

**TOTAL MAXIMUM DAILY LOADS FOR  
SANTA CLARA RIVER ESTUARY BEACH/SURFERS' KNOLL,  
MCGRATH STATE BEACH, AND MANDALAY BEACH  
COLIFORM AND BEACH CLOSURES**

**STAFF REPORT**

**California Regional Water Quality Control Board  
Los Angeles Region**

**July 2003**

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## 1.0 INTRODUCTION

The 1998 303(d) list of impaired waterbodies in California identifies Surfers' Knoll/Santa Clara River Estuary Beach (Surfers' Knoll) and McGrath Beach State Park (McGrath Beach) as impaired by coliform bacteria and McGrath and Mandalay Beaches as impaired by beach closures. The impairment listings are based on data showing the presence of high coliform counts from Ventura County Environmental Health Division (VC/EHD) sampling and State Water Resources Control Board (State Board) records of beach closures.

More recent data and records from these sources and the original listing data were reviewed by California Regional Water Quality Control Board, Los Angeles Region (Regional Board) staff for the 2002 water quality assessment (WQA) and this TMDL study. Review of the recent data show that Surfers' Knoll is no longer impaired by coliform bacteria and McGrath and Mandalay Beaches are no longer impaired by beach closures. Closures are required if there are spills on the beach. There have been no spills in the last three years. As part of the 2002 WQA, the Regional Board staff have recommended removal of these impairments from the forthcoming 303(d) list. State Board has approved the 303(d) list, and the United States Environmental Protection Agency (US EPA) is reviewing these recommendations. As described in this report, the remaining impairment is the total coliform impairment of McGrath Beach and the major source causing this impairment is a discharge from McGrath Lake. In light of the sole remaining impairment in this coastal area, the Regional Board staff have prepared this document to establish a Total Maximum Daily Load (TMDL) and Implementation Plan that will result in a decrease in bacterial contamination and the attainment of bacterial water quality standards for McGrath Beach.

### 1.1 REGULATORY BACKGROUND

The Water Quality Control Plan, Los Angeles Region (*Basin Plan*) contains water quality objectives for waters in the Los Angeles Region. The Basin Plan: (1) designates beneficial uses for surface and ground waters; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy; and (3) describes implementation programs to protect all waters in the Los Angeles Region.

The water quality objectives established in the Basin Plan are mandated under Division 7 of the California Water Code, known as the "Porter-Cologne Water Quality Control Act" (Porter-Cologne). The Basin Plan implements Porter-Cologne and, along with applicable State Board policies (e.g., the California Ocean Plan), serves as the State Water Quality Control Plan applicable to the coastal watershed draining to McGrath Beach, as required pursuant to the federal Clean Water Act (CWA).

Section 303(d) of the CWA requires that each state identify those waters within its boundaries for which existing controls and effluent limitations alone do not ensure attainment of water quality objectives. The resulting list is referred to as the "303(d)

list." The CWA further requires that states establish a priority ranking for waters on the 303(d) list, then, in accordance with the priority ranking, establish TMDLs.

A TMDL is the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background (40 CFR 130.2) such that the capacity of the waterbody to assimilate pollutant loads (loading capacity) is not exceeded. The TMDL shall be established at levels necessary to attain and maintain the applicable narrative and numerical water quality objectives with seasonal variations and a margin of safety (MOS) to address uncertainty in the analysis. Determinations of TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters (40 CFR 130.7(c)(1)).

The United States Environmental Protection Agency (USEPA) has oversight authority for the 303(d) program and is required to review and either approve or disapprove a state's 303(d) list and each TMDL developed by a state. If a state fails to develop a TMDL in a timely manner or if the USEPA disapproves a TMDL submittal by a state, USEPA is required to establish a TMDL for that waterbody (40 CFR 130.7(d)(2)).

The elements of a TMDL are described in 40 CFR Sections 130.2 and 130.7, and Section 303(d) of the CWA, as well as in USEPA guidance (USEPA, 1991).

## 1.2 CONSENT DECREE

On March 22, 1999, a 13-year schedule for the development of TMDLs in the Los Angeles Region was established in a consent decree (*Heal the Bay, Inc. et al. v. Browner, et al. C 98-4825 SBA*). Prior to the approval of this decree, Regional Board staff had identified over 700 waterbody-pollutant combinations in the Los Angeles Region where TMDLs would be required (LARWQCB, 1996, 1998).

