	50	10	6	1.2	42	14		106
C952011	STATION09	8/16/95	13	13	0.04	50	10	6	1.2	42	14		104
C952299	STATION09	9/13/95	15	15		44	11	4	1.2	41	9	<0.1	141
C952300	STATION09	9/13/95	15	15	0.04	44	11	4	1.2	52	7	<0.1	116
C942063	TWITCHELLP	10/17/94	113	188	0.59	217	41	28	4.6	93	82	0.3	619
C942091	TWITCHELLP	10/24/94	114	186	0.72	171	32	22	3.7	77	51	0.2	528
C942108	TWITCHELLP	10/31/94	118	196	0.72	159	29	21	3.8	80	38	0.2	521
C942125	TWITCHELLP	11/7/94	149	316	0.60	262	44	37	7.7	67	78	0.2	762
C942165	TWITCHELLP	11/16/94	122	209	0.65	202	38	26	4.2	75	74	0.2	590
C942206	TWITCHELLP	11/21/94	124	203	0.70	182	35	23	3.6	73	67	0.2	583
C942294	TWITCHELLP	12/5/94	145	270	0.67	261	52	32	4.7	66	92	0.3	758
C942340	TWITCHELLP	12/12/94	138	268	0.70	249	50	30	6.1	64	90	0.3	685
C942376	TWITCHELLP	12/19/94	134	237	0.50	257	50	32	6	60	128	0.3	720
C950011	TWITCHELLP	1/4/95	134	229	0.44	270	52	34	7.4	64	141	0.3	706
C950053	TWITCHELLP	1/9/95	156	255	0.59	281	55	35	8.4	63	148	0.4	799
C950128	TWITCHELLP	1/18/95	154	255	0.45	359	73	43	13	65	216	0.4	931
C950167	TWITCHELLP	1/18/95			0.42								
C950170	TWITCHELLP	1/23/95	186	321	0.54	539	112	63	7.7	74	323	0.4	1200
C950278	TWITCHELLP	1/30/95	176	280	0.42	504	106	58	7.5	75	309	0.4	1110
C950330	TWITCHELLP	2/6/95	185	328	0.56	546	110	66	5.8	87	318	0.4	1210

Table 23. Mineral Data (cont.)

Blanks cells indicate that a parameter was not analyzed.

Lab No.	Station Name	SampDate	Na mg/L	Cl mg/L	Br mg/L	Hardness mg/L	Ca mg/L	Mg mg/L	K mg/L	Alk. mg/L	SO4 mg/L	B mg/L	TDS mg/L
C950370	TWITCHELLP	2/13/95			0.55								
C950506	TWITCHELLP	2/15/95	136	236	0.40	317	71	34	6.6	106	166	0.46	861
C950507	TWITCHELLP	2/22/95	168	288	0.60	388	86	42	5.3	91	222	0.4	992
C950512	TWITCHELLP	3/1/95	170	286	0.65	410	82	50	4.6	92	207	0.3	967
C950597	TWITCHELLP	3/8/95	178	307	0.63	534	110	63	8.9	90	310	0.4	1190
C950664	TWITCHELLP	3/15/95	173	266	0.51	485	97	59	5.5	93	294	0.4	1120
C950710	TWITCHELLP	3/22/95	143	246	0.62	394	77	49	6.5	75	224	0.3	952
C950732	TWITCHELLP	3/29/95	174	286	0.49	540	106	67	5.5	101	331	0.4	1250
C950780	TWITCHELLP	4/5/95	134	227	0.64	329	66	40	3.6	86	172	0.3	811
C950822	TWITCHELLP	4/12/95	129	210	0.58	319	62	40	3.6	96	164	0.3	810
C950896	TWITCHELLP	4/19/95	108	175	0.53	263	51	33	1.7	87	125	0.3	681
C950911	TWITCHELLP	4/26/95	114	183	0.57	263	51	33	3	88	127	0.3	666
C951106	TWITCHELLP	5/1/95	119	192	0.65	209	41	26	3.2	82	78	0.3	616
C951139	TWITCHELLP	5/8/95	104	167	0.49	207	40	26	3	82	87	0.2	595
C951273	TWITCHELLP	5/22/95	97	166	0.50	180	34	23	2.6	82	66	0.2	527
C951332	TWITCHELLP	5/30/95	112	175	0.54	196	37	25	3.5	95	69	0.3	552
C951405	TWITCHELLP	6/5/95	52	76	0.23	119	23	15	3.3	58	50	0.2	304
C951469	TWITCHELLP	6/12/95	93	155	0.57	162	32	20	2.9	78	51	0.2	467
C951520	TWITCHELLP	6/19/95	79	129	0.46	140	28	17	2.4	68	44	0.2	423
C951582	TWITCHELLP	6/26/95	82	122	0.41	184	34	24	2.6	99	74	0.3	474
C951694	TWITCHELLP	7/3/95	77	127	0.46	129	25	16	2.5	70	36	0.2	395
C951730	TWITCHELLP	7/10/95	76	119	0.44	110	21	14	2.6	71	30	0.2	370
C951781	TWITCHELLP	7/17/95	60	89	0.30	106	21	13	2.1	62	38	0.2	314
C951829	TWITCHELLP	7/24/95	63	92	0.30	129	25	16	2.1	62	60	0.2	355
C951879	TWITCHELLP	7/31/95	33	49	0.15	74	15	9	7.6	42	36	0.1	205
C951927	TWITCHELLP	8/7/95	56	84	0.32	122	24	15	1.9	69	46	0.2	346
C951978	TWITCHELLP	8/14/95	46	68	0.24	88	17	11	1.6	62	24	0.1	251
C952026	TWITCHELLP	8/21/95	45	66	0.23	81	16	10	1.6	62	23	0.2	252
C952088	TWITCHELLP	8/28/95	52	75	0.26	113	22	14	1.9	67	42	0.2	300
C952190	TWITCHELLP	9/5/95	76	118	0.45	115	23	14	2.2	75	30	0.2	373
C952241	TWITCHELLP	9/11/95	69	111	0.40	113	22	14	2	75	25	0.2	356
C952323	TWITCHELLP	9/18/95	81	137	0.51	113	22	14	2.2	78	18	0.2	402
C952371	TWITCHELLP	9/25/95	80	131	0.49	114	21	15	2.2	78	13	0.2	371
C942359	VENICE	12/13/94			0.13								
C950118	VENICE	1/17/95			0.20								
C951175	VENICE	5/11/95			0.41								
C951176	VENICE	5/11/95			0.40								
C951509	VENICE	6/15/95			0.34								
C942068	VERNALIS	10/20/94	34	38	0.09	70	15	8	2	59	29	0.1	183

Chapter 13. QUALITY ASSURANCE/QUALITY CONTROL

Data verification assures credibility in the analysis, interpretation, and reporting of the program's monitoring activities and special studies.

This data quality review covers MWQI QA/QC data from the 1995 water year (October 1994 to September 1995). The data quality review involved comparing data from the quality control samples against acceptable control limits. Data that fell outside these control limits were flagged.

Two environmental laboratories provided analyses of MWQI water samples during the 1995 water year. DWR's Bryte Chemical Laboratory analyzed water samples for minerals, minor elements, and organics. Bryte took over THMFP analyses for water samples collected after June 1995. Clayton Environmental Consultants, Pleasanton, California, performed THMFP analyses of water samples using EPA Method 502.2. This method has acceptance limits of 80-120 percent (except for chlorine recoveries where Standard Method 4500-Cl-B with control limits of 75-125 percent were used). Clayton performed these analyses through June 1995 when its contract with DWR expired.

All QC data from Clayton were compiled. QC data from Bryte were compiled to achieve at least a 25 percent representation. Bryte is in the process of automating its data reporting procedures to enable easier and more complete access to its QC data.

The data quality review of Clayton analyses indicated that the data were acceptable. There was minor dibromochloromethane contamination of method blanks in December 1994. The level of contamination was not considered significant.

The available QC data indicated that overall, Bryte's mineral, minor elements, and THMFP results were acceptable. A few duplicate analyses exceeded the control limits but they were not considered serious enough to have a significant effect on the data quality. The results of the data quality review are presented in more detail below.

A. Sample Holding Times

1. Clayton Environmental Consultants

All results of the environmental samples analyzed for THMFP were reviewed (Table 24). There were no holding time exceedances.

The date from when THMFP samples are spiked to the date they are quenched is the incubation period and should not exceed seven days. The samples must be analyzed within 14 days of quenching. This 14-day period is the holding time.

Table 24. Frequency of Holding Time Exceedances for Clayton Environmental Consultants

Analyte	Holding Time (days)	No. of samples reviewed	Samples outside holding times	Frequency of Samples out of Limits (%)
Bromodichloromethane	14	192	0.00	0.00
Bromoform	14	192	0.00	0.00
Chloroform	14	192	0.00	0.00
Dibromochloromethane	14	192	0.00	0.00

2. Bryte Chemical Laboratory

Approximately 25 percent of mineral, minor elements and THMFP data were randomly reviewed for holding times (Table 25). There were no holding time exceedances.

Table 25. Frequency of Holding Time Exceedances for Bryte Chemical Laboratory

Analyte	Holding Time (days)	No. of samples reviewed	Samples outside holding times	Frequency of Exceedances (%)
Standard Minerals	180	35	0	0
Minor Elements	180	35	0	0
Bromide	14	55	0	0
TFPC	14	60	0	0.00

B. Method Blanks

Method blanks are used to detect and quantify contamination introduced through sample preparation or analysis procedure (some "background noise" is allowed).

1. Clayton Environmental Consultants

All of the method blanks performed in the study period were reviewed (Table 26). There were minor dibromochloromethane contamination problems on dates shown in Table 27. The laboratory took corrective action before analyzing the environmental samples, resulting in the data being of acceptable quality.

Table 26. Contamination Frequency of Clayton Environmental Consultants Method Blanks

Analyte	Acceptance Limits (μg/L)	Total Analyses Performed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
Bromodichloromethane	Non-detect	19	0.00	0.00
Bromoform	Non-detect	19	0.00	0.00
Chloroform	30	19	0.00	0.00
Dibromochloromethane	Non-detect	19	3	16
Surrogate	80-120	19	0.00	0.00

Table 27. Method Blank Contamination Dates for Clayton Environmental Consultants

Analyte	Acceptance Limits (μg/L)	Method Blank Recovery (μg/L)*	Analysis Date
Dibromochloromethane	Non-detect	10, 10	12/7/94
Dibromochloromethane	Non-detect	10	12/16/94

* Only method blank recoveries that were outside the control limits are shown.

2. Bryte Chemical Laboratory

According to laboratory personnel, method blank analyses were performed and corrective actions taken when contamination was detected. However, the process of recording and reporting the results of method blank analyses was instituted for only part of the water year (Table 28).

Table 28. Contamination Frequency of Bryte Chemical Laboratory Method Blanks

Analyte	Acceptance Limits (μ/l)	Analyses reviewed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
Bromodichloromethane	<0.1	5	0	0
Bromoform	<0.1	5	0	0
Chloroform	<0.1	5	0	0
Dibromochloromethane	<0.1	5	0	0
Surrogate	<0.1	5	0	0
Bromide	<0.1	5	0	0
Arsenic	<0.1	5	0	0
Selenium	<0.1	5	0	0
Boron	<0.1	9	0	0
Chlorine	<0.1	5	0	0
Nitrate	<0.1	9	0	0
Sulfate	<0.1	4	0	0
Ultraviolet absorbance	<0.1	24	0	0

C. Field Blanks

1. Clayton Environmental Consultants

Field blank samples were not collected for THMFP analyses.