For the purpose of scheduling TMDL development, the consent decree combined the waterbody-pollutant combinations into 92 TMDL analytical units. Analytical Unit No. 23 consists of Santa Clara River Estuary Beach/Surfers' Knoll, McGrath Beach, and Mandalay Beach. McGrath Beach, Surfers' Knoll and Mandalay Beach are listed with impairments related to pathogens. However, Surfers' Knoll and Mandalay Beach have been recommended for removal from the 2002 303(d) list by Regional Board staff, as described below.

## 2.0 PROBLEM IDENTIFICATION

This section describes the WQA methodology that led to the listing of Surfers' Knoll, McGrath Beach and Mandalay Beach as impaired for coliform bacteria and *beach closures*. This section reviews data that led to the listing of the sites and further data, reviews the water quality objectives applying to this TMDL, describes the geography and history of the region, describes the affected beneficial uses, and states the water quality objectives of the waterbody.

The data used by Regional Board staff that led to the impairment of McGrath Beach exceedance of the total coliform objective are discussed below. Where available, more recent data were reviewed to confirm the 1998 303(d) listings. As Regional Board staff's listing recommendations are based on impairments to water quality, it is appropriate to begin this section with a review of the applicable water quality objectives.

State water quality standards consist of the following elements: 1) beneficial uses, 2) narrative and numeric objectives to protect beneficial uses and 3) an antidegradation policy. In California, the each of the regional boards define beneficial uses in their respective basin plans.

Table 2.1 in the Basin Plan for the Los Angeles Region (1994) lists 20 beneficial uses for Surfers' Knoll, McGrath Beach and Mandalay Beach. Excerpts from this table are reproduced in Table 2, in section 2.3, below. These uses are specified as existing (E) uses. All existing beneficial uses must be protected.

## 2.1 REVIEW OF DATA

As stated above, Surfers' Knoll and McGrath State Beach were listed as impaired for total coliform in the 1998 303(d) list. Additionally, McGrath Beach and Mandalay Beach were listed for beach closures. In each listing, water contact recreation (REC-1) was identified as the beneficial use not supported due to total coliform and beach closures. More recent pathogen and beach closure data were reviewed for the 2002 WQA. The data review shows that the data indicate that Surfers' Knoll is not impaired for coliform bacteria. As such, Surfers' Knoll was recommended for removal from the 303(d) list and will not require load or waste load allocations. This TMDL includes continued monitoring by VC/EHD, which is already required by existing laws and is not a new regulatory requirement of this TMDL.

The recent beach closure data show that both McGrath and Mandalay Beaches have had no beach closures in the past three years. They were also recommended for removal from the 2002 303(d) list. Therefore, McGrath and Mandalay Beaches will not require load or waste load allocations for beach closures. Again, the VC/EHD will continue monitoring and posting beaches as required by other applicable laws.

McGrath Beach remains impaired for total coliform. Therefore, this TMDL staff report will focus on the McGrath Beach impairment for total coliform. All waste load allocations established by this TMDL will be for the purpose of eliminating the total coliform impairment at McGrath Beach.