2. Bryte Chemical Laboratory

Field blanks were used to monitor contamination originating from the collection, transportation, and storage of environmental samples. Laboratory prepared blank water was supplied to field personnel who processed it in the same manner as environmental samples--including filtration. All of the 23 filtered blanks analyzed were reviewed (Table 29). No samples were contaminated, indicating acceptable field operating procedures.

Table 29. Filtered Field Blank Contamination Results for Bryte Chemical Laboratory

Analyte	No. of samples reviewed	Samples outside limits	Frequency of Exceedances (%)
Standard Mineral	23	0	0
Minor Element	23	0	0

Laboratory prepared blank water was taken to the field and processed in the normal manner except that it was not taken through the filtration process. These unfiltered field blanks were used to monitor cross-contamination from containers and preservatives (Table 30). There was no indication of cross-contamination.

Table 30. Results of Unfiltered Field Blank Analyses

Analyte	No. of samples reviewed	Samples outside limits	Frequency of Exceedances (%)
Standard Mineral	22	0	0
Minor Element	22	0	0

D. Matrix Spike Recoveries

Matrix spike recoveries indicate the accuracy of recovering a known concentration of substance in the matrix. The results of a matrix spike indicate the accuracy of recovery given the interference peculiar to any given matrix. The percent recovery must fall within acceptable limits.

1. Clayton Environmental Consultants

All of the matrix spikes recoveries reported by Clayton were reviewed (Table 31). All of the recoveries were within control limits.

Table 31. Matrix Spike Recovery for Clayton Environmental Consultants

Analyte	Method Control Limit (%)	Total Analyses Performed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
Bromodichloromethane	80-120	17	0	0
Bromoform	80-120	17	0	0
Chloroform	80-120	17	0	0
Dibromochloromethane	80-120	17	0	0

2. Bryte Chemical Laboratory

a. <u>Minerals</u>

Twenty-five percent of the standard minerals QC matrix spike recoveries were reviewed (Table 32). All of the recoveries were within control limits.

Table 32. Standard Mineral Matrix Spike Recovery for Bryte Chemical Laboratory

Analyte	Method Control Limits (%)	Method (EPA)	Total Analyses Reviewed	Recoveries Outside Limits	Frequency of Samples out of Limits (%)
Na	82-116	273.1	31	0	0
Cl	89-114	325.2	58	0	0
Se	74-121	270.3	16	0	0
Ca	84-117	215.1	29	0	0
Mg	86-113	242.1	26	0	0
K	80-120	258.1	26	0	0
ALK	88-111	310.1	14	0	0
SO4	82-120	375.2	42	0	0
B	92-111	USGS 1-2115-85	45	0	0
Br	82-118	300.0	56	0	0
NO_3	78-118	353.2	18	0	0

b. Minor Elements

Approximately 25 percent of the minor elements QC matrix spike recoveries were reviewed (Table 33). They were all within control limits.

Table 33. Minor Element Matrix Spike Recovery for Bryte Laboratory

Analyte	Method Control Limits (%)	Method (EPA)	Total Analyses Reviewed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
As	77-121	260.3	18	0	0
Hg	80-120	245.1	3	0	0

E. Matrix Spike Duplicates

Matrix spike duplicate results indicate the precision of the analytical method in a given matrix. The difference between the duplicate samples is reported as a relative percent difference. This difference is compared against the individual laboratory control limit as a conservative approach to determining precision.

1. Clayton Environmental Consultants

All of the matrix spike duplicates reported by Clayton during the study period were reviewed (Table 34). All were within the acceptable control limits.

Table 34. Matrix Spike Duplicate Recovery for Clayton Environmental Consultants

Analyte	Acceptable RPD's (%)	Total Analyses Performed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
Bromodichloromethane	20	8	0	0
Bromoform	20	8	0	0
Chloroform	20	8	0	0
Dibromochloromethane	20	8	0	0
Chlorine	20	6	0	0

2. Bryte Chemical Laboratory

Approximately 25 of QC mineral matrix spike duplicates were reviewed. All were within control limits (Table 35).

Table 35. Standard Mineral Matrix Spike Duplicate Recovery for Bryte Chemical Laboratory

Analyte	Acceptance RPD(%)	Method (EPA)	Total Analyses Reviewed	Recoveries Outside Limits	Frequency of Samples out of Limits (%)
Na	15	273.1	15	0	0
Cl	15	325.2	13	0	0
Se	15	270.3	28	0	0
Ca	15	215.1	32	0	0
Mg	15	242.1	10	0	0
K	15	258.1	15	0	0
ALK	15	310.1	13	0	0
SO4	15	375.2	13	0	0
B	15	USGS 1-2115-85	13	0	0
Br	15	300.0	4	0	0
NO_3	15	353.2	19	0	0

F. Sample Duplicates

Sample duplicates are environmental samples divided into two separate aliquots and analyzed independently to determine the repeatability of the analytical method. RPD of the duplicate results must fall within established control limits.

1. Clayton Laboratory

All of the sample duplicate analyses performed were reviewed. All were within control limits (Table 36).

Table 36. Sample Duplicate Recovery for Clayton Environmental Consultants

Analyte	Acceptable RPD's (%)	Total Analyses Performed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
Bromodichloromethane	20	8	0	0
Bromoform	20	8	0	0
Chloroform	20	8	0	0
Dibromochloromethane	20	8	0	0
Chlorine	20	6	0	0

2. Bryte Chemical Laboratory

At least 50 percent of mineral sample duplicate analyses performed were reviewed (Table 37). Some calcium, boron, bromide, and DOC analyses were outside control limits. However, 90 percent of the analyses was within control limits, resulting in acceptable data quality.

Table 37. Standard Mineral Sample Duplicate Recovery for Bryte Chemical Laboratory

Analyte	Acceptance RPD(%)	Method (EPA)	Total Analyses Reviewed	Recoveries Outside Limits	Frequency of Samples out of Limits (%)
Na	15	273.1	17	0	0
Cl	15	325.2	44	0	0
Ca	15	215.1	17	1	6
Mg	15	242.1	18	0	
K	15	258.1	17	0	0
ALK	15	310.1	25	0	0
SO4	15	375.2	53	0	0
B	15	USGS 1-2115-85	31	1	3
Br	15	300.0	40	2	5
DOC	15	160.1	112	2	2
Turbidity	15	180.1	54	0	0

The results of minor element sample duplicate analyses are presented in Table 38. Results for copper, mercury, and selenium suggest significant problems with precision. However, not enough data exist to determine the scope of the potential problem.

Table 38. Minor Elements Sample Duplicate Recovery for Bryte Chemical Laboratory

Analyte	Acceptance RPD(%)	Method (EPA)	Total Analyses Reviewed	Recoveries Outside Limits	Frequency of Samples out of Limits (%)
As	15	206.3	12	0	0
Cu	15	220.1	4	3	75
Hg	15	245.1	3	1	33
Se	15	270.3	14	7	50

G. Laboratory Control Samples

Laboratory control samples recoveries were used to assess the accuracy of the analytical method. A known concentration of analyte was spiked into a clean medium and then analyzed. The results were compared to the laboratory's control limits.

1. Clayton Laboratory

All of Clayton's LCS analyses were reviewed. All were within control limits (Table 39), indicating good recoveries for THMFP samples.

Table 39. Laboratory Control Sample Recovery for Clayton Laboratory

Analyte	Method Control Limit (%)	Total Analyses Performed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
Bromodichloromethane	80-120	14	0	0
Bromoform	80-120	14	0	0
Chloroform	80-120	14	0	0
Dibromochloromethane	80-120	14	0	0

2. Bryte Chemical Laboratory

a. Minerals

Approximately 25 percent of mineral QC batches were reviewed (Table 40). All of the LCS recoveries were within control limits, indicating good recovery for minerals.

Table 40. Standard Mineral LCS Recovery for Bryte Chemical Laboratory

Analyte	Method Control Limits (%)	Total Analyses Reviewed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
Na	85-115	28	0	0
Cl	85-115	43	0	0
Se	80-120	11	0	0
Ca	85-115	22	0	0
Mg	85-115	35	0	0
K	85-115	29	0	0
SO4	85-115	41	0	0
DOC	85-115	98	0	0
Br	85-115	32	0	0
TDS	85-115	11	0	0

b. <u>Minor Elements</u>

Approximately 30 percent of minor elements QC analyses were reviewed (Table 41). All were within control limits, indicating good recovery for minor elements.

Table 41. Minor Element LCS Recovery for Bryte Chemical Laboratory

Analyte	Method Control Limits (%)	Total Analyses Reviewed	Analyses Outside Limits	Frequency of Samples out of Limits (%)
As	80-120	12	0	0
Cu	85-115	6	0	0
Hg	85-115	4	0	0.00

Chapter 14. SANITARY SURVEY OF THE STATE WATER PROJECT

> Sanitary survey updates identify needed measures to protect watersheds and water storage facilities of the State Water Project.

The California SWP is the nation's largest state-built water development project. It provides drinking water to approximately two-thirds of California's population. Major components of SWP include the multipurpose Oroville Dam and Reservoir, the California Aqueduct, the South Bay Aqueduct, the North Bay Aqueduct, a portion of the San Luis Reservoir, and four reservoirs in Southern California. In order to expand information on source water quality and meet State regulations, DWR's MWQI Program, recently conducted a Sanitary Survey of the SWP.

The requirement for a sanitary survey results from the California DHS Surface Water Treatment Regulation, which was put into effect on June 1, 1991. This rule requires that all water purveyors perform a sanitary survey of their source water watersheds by January 1, 1996. It is intended to implement the federal Surface Water Treatment Rule, which was promulgated on June 29, 1989 and became effective on December 31, 1990. In addition, the regulations require an update of the sanitary survey every five years.

The intent of a sanitary survey is to identify actual or potential sources of contamination in a watershed, along with a variety of other related factors which are capable of producing adverse impacts on the quality of water used for domestic drinking water purposes. For many regional and local water agencies that use SWP as a source of drinking water, the requirements mandated by SWTR required some interpretation regarding how the rule would be applied to agencies using SWP water. Both DHS and SWC were in agreement that the most practical approach to meeting the requirements of SWTR for a system as large and complex as SWP was to conduct a single sanitary survey of the entire water collection, storage, and distribution system. A major advantage for the water agencies of conducting a unified sanitary survey for SWP was that individual surveys would not be required of them for either new or amended water supply permits when SWP was the water source.

The first sanitary survey of SWP was completed in October 1990. The current survey updates the 1990 sanitary survey report, and documents the changes in the watersheds of SWP or water quality which have occurred over the five-year period since the initial survey. In addition, this report contains a review of the recommendations made in the initial sanitary survey report, and provides new recommendations for further action where appropriate.

In addition to the recommendations from the initial sanitary survey, the 1996 Sanitary Survey had several additional areas of focus. DHS requested that greater attention be given to several specific components of SWP. A more detailed investigation of the major reservoir watersheds, which include Del Valle, San Luis, Pyramid, Castaic, Silverwood, and Perris, along with the Barker Slough/North Bay Aqueduct watershed, and the open channel section of the Coastal Aqueduct, was requested. An emphasis was also placed on the occurrence of coliforms and the pathogens *Giardia* and *Cryptosporidium* in the water supply, and any related monitoring efforts. The 1996 Sanitary Survey also covered actual and potential contaminant sources in the watersheds, emergency action plans, and water quality conditions at representative points throughout SWP. Also included was an overview of the water supply system of each study area and of SWP.

Several important characteristics of each watershed related to land use, population, agriculture, grazing, hydrology, surface geology and hydrology, soils, and vegetation were described. The watershed boundaries for each study area were defined using both 7.5 and 15 minute United States Geological Survey topographical maps and DWR hydrologic maps (DWR 1987). In addition, the area of each watershed was measured.

The watersheds for each study area contained a variety of potential sources of contamination. Examples of these sources included: recreational use, highway/road runoff, leaking underground storage tanks, hazardous materials spills, wastewater treatment system spills, livestock grazing, landfill runoff, and agricultural runoff to source waters. The contaminant sources were identified through the use of field surveys, data base searches, existing literature, and interviews. Environmental data bases were searched to identify certain environmental concerns arising from activities in the watersheds and adjacent areas. Checklists of potential contamination sources were prepared and forwarded to DHS during research and preparation of the 1996 Sanitary Survey, in accordance with American Water Works Association guidelines.

Water quality data were reviewed and reported for several important monitoring locations both in the Sacramento-San Joaquin Delta and at various selected points along the California Aqueduct. Water quality parameters reviewed included: coliforms, *Giardia*, *Cryptosporidium*, DBP, organic carbon, bromide, total dissolved solids, chloride, algae and nutrients, metals, and other constituents of concern. The monitoring stations at Greenes Landing on the Sacramento River and Vernalis on the San Joaquin River were intended to provide an indication of the quality of water flowing into the Delta from these two major sources. The majority of these data was obtained from DWR's MWQI Program and from SWP's Water Quality Monitoring Program, with other external sources used as necessary. Any significant changes or trends in constituent levels were noted and are discussed in this report where appropriate.

Included in this update was a questionnaire sent out to the municipal contractors of SWP, inquiring about their projected ability to meet new and proposed drinking water rules. The questionnaire asked for water quality or treatment-related information, which included any difficulties the contractors might have experienced treating SWP water for drinking water purposes. It also invited discussion of the agencies' success in handling any problems encountered, and how they adapted the treatment system to handle each situation. The contractors were also asked to identify any known or potential threats to SWP water quality.

The survey provides conclusions and recommendations for each of the individual watersheds and/or water quality parameters. It is anticipated that a Sanitary Survey Action Committee will be formed to prioritize and follow through on the recommendations contained in the report. DHS, selected SWC, and DWR are likely to be among those represented on the committee. Because the State requires sanitary surveys to be conducted every five years, DWR is incorporating this requirement as an ongoing component of the MWQI Program.

The sanitary survey updated report was completed and submitted to DHS in December 1995. DWR published the final report in May 1996.

Chapter 15. MWQI MODELING SUPPORT BY DWR'S DIVISION OF PLANNING

> Modeling creates a better understanding of water quality and quantity relationships and provides tools to help predict changes under different events.

California municipalities taking water from the Sacramento-San Joaquin Delta are currently faced with an array of challenges. Besides having to compete for increasingly scarce water supplies, municipalities will have to implement higher levels of treatment to comply with anticipated changes to drinking water regulations. The cost of treating Delta waters to meet new disinfection by-product standards could be substantial. For this reason, DWR has a great interest in developing tools for understanding water quality mechanisms and evaluating management alternatives in the Delta.

DWR has models for the simulation of DBP precursors and THM formation in the Delta. Limitations at this point are related to the DICU model. The project to develop a new Delta island model (with dynamic DOC and salinity features) will nullify this current limitation.

DWR's DOP published in February 1995 a report entitled *Estimation of Delta Island Diversions and Return Flows* (*Estimation 1995*). That report documents the DICU model and associated routines. Several areas for future model enhancement were identified and progress on those and other items were discussed in the 1994 *DWR Bay Delta Evaluation Program Annual Report* (*Methodology* 1995). This section includes items from those reports and progress since they were released. This section is organized as follows:

A. DICU model improvements

B. THM predictive formulation improvements

C. Effect of improved models on DBP precursor transport simulation

D. Ongoing DICU Model improvements

E. Potential future directions

A. DICU MODEL IMPROVEMENTS

The following improvements were made to the DICU model.

1. <u>Drain Quality Specification</u>

Representative monthly values for agricultural return quality were developed for the following constituents: minerals, electrical conductivity, organic disinfection by-product precursors, biochemical oxygen demand, nutrients, dissolved oxygen, temperature, and chlorophyll *a* (*Representative 1995*). Much of this work was based on aggregated MWQI data provided by DWR's Division of Local Assistance (*MWQI 1995*). These values will replace DICU's former specification of agricultural return quality, which is based on DWR's Bulletin 123 (*Delta 1967*) and are limited to total dissolved solids and chloride. Monthly values for minerals, electrical conductivity, BOD, nutrients and chlorophyll *a* are aggregated by Bulletin 123 subregion. In general, the remaining values are aggregated by DOC subregion (*Five-Year 1994*).

Specification of representative values is considered to be an interim solution to modeling agricultural drain quality. A long-term solution is to simulate changes in agricultural return quality with dynamic mathematical formulations. A contract with the University of California, Davis was executed and work is being conducted to expedite the attainment of this goal with respect to salinity and organics (discussed later in this chapter).

2. <u>New Seepage and Irrigation Efficiency Estimates</u>

New spatially varying Delta seepage and irrigation efficiency estimates have been developed (*Methodology* 1995). The former version of the DICU model only accounted for the component of seepage inflow that is available for consumptive use by plants. And previously in the model, a constant Deltawide irrigation efficiency estimate of 70 percent was used. New estimates are based, in part, on data from DWR's Report 4 (*Quantity 1956*). A preliminary validation of the estimates was performed with historic data collected on Twitchell Island and is shown in Figure 30.

3. <u>Channel Diversion Disaggregation</u>

Agricultural diversions entrain eggs, larvae, and juvenile fish into the Delta islands. The DICU model can be used in conjunction with DSM2 hydrodynamics and particle tracking to assess the benefits of managing diversion timing and water use, set priorities on screen placement, and evaluate the benefits associated with relocating or consolidating diversion points. For this type of application, the DICU model was modified to disaggregate channel diversion estimates into two components: siphon inflow and seepage inflow. While disaggregation is not required to simulate hydrodynamics and water quality, it is essential for simulating particle fate and movement as particles are not entrained by seepage inflows.

B. THM PREDICTIVE FORMULATION IMPROVEMENTS

Work was conducted in 1995 (*Methodology* 1995) to improve on the trihalomethane predictive formulation discussed in the 1994 annual report (*Methodology* 1994). Calibration and validation of the improved formulation were conducted with the same data sets reported in the 1994 annual report. The formulation proposed last year included three components: a log-linear total THM or TTHM predictive equation developed by Malcolm Pirnie Inc. in support of EPA's WTP Simulation Program (*Bay-Delta* 1994); the bromine distribution factor relationships developed by Hutton and Chung (1994); and a bromine incorporation factor function calibrated with the data set reported in last year's annual report. The TTHM and bromine incorporation factor component were improved this year through the use of artificial neural networks.

Sensitivity of the TTHM neural network model to changes in bromide and DOC concentrations is illustrated in Figure 31 (Hutton et. al., 1996). The THM species prediction with the new formulation is within +/- 30 percent of observed values 70 percent of the time for chloroform (Figure 32), 95 percent of the time for dichlorobromomethane (Figure 33), 99 percent of the time for chlorodibromomethane (Figure 34), and 95 percent of the time for bromoform (Figure 35). The TTHM predictions lie within +/- 30 percent of observed values 99 percent of the time and within +/- 10 percent of observed values 66 percent of the time (Figure 36). Percent deviations were computed only when observed concentrations were greater than or equal to 5 µg/L. Motivated by these encouraging verification results, the THM chemistry predictor will be incorporated as a subroutine in DWR's new Delta water quality transport model, DSM2-Qual. No significant modifications are anticipated at this time.

C. EFFECT OF IMPROVED MODELS ON DBP PRECURSOR TRANSPORT SIMULATION

A recent 365-day real-tide simulation of DOC transport during water year 1993 showed good correspondence with observed data (Hutton et al. 1996). A previous attempt at a nonsteady-state simulation did not give acceptable results. Improvements are attributed to (1) modifications to DICU assumptions and (2) availability of autosampled data to drive the model.

1. Background

The seminal work on DBP precursors transport in the Delta was reported by Hutton and Chung (1992). With historic boundary conditions and steady-state assumptions, the authors simulated the transport of THM formation potential carbon (an organic precursor surrogate) and total dissolved solids (a bromide surrogate). Model results, reported as THM formation potentials, compared favorably with historical observations. Deviations were greatest at locations heavily influenced by agricultural return flows. Due to the prevalence of peat soils, agricultural drains are major contributors to organic materials in the Delta.

As more data became available, transport of DOC, ultraviolet absorbance at 254 nm (UV-254) and bromide were simulated for a 24-month period assuming monthly varying upstream conditions and a 25-hour repeating tide (Hutton and Enright 1993). A noteworthy result from this study was that organic precursor values were consistently underpredicted throughout the Delta, suggesting that the assumed hydrology may be understating actual agricultural return flows.

Motivated by the above hypothesis, the approach used to develop agricultural diversion and return hydrology was scrutinized (*Estimation* 1995) and modifications were made to more accurately account for seepage and spatial variation in crop irrigation efficiency (*Methodology* 1995). The modifications resulted in higher agricultural return flows, a better fit to historically-observed return flow data, and presumably a more accurate representation of organic precursor loads. This modified approach was adopted for the study described herein.

2. Study Procedure

DWR's Delta Simulation Model (Hutton and Chung 1992) is used to simulate hydrodynamics and DBP organic precursor transport in the Delta for 365 days from October 1, 1992 through September 30, 1993. Bromide transport was beyond the scope of this study but will be considered in future work. Hydrodynamics is run with a 1-minute time step, and transport was run with a 4-minute time step. Historic hydrodynamic boundary conditions include a 60-minute tidal stage, daily-varying riverine inflows and export demands, and computed monthly varying agricultural diversion and return flows. Exports from HARVEY O. Banks Pumping Plant are simulated on an hourly basis; operation of the facility's forebay intake gates is simulated on a 1-minute time step. Water quality boundary conditions are generally based on historic conditions as follows:

- Riverine Inflows--Organic water quality is based on daily autosampled data near the Sacramento River boundary and on available grab-sample data at the other boundaries.

- Agricultural Returns--Organics are assumed to vary monthly according to historically observed spatial patterns (*Representative* 1995). Yolo Bypass flow is assumed to be of agricultural return quality except when it conveys Sacramento River water during high-flow periods.

- Tidal Boundary--Due to an absence of data, organics are assumed as zero. The tidal boundary was shown elsewhere to have little impact on organic concentrations in the interior Delta (Hutton and Chung 1992).

3. <u>Study Results</u>

Simulated DOC and UV-254 generally correspond well with observed grab sample data collected throughout the Delta as shown in Figures 37, 38, and 39. Special attention was paid to drinking water diversions and to locations where several observed data points were available. The consistent underprediction of organics noted in earlier studies was not observed, providing further evidence that use of a modified agricultural diversion and return hydrology is warranted. The simulation captures an observed trend of high organics loads during the winter and early spring, a period when Delta water quality is often subject to the effects of precipitation runoff and agricultural salt leaching practices. Transport of UV-254 was observed to follow a time series pattern nearly identical to that of DOC at all locations investigated, supporting the assumption that conservative transport could be extended equally well to both constituents.