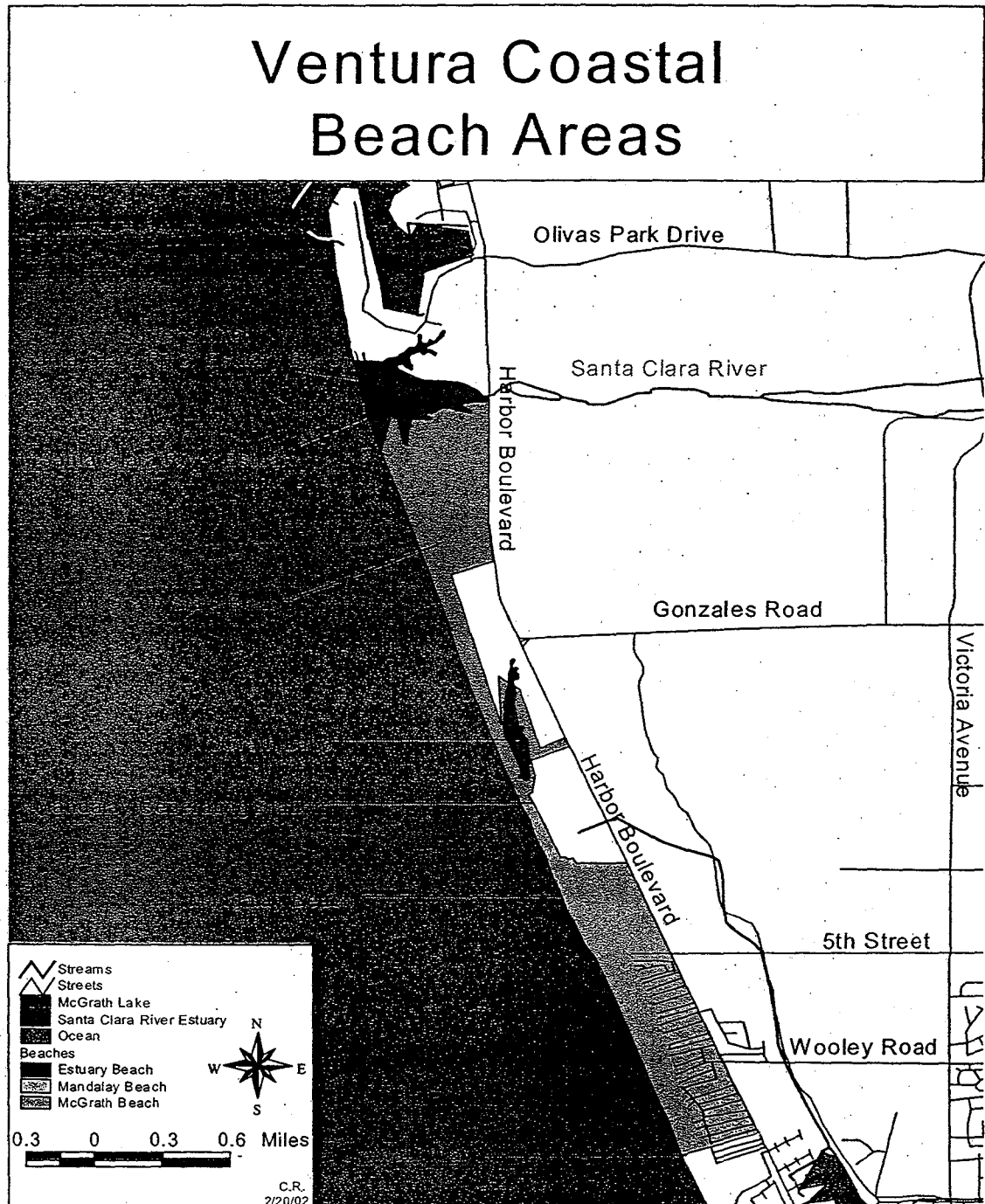
TABLE 1. Santa Clara River Estuary Beach, McGrath State Beach, and Mandalay Beach Total Coliform and Beach Closures TMDL Problem Statement

Beach	1998 303(d) List for Total Coliform	1998 303(d) List for Beach Closures	2002 Water Quality Assessment
Surfers' Knoll	X		New data, recommended for delisting for coliform bacteria
McGrath Beach	X	X	<b>Continued impairment for total coliform</b> New data, recommended for delisting for beach closures
Mandalay Beach		X	New data, recommended for delisting for beach closures

## 2.2 GEOGRAPHY

On the Ventura County coastline, just south of the City of Ventura, there is a series of beaches, shown in Figure 1. Starting from the north is Surfers' Knoll, which is adjacent to the Santa Clara River Estuary, and is also known as Santa Clara River Estuary Beach. Adjacent to this beach, heading southeast down the coast is McGrath Beach. McGrath Beach runs along a northwest to southeast direction, and is 1.7 miles long. For the purposes of the Regional Board and as used by VC/EHD as the major data source, this includes Mandalay State Beach. In the middle of McGrath Beach, between the dunes and Harbor Boulevard to the east is a small back dunes lake, McGrath Lake. McGrath Lake is approximately 10 acres, with a wetlands area on its east side. Continuing south on the beach is the Reliant Energy Mandalay Generating Station (Mandalay Generating Station). This point is the end of McGrath State Beach. The next beach south is Mandalay City Beach (Mandalay Beach). This beach is also 1.7 miles long, and it extends in a northwest to southeast direction from the Mandalay Generating Station to Amalfi Way in the City of Oxnard.