The simulated DOC and UV-254 time series at Banks are shown along with observed grab sample data in Figure 40. Organic DBP precursor concentrations are particularly important at Banks, for at this location water is diverted from the Delta into California's SWP. The model generally predicts stable conditions during the October-November 1992 and May-September 1993 periods, with DOC and UV-254 maintaining values of approximately of 3 mg/L and 0.1 cm^{-1}, respectively. Predictions and observed data track very well during these periods. The simulation predicts a rapid increase in organics for a two-month period beginning in December, peaking at 14 mg/L DOC and 0.55 cm^{-1} UV-254 on January 30, 1993. This rapid increase is followed by a gradual recession over the next three months. Simulated phasing of the transient condition is supported by observed data. The data, however, suggest lower peak and receding values. Maximum DOC and UV-254 grab samples were measured on January 26, 1993 at 10.5 mg/L and 0.36 cm^{-1}, respectively.

Given simulated organic precursor values, the THM predictor described above (Hutton et al. 1996) was applied to compute formation potential concentrations at Banks over the 365-day simulation period (Figure 41). The THM predictor was provided with a variety of additional input on raw water quality and water treatment reaction conditions to generate daily estimates. Because a bromide transport simulation was not conducted, a daily time series of bromide values was developed from available grab sample data for input to the THM predictor. The bromide time series input is characterized by high values (0.5 mg/L) during the October-December period, rapidly decreasing values (to 0.1 mg/L) through mid-January, increasing values through May (to 0.15 mg/L), and decreasing values (to 0.05 mg/L) by August. To define THM formation potential conditions, available chlorine dose was assumed to increase linearly with DOC concentration (1.1 x DOC), while reaction temperature, time and pH were fixed at 25°C, 3 hours, and 8.2, respectively.

Several observations and comments can be made regarding Figure 41. First, as expected, the total THM (TTHM) formation time series corresponds with the simulated pattern of organic precursor values at Banks. Second, the relative composition of THM species is biased towards brominated species for the first three months of the simulation period, in direct response to high concentrations of bromide observed at Banks. Third, the 100 µg/L TTHM drinking water standard is often not met under the assumed reaction conditions. However, computed values should be viewed as formation potentials rather than tap water concentrations since the model does not consider factors such as pretreatment of organics, variability of actual treatment plant conditions, peak attenuation in downstream reservoirs, source water blending, etc.

A convincing validation of the time series shown in Figure 41 is not possible due to a lack of observed data. Based on deviations shown in Figure 40 between grab sample data and transport simulation results, one would expect Figure 41 to overstate THM formation potential during the January-March 1993 period. Although the goodness of computed values for the remaining periods is subject to speculation, a limited analysis suggests that they are reasonable.

THM measurements were conducted by Metropolitan Water District of Southern California on Banks grab samples (collected by DWR) on May 1 and August 1, 1993. The May 1 sample had a bromide concentration of 0.17 mg/L and was spiked with an available chlorine dose of 4.0 mg/L. The August 1 sample had a bromide concentration of 0.06 mg/L and was spiked with an available chlorine dose of 3.4 mg/L. Both measurements were conducted under fixed reaction temperature, time and pH of 25°C, 3 hours and 8.2, respectively. These two measurements are compared with computed values in Figure 42. Computed values were generated by the THM predictor assuming simulated DOC and UV-254 values from Figure 40. Remaining inputs to the THM predictor were based on observed data.

Reasonably good correspondence between observed and computed values is shown in Figure 42. On May 1, TTHM was measured as 112 µg/L and computed as 96 µg/L, a 14 percent difference. Most of the deviation results from a 9 µg/L (23 percent) under-prediction of dichlorobromomethane formation. On August 1, TTHM was measured as 69 µg/L and computed as 64 µg/L, a 7 percent difference. Again, most of the deviation results from a 6 µg/L (31 percent) underprediction of dichlorobromomethane formation. In both cases chloroform formation was estimated within 2 percent of observed values.

4. Study conclusions

Transport of DOC and UV-254 in the Delta was simulated for a 365-day period. Predicted values compare favorably with observed data under stable Delta conditions. The predicted phase of peak organic loads corresponds with observations at HARVEY O. Banks Pumping Plant; however, the absolute magnitudes associated with peak organic loads are somewhat overestimated. A THM predictor developed in a companion paper was applied to compute formation potential throughout the simulation period. THM predictions, both total and individual species concentrations, matched very well with limited available data.

DWR's Delta Simulation Model has been calibrated and validated since about 1991 for simulating salinity transport. This work has been conducted under DOP's Bay-Delta Evaluation Program. Reasonable salinity simulations should presumably translate into reasonable bromide simulations, assuming adequate data are available to drive the model. As good bromide time series data are not available, bromide simulations will typically be conducted by computing bromide concentrations from EC time series data at model boundaries. Possible limitations of this approach are

(1) a lack of bromide data at the Benicia boundary and (2) poor correlations between EC and bromide at the Sacramento boundary. Although the latter limitation is expected to have minimal consequences on simulation results, the former is likely to be significant.

To obtain bromide and salinity data near Benicia, the MWQI Program recently implemented monthly sampling at Suisun Bay off Bulls Head Point near Martinez (Station D6). Field measurements and laboratory analyses of monthly samples obtained at this site include temperature, electrical conductivity, pH, dissolved oxygen, total dissolved solids, suspended solids, chloride, and bromide. The monthly data obtained for this sampling site will provide the information needed to compute bromide concentrations from EC time series data at the Benicia boundary.

D. ONGOING DICU MODEL IMPROVEMENTS

Ongoing model improvements include a new Delta Island model (agricultural drainage quality module and water balance module) and improvements to input data mentioned in the February 1995 report that are being incorporated into the new model (*Estimation* 1995).

1. Agricultural drainage Quality Module

Several years ago a dynamic agricultural drainage salinity model was developed (*Methodology* 1991) and implemented but later abandoned. The model was found to be unstable over long-term simulations, probably due to simplistic assumptions regarding salt residence time in the soil. A more recent concern was that, while the current DICU formulation may give sufficient resolution for a salt simulation, it was inadequate for a THM precursor simulation (in the interim, representative values are being used as discussed earlier in this chapter). The Delta Modeling Section received partial funding from the MWQI Program to address this concern; DWR entered into a contract with Professor Ken Tanji of UCD to develop and test a model for simulating Delta island drainage quality (salt/organics) that will interface with the DICU model and Delta Simulation Model 2. Because fate and transport of organics through soil is a poorly understood phenomenon, UCD's role may lead to a more credible model. Contract deliverables will include preparation of new model FORTRAN source code and documentation.

2. Water Balance Module

The MWQI Program also identified the need for peer review of the DICU model. Therefore, part of the contract described above was to perform a written review of the DICU model as described in the February 1995 report (*Estimation* 1995). Professor Tanji's review supports the items marked for improvement (Tanji August 1995). He also recommended the addition of a shallow groundwater compartment to obtain a better estimate of mass balance on water and to gain flexibility in water balance computations. He proposed a model that would expand the present DICU model from a soil moisture-evapotranspiration based model to a three-compartment water-flow pathway and water-balance system for Delta islands (Tanji, September 1995). That system consists of a root zone, a shallow groundwater, and an open drain compartment.

The February 1995 the DOP's report makes a number of recommendations for model refinement. While several of these modifications have been made since then, it became clear that developing an entirely new computer code would be more effective than creating additional patches for the existing code. The water balance Professor Tanji recommended not only takes into consideration the recommendations from his review but is equipped to be compatible with the new dynamic quality module that he is developing. Therefore, the Delta Modeling Section is creating a new water balance module which will feed data into the water quality module.

3. New Delta Island Model: DSM2-LAND

The target completion date for the water balance module is dictated by the contract with UCD to develop and calibrate a dynamic quality module for salinity and DOC. DWR will provide UCD with a calibrated water balance module by the end of April 1996.

4. Input Data Improvements

The new water balance module will include many new assumptions such as including leach water in soil moisture calculations and modifying runoff calculations to be consistent with soil moisture calculations, i.e., drains are operated differently when leaching takes place. However, the allocation of island diversion and return flows to DWR's Delta Simulation Model nodes will not change. Following are modifications being made to input data that were noted in the February 1995 report (these modifications will only be made available in the new model).

a. Evapotranspiration Formulation

Evapotranspiration is one of the most significant variables controlling the quantity of both diversions and return flows during the crop growing season. A new method of estimating ET in the Delta was developed by DWR's Central District (*Historic* 1994). The method is based on an equation which uses temperature and solar radiation to calculate reference ET (Hargreaves and Samani 1985). Staff have incorporated the new formulation into the new DICU model (DSM2-LAND), replacing the former formulation based on pan evaporation data.

b. Historic Delta Land Use Database

DICU sensitivity analyses demonstrated the importance of land use data in estimating diversion and return flows (*Estimation* 1995). Based on these results, a decision was made to develop a historic Delta land use database. The current version of the DICU model assigns land use to 142 Delta subareas based on D-1485 water year classification. Critical water years are assigned a land use based on a 1976-77 field survey. Noncritical water years are assigned a land use based on various field surveys undertaken in the late 1970s and early 1980s. An extensive search for possible sources of detailed Delta land use data covering 1922 to 1994 was conducted (*Methodology* 1995). A summary of the advances that have been made in acquiring that data follows.

(1) Digital Land Use Data and DICU Subarea Boundaries

In the past year, USGS, under contract with the Delta Modeling Section, digitized DICU's 142 subarea boundaries. This information has enabled staff to access all digital land use data that is available through DWR's Statewide Planning Branch as well as the 1968 Delta survey which USGS also digitized due to another cost-share contract the Delta Modeling Section negotiated.

(2) Other DWR Delta Land Use Data

Thirteen Delta land use surveys from DWR's Bulletin 23 series (*Report*) were keypunched into an electronic file by

ISSO, DWR. Staff then assigned the data to DICU land use categories and subareas since the data are aggregated by regions that generally coincide with DICU subareas.

The above data will be used to develop a land use database over the next year.

5. Model Calibration

Over the next year, staff will also attempt a calibration of the DICU model. Special attention will be given to leach water schedules and irrigation efficiencies. Irrigation efficiencies may be allowed to vary by month as well as by crop and subregion. Data acquisition, assembly, and analysis to support such a model calibration is ongoing.

E. POTENTIAL FUTURE DIRECTIONS

Below is a partial list of projects that could be undertaken beyond what this chapter has discussed in terms of further modeling support to the MWQI Program. The general focus of these projects is to enhance the DSM2 for providing input data to EPA's WTP model.

1. Alkalinity Modeling

The DSM2 model could be enhanced to simulate the fate and transport of constituents necessary for estimating alkalinity in Delta waters. Emphasis would be placed on developing and calibrating the important reaction kinetics that influence carbonate/bicarbonate, pH, and silicate. Alkalinity and pH are required inputs to EPA's WTP model.

2. Temperature and Ammonia Modeling

The DSM2 model is currently capable of simulating temperature and the nitrogen cycle in the Delta. A preliminary calibration in the vicinity of Stockton has been conducted. Emphasis would be placed on calibrating temperature and kinetics related to the nitrogen cycle for the entire Delta. Temperature is required for computing ammonia reaction kinetics; temperature and ammonia nitrogen are required inputs to EPA's WTP model.

3. <u>Water Hardness Modeling</u>

The DSM2 model is currently capable of simulating conservative minerals such as calcium and magnesium. However, model calibration would typically focus on salinity measures such as chloride, bromide, and TDS. Emphasis would be placed on using source-receptor or "fingerprinting" techniques to calibrate the transport of all important cations (i.e., calcium, magnesium, and sodium) and possibly additional anions (in conjunction with alkalinity modeling) in the Delta. This effort should also result in improved simulation of other conservative constituents such as bromide and DOC. Total and calcium hardness are required inputs to EPA's WTP model.

4. <u>Pathogen Modeling</u>

The DSM2 model has a particle tracking module that simulates the fate and movement of individual "particles" with user-specified characteristics such as mortality. Emphasis would be placed on developing, in coordination with experts, characteristics for pathogens of interest such as *Giardia lambia* cysts. Appropriate data and expert consultation would be needed to conduct this project. *Giardia lambia* cyst concentration is a required input to the EPA WTP model. However, other pathogens may be of interest to MWQI.

5. <u>HAA Modeling</u>

Concepts such as bromine incorporation factor and bromine distribution factors would be used to develop a predictive module for HAA6. Some preliminary work has been done in this area and looks promising. Emphasis would be placed on using artificial neural networks similar to what has been done with DWR's THM module. Appropriate data would be needed to conduct this project. This module would function as a postprocessor to DSM2 and could function as a subroutine in EPA's WTP model.

The MWQI Program and DWR's Bryte Chemical Laboratory have been working on developing simulated distribution system testing of Delta channel waters for HAA6 and THM formation. Using a 24-hour chlorination period, monthly SDS testing for HAA6 and THM formation will be conducted on samples obtained from 12 key Delta channel water sampling sites. Implementation of monthly SDS testing began in

April 1996. Data obtained from SDS testing of Delta channel waters for HAA6 and THM formation may provide information which could be used for HAA modeling.

6. Data Collection Prioritization

Modeling support could be provided for prioritizing data collection efforts in space and time. In the past, DWR has provided such recommendations. It is envisioned that this effort could be conducted in a more rigorous fashion through model simulations and sensitivity analyses.

7. Special Studies

Special Delta simulations could be conducted at the request of the MWQI TAC. These studies could provide a screening level analysis prior to funding larger field studies.

Figure 30.

DELTA LOWLANDS AGRICULTURAL DRAINAGE: 1954-55

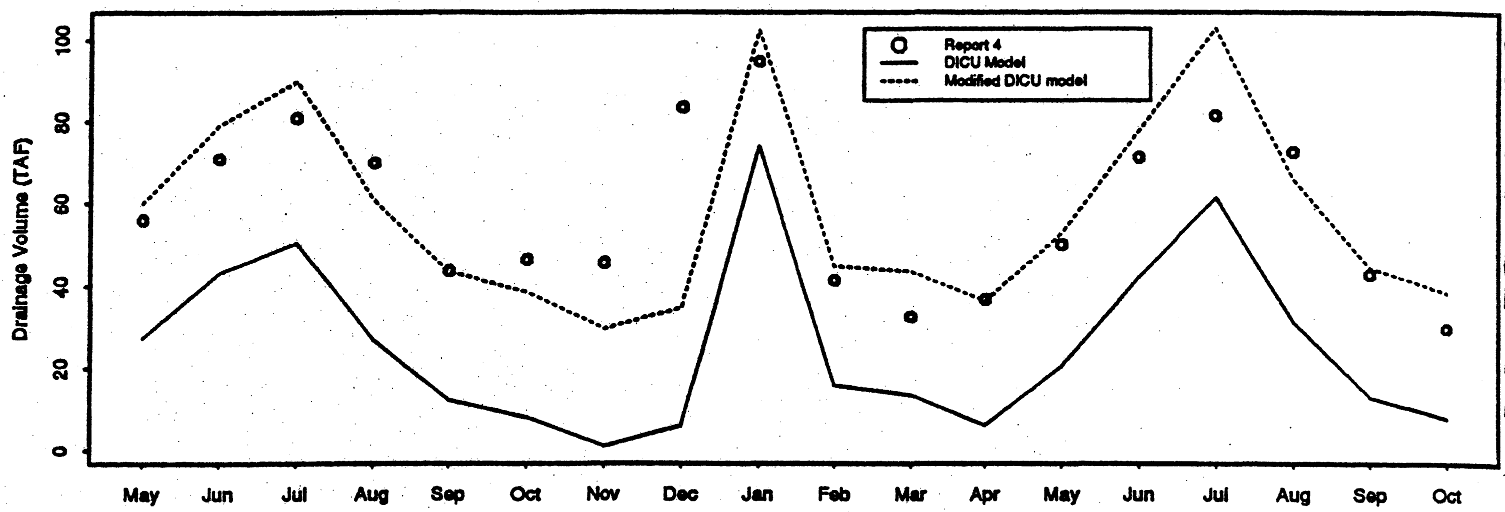
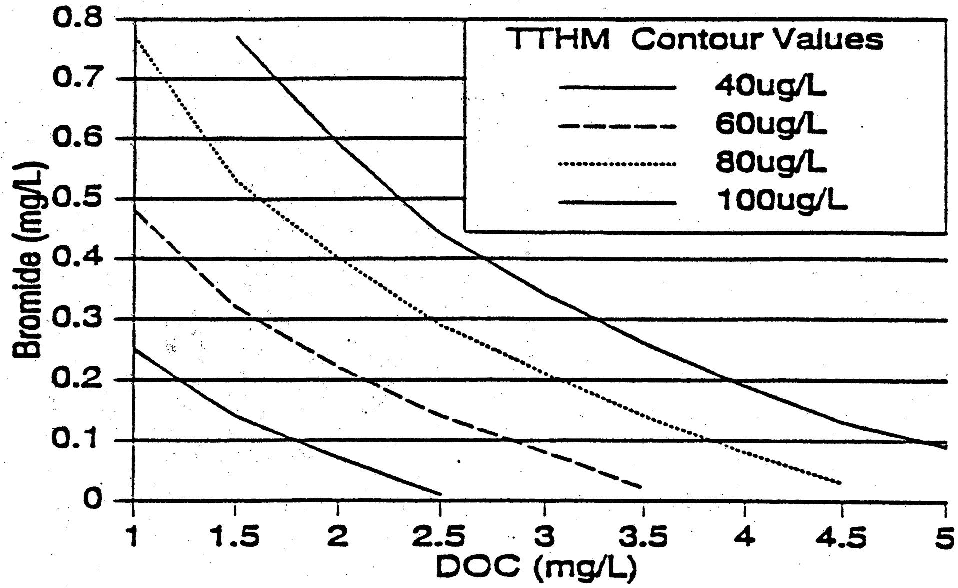
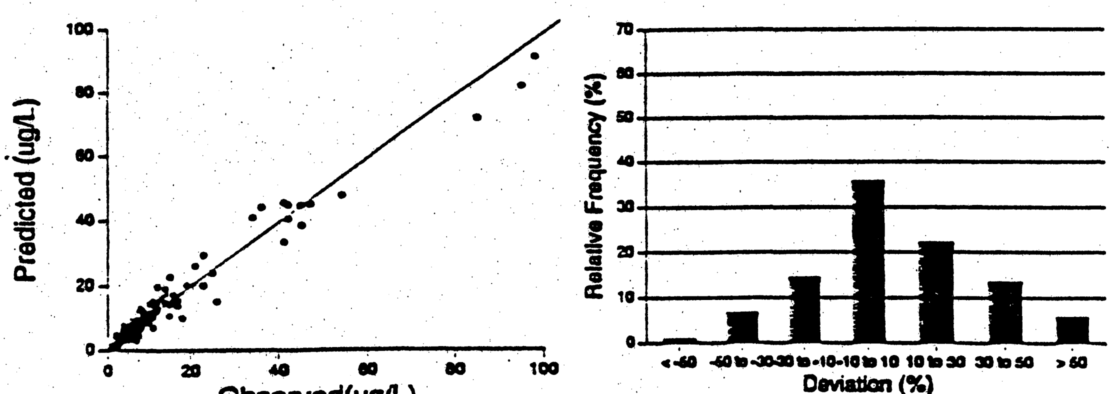


Figure 31.



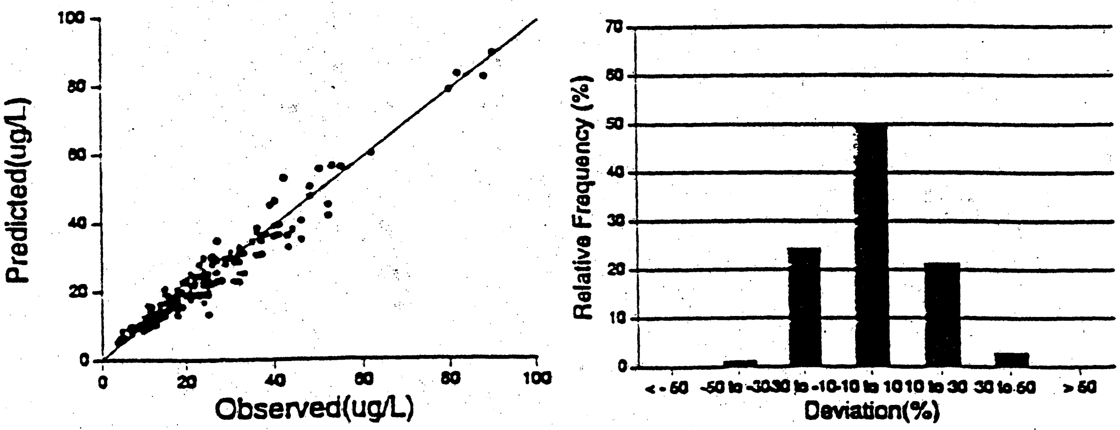
Sensitivity of TTHM Neural Network

Figure 32.



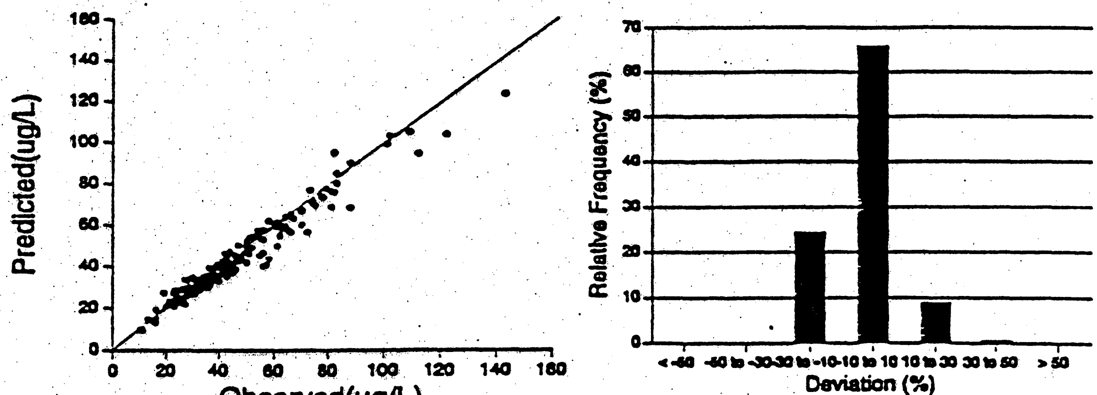
Chloroform Verification Results

Figure 33.



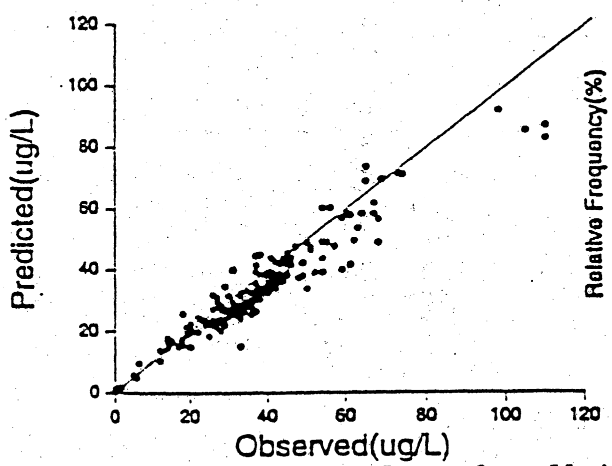
Dichlorobromomethane Verification Results

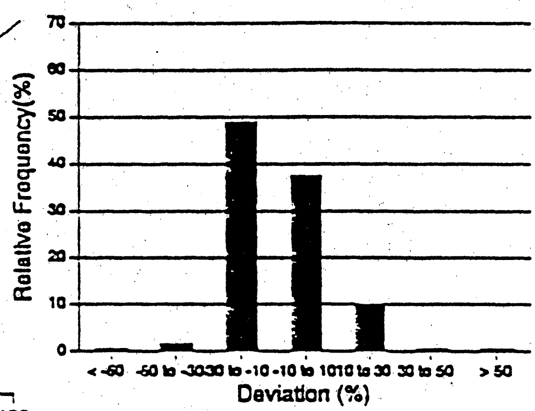
Figure 34.



Chlorodibromomethane Verification Results

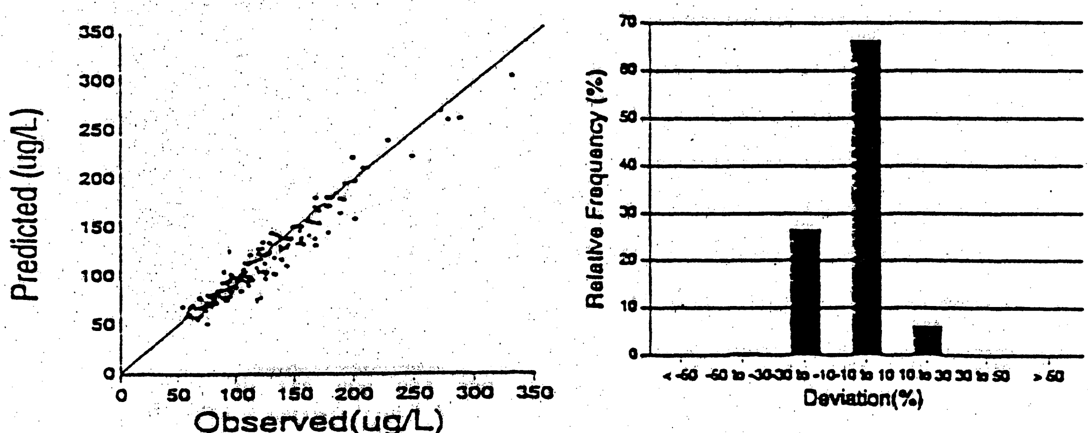
Figure 35.





Bromoform Verification Results

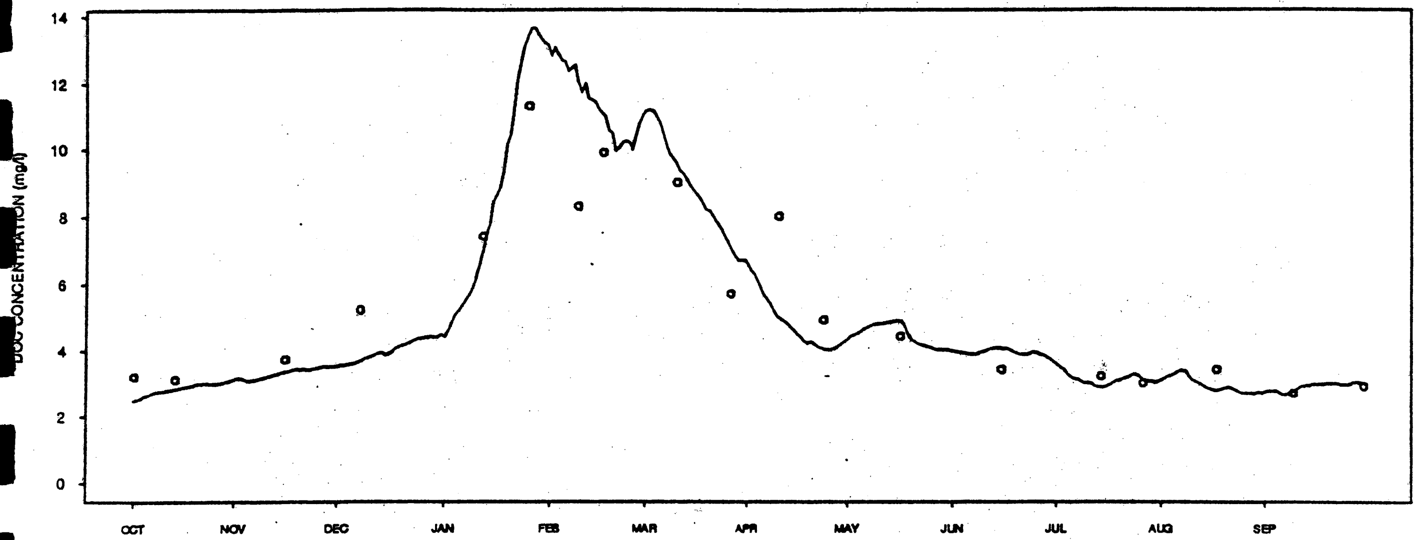
Figure 36.



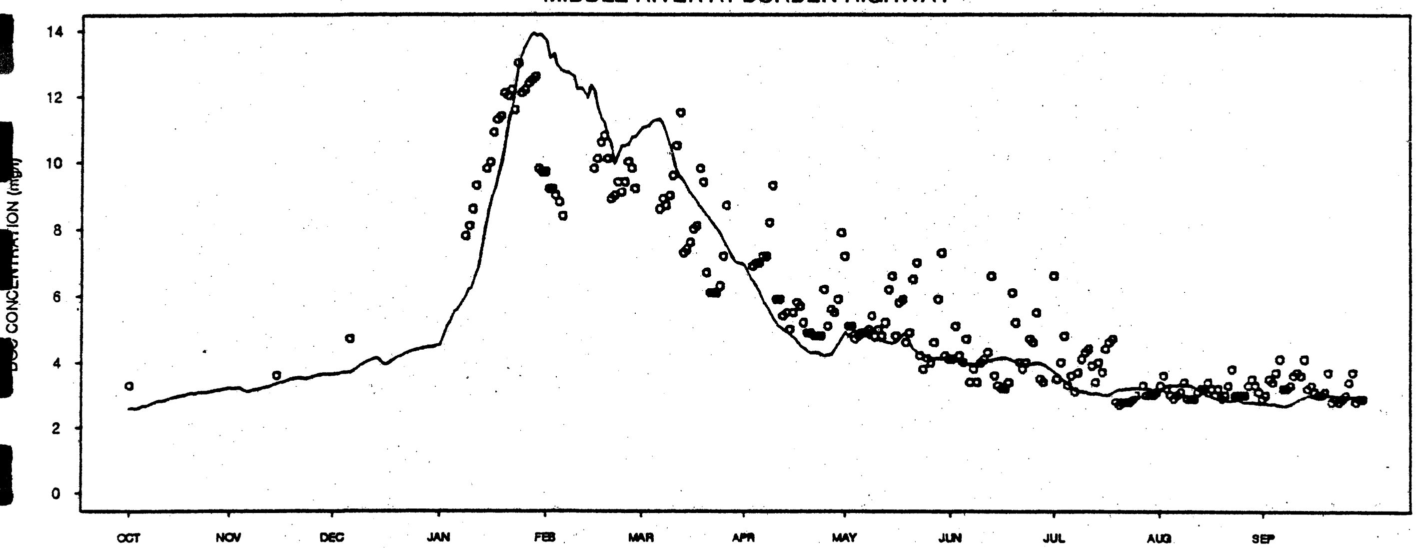
TTHM Verification Results

Figure 37.

WATER YEAR 1993 DOC VERIFICATION RESULTS
MIDDLE RIVER AT BACON ISLAND



MIDDLE RIVER AT BORDEN HIGHWAY



MIDDLE RIVER AT MOWRY BRIDGE

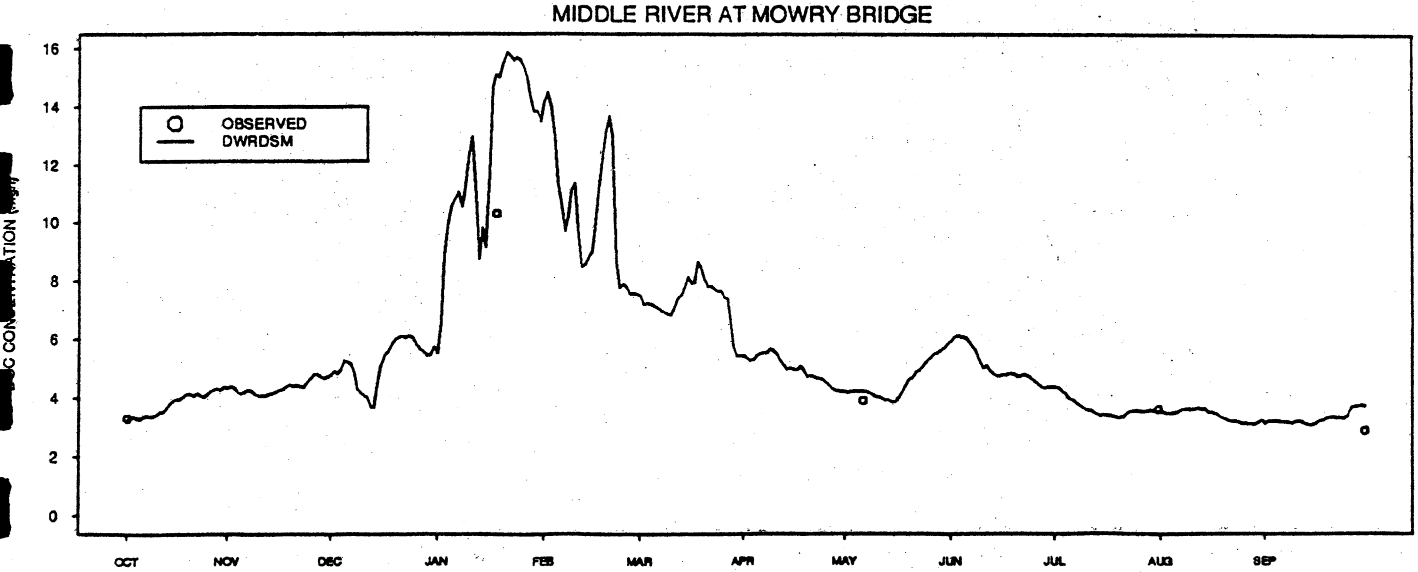


Figure 38.

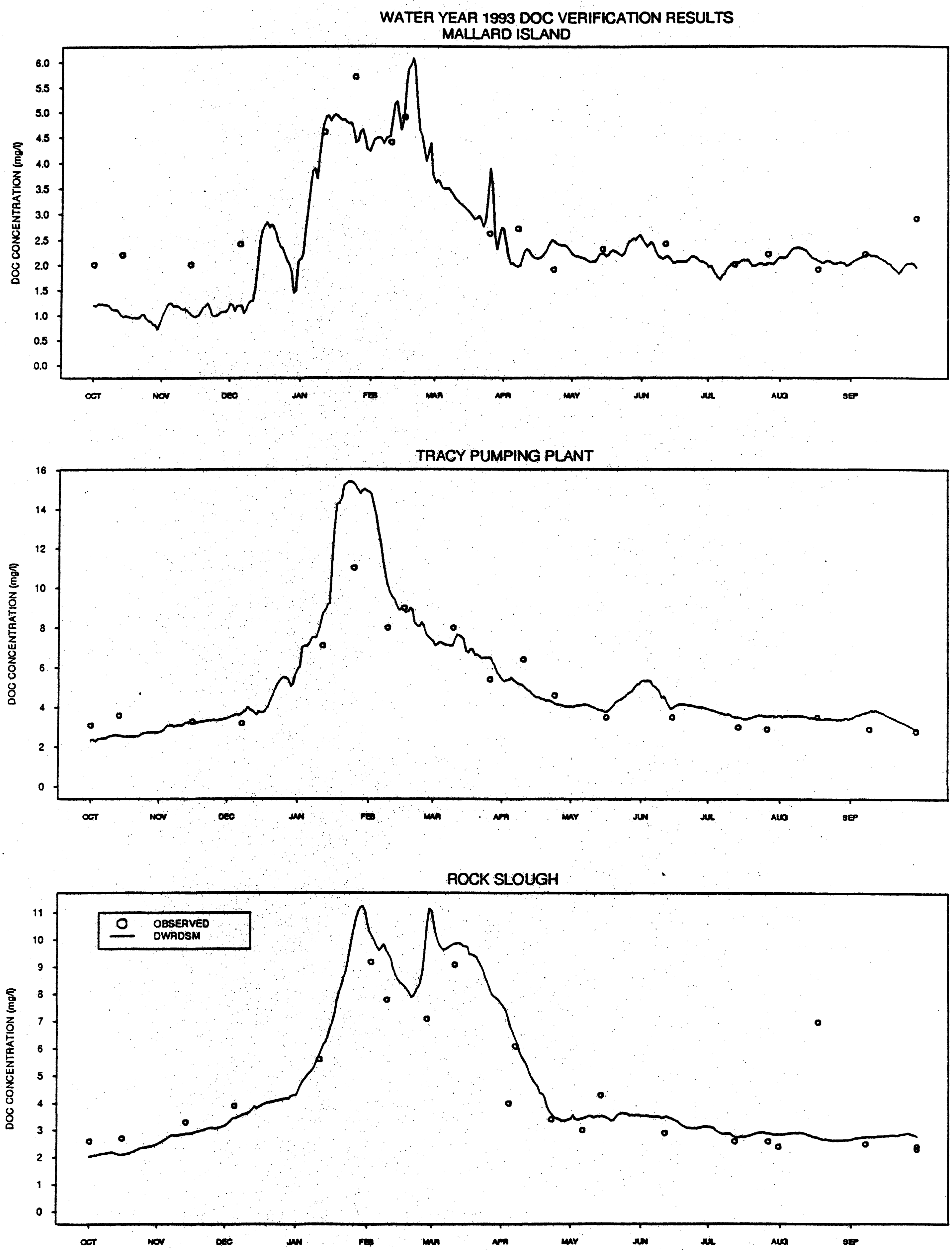

WATER YEAR 1993 DOC VERIFICATION RESULTS
MALLARD ISLAND
DOC CONCENTRATION (mg/l)
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
TRACY PUMPING PLANT
DOC CONCENTRATION (mg/l)
16
14
12
10
8
6
4
2
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
ROCK SLOUGH
OBSERVED
DWRDSM
DOC CONCENTRATION (mg/l)
11
10
9
8
7
6
5
4
3
2
1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP

Figure 39.

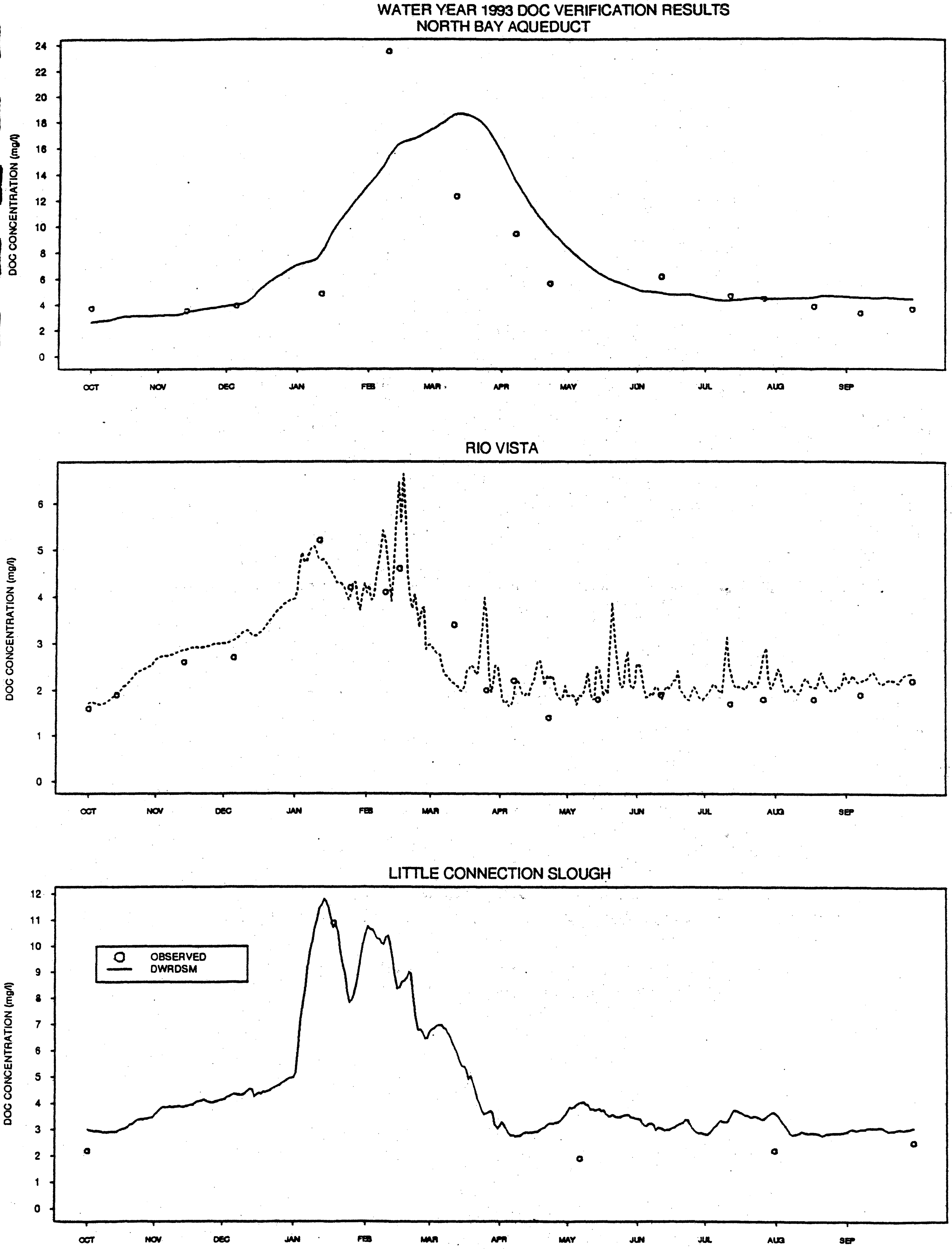
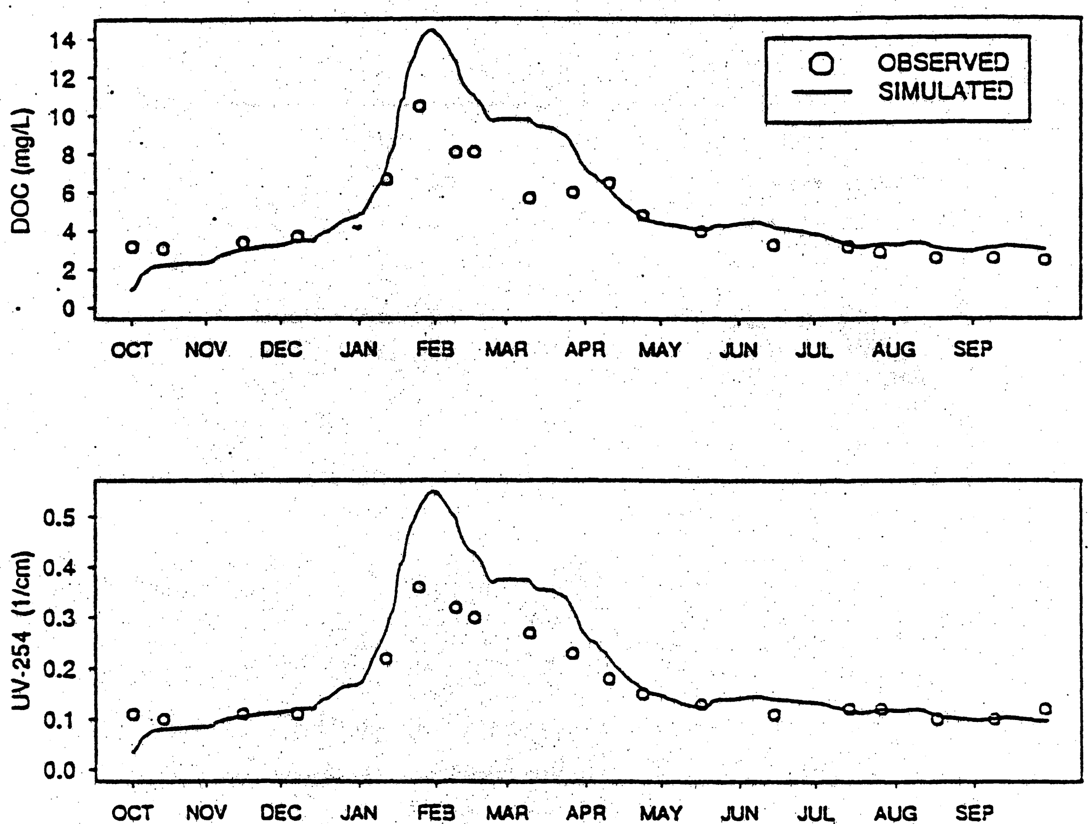
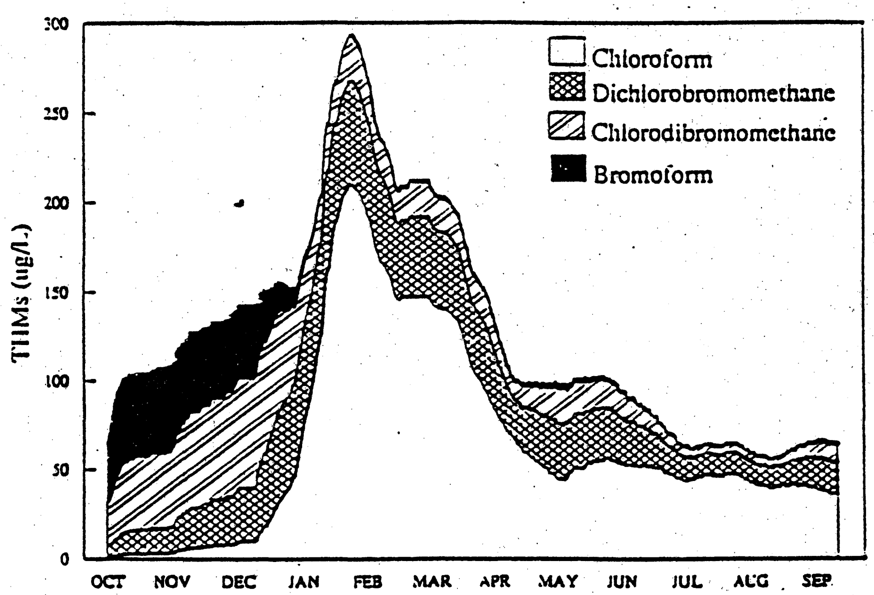

WATER YEAR 1993 DOC VERIFICATION RESULTS
NORTH BAY AQUEDUCT
DOC CONCENTRATION (mg/l)
24
22
20
18
16
14
12
10
8
6
4
2
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
RIO VISTA
DOC CONCENTRATION (mg/l)
6
5
4
3
2
1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
LITTLE CONNECTION SLOUGH
DOC CONCENTRATION (mg/l)
12
11
10
9
8
7
6
5
4
3
2
1
0
OBSERVED
DWRDSM
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP

Figure 40.



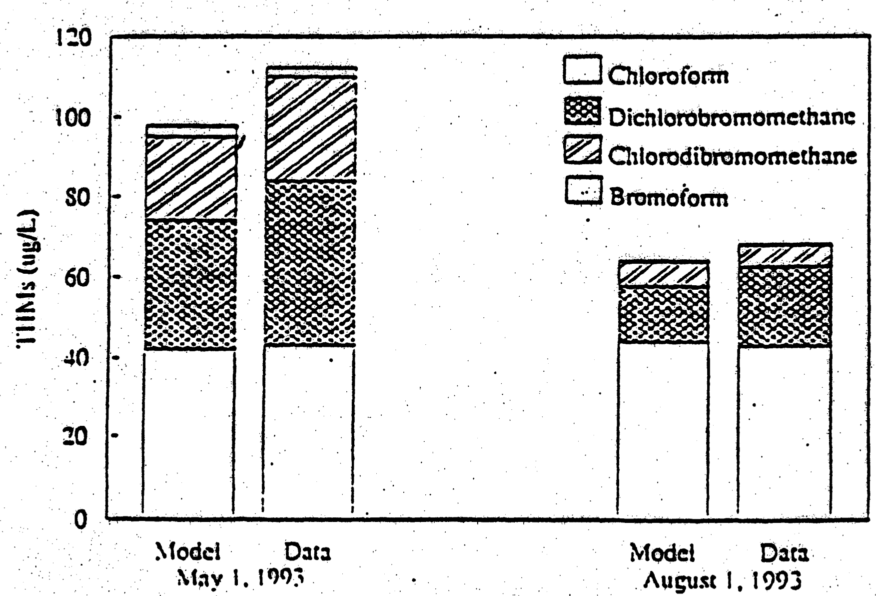
Simulated DBP Organic Precuror Time Series at Harvey O. Banks Pumping Plant: October 1, 1992 through September 30, 1993

Figure 41.



Simulated THM Formation Potential Time Series at Harvey O. Banks Pumping Plant: October 1, 1992 through September 30, 1993

Figure 42.



Simulated and Observed THM Concentrations at Harvey O. Banks Pumping Plant: May 1 and August 1, 1993

Chapter 16. MWQI EXPENDITURES FISCAL YEAR 1994-95

The program met budgetary expectations.

The overall budget for the MWQI Program for fiscal year 1994-95 was $1,761,000 (Table 42). This budgeted amount consisted of $69,000 from Contra Costa Water District and $1,692,000 from SWP funds. The program's total annual expenditures for the fiscal year was $1,432,751, or 81.4 percent of budgeted funds.

Salaries and wages made up 53.1 percent of the total annual expenditures of the program (Table 43). Total cost for laboratory services by DWR's Bryte Chemical Laboratory was the second largest expenditure at 14.8 percent of the Program's total annual expenditures. These two largest items of expense were followed by total expenses incurred for contract laboratory services (8.3 percent) and consultant services (7.1 percent). Total expenditures for QA/QC functions for the MWQI Program and DWR's DOP's Delta modeling activities made up 5.6 percent and 5.1 percent, respectively.

During the period of July 1994 through February 1995, the MWQI Program's cumulative expenditures were occurring at levels of 52.3 percent to 64.4 percent of straight line estimated budgeted amounts (Figure 43). In March 1995, however, new staff were hired into the Program for the Five-Year Update of the Sanitary Survey of SWP, and cumulative expenditures increased as work progressed for this project. During this latter part of the fiscal year, cumulative expenditures were occurring at levels of 67.7 percent to the final end-of-fiscal-year level of 81.4 percent.

During fiscal year 1994-95, the accounting system for the MWQI Program was not established to track expenditures for individual projects or activities of the program. As a result, auditing of expenditures for each individual project or activity was not possible. Individual program components for which expenditures were tracked throughout the year were Contra Costa Water District, Delta Modeling, and QA/QC. Expenditures for all other projects or activities of the Program were charged to one accounting unit. The computed total annual expenditures for each program component were within budgeted amounts. Table 44 shows the MWQI cumulative expenditures for fiscal year 1994-95.

Table 42. MWQI Program Budget
Fiscal Year 1994-95

Program Component	Budgeted	Expended	Percent of Budget Expended
Contra Costa Water District	$ 69,000	$ 68,999	100%
Delta Modeling	$ 75,000	$ 73,364	98%
Quality Assurance/Quality Control	$ 104,000	$ 80,936	78%
MWQI Program and Projects	$1,513,000	$1,209,452	80%
Total	$1,761,000	$1,432,751	81.4%

Table 43. MWQI Total Annual Expenditures
Fiscal Year 1994-95

	Expenditure	%Total
Salaries and Wages	$761,166	53.1%
Training	$3,398	0.2%
Travel	$5,123	0.4%
Vehicle Operations	$2,941	0.2%
Heavy Equipment	$36,085	2.5%
Delta Modeling	$73,364	5.1%
Quality Control	$80,936	5.6%
Bryte Laboratory	$211,881	14.8%
Contract Laboratory	$118,883	8.3%
Consultant Services	$101,775	7.1%
Supplies, Reproduction, etc.	$37,199	2.6%
Total	$1,432,751	100.0%

Figure 43.
MWQI Cumulative Expenditures
Fiscal Year 1994-95

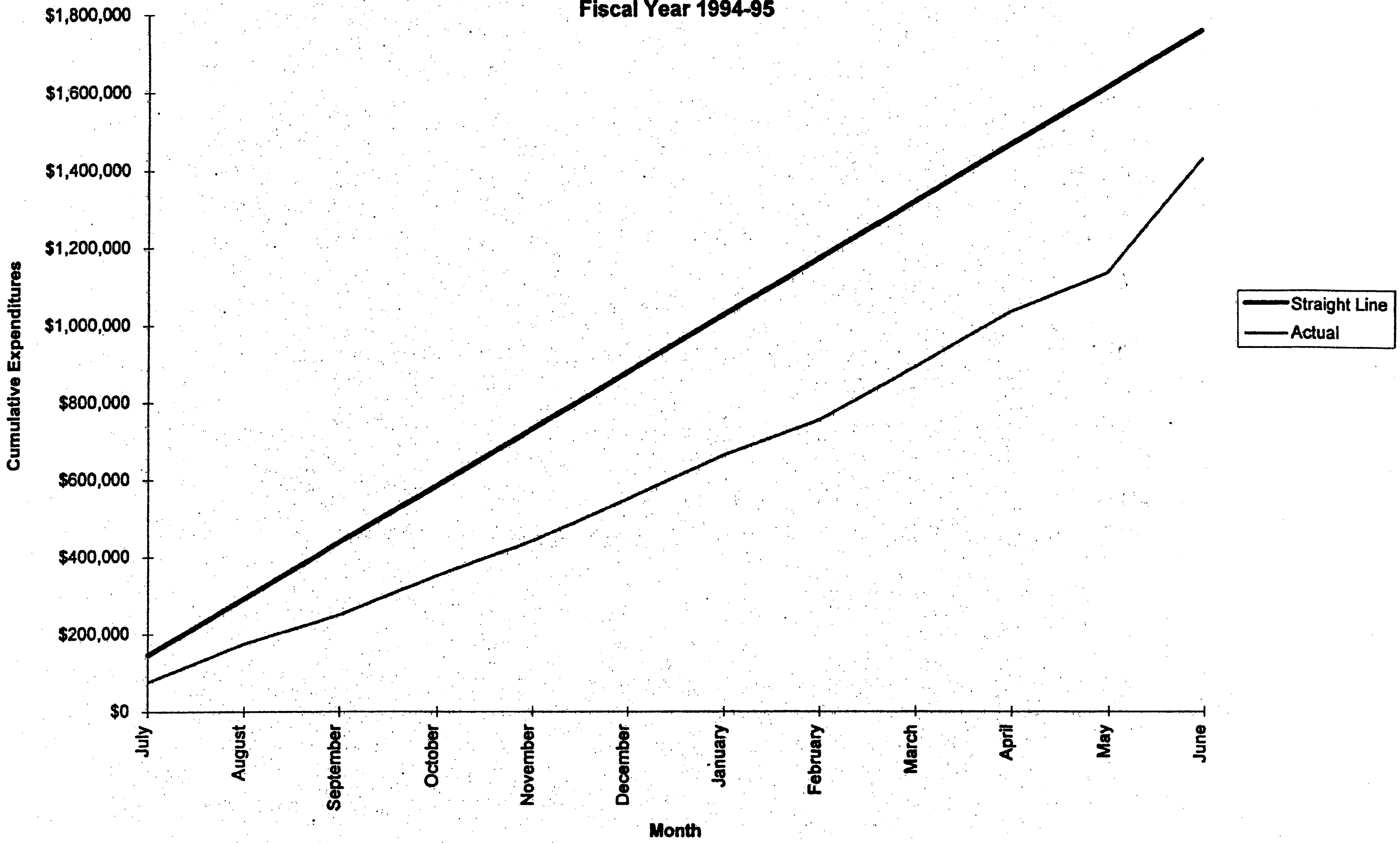


**Table 44. MWQI Cumulative Expenditures
Fiscal Year 1994-95**

Month	Straight Line	Actual	A/S %
July	$ 146,750	$ 76,751	52.3%
August	$ 293,500	$ 175,606	59.8%
September	$ 440,250	$ 250,846	57.0%
October	$ 587,000	$ 352,238	60.0%
November	$ 733,750	$ 442,619	60.3%
December	$ 880,500	$ 551,816	62.7%
January	$1,027,250	$ 664,279	64.7%
February	$1,174,000	$ 756,155	64.4%
March	$1,320,750	$ 894,549	67.7%
April	$1,467,500	$1,035,392	70.6%
May	$1,614,250	$1,136,137	70.4%
June	$1,761,000	$1,432,751	81.4%

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