FIGURE 1. MAP OF SURFERS' KNOLL, MCGRATH BEACH, MCGRATH LAKE, AND MANDALAY BEACH



Directly east of the beaches and the lake, Harbor Boulevard runs nominally north and south through much of Ventura County, including along the length of these three beaches. East of Harbor Boulevard through much of this region is agricultural land. There is agricultural land directly east of McGrath Beach and McGrath Lake to the north and south of Gonzales Road. West of Harbor Boulevard at Gonzales Road are petroleum extraction facilities. Additional oil and gas wells are scattered throughout the agricultural lands. Beyond the agricultural land is the Bailard Landfill, and several nurseries. To the south of Gonzales Road is a dog kennel.

### 2.3 BENEFICIAL USES

Beneficial uses are defined in the Basin Plan for individual water bodies and general statements of beneficial uses for water bodies not covered by individual beneficial uses. While the Basin Plan assigns beneficial uses for Mandalay Beach individually, beneficial uses for Surfers' Knoll and McGrath Beach fall under the general Ventura County Coastal Nearshore beneficial uses. These beneficial uses are shown in Table 1.

TABLE 2. Surfers' Knoll, McGrath Beach and Mandalay Beach Beneficial Uses, and Description. Excerpt from the Basin Plan, Table 2-1.

Reach	Hydro. Unit No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	REC 1	REC 2	COM M
Surfers' Knoll	403.11		E					E	E	E	E
McGrath Beach	403.11		E					E	E	E	E
Mandalay Beach	403.11							E	E	E	E

Reach	WAR M	COLD	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET
Surfers' Knoll				E	E	Ean	Ee	Ef	Ef	E	
McGrath Beach				E	E	Ean	Ee	Ef	Ef	E	
Mandalay Beach				E	E	Ee				E	

E: Existing beneficial use. P: Potential beneficial use. I: Intermittent beneficial use. e: One or more rare species utilize all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting. f: Aquatic organisms utilize all bays, estuaries, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas that are heavily influenced by freshwater inputs. an: Areas of Special Biological Significance. Some designations may be considered for exemptions at a later date.

Beneficial uses for these coastal areas include industrial service supply (IND); navigation (NAV); water contact and non-contact recreation (REC-1 and REC-2); commercial and sport fishing (COMM); marine habitat (MAR); wildlife habitat (WILD); preservation of biological habitats (BIOL); rare threatened, or endangered species habitat (RARE); migration of aquatic organisms (MIGR); spawning, reproduction, and/or early development (SPWN); and shellfish harvesting (SHELL).

#### 2.3.1 Water Contact Recreation

As stated above, Surfers' Knoll and McGrath Beach are currently listed as impaired for total coliform in the 1998 303(d) list. Additionally, McGrath Beach and Mandalay Beach are listed for beach closures. In each listing, REC-1 was identified as the

beneficial use that was not supported due to total coliform and beach closures. REC-1 is described in the Basin Plan as “Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.” The number of visitors to McGrath Beach varies from approximately 1,400 per month in the winter to 16,000 per month in the summer. McGrath Beach also has a campground that contains 146 campsites. These sites are routinely full during the summer season.

### 2.3.2 Non-contact Water Recreation

Non-contact water recreation, or REC-2, is defined by the Basin Plan as, “Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beach combing, camping, boating, tidepool, and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.” REC-2 objectives for pathogen indicators are much greater than the objectives for protection of REC-1 activities. Therefore, protecting the REC-1 uses will protect the REC-2 uses.

## 2.4 WATER QUALITY OBJECTIVES

The Regional Board adopted bacteria water quality objectives on October 25, 2001 (Regional Board Resolution 01-018; see Appendix A), which were then approved by the State Water Resources Control Board on July 18, 2002 (State Board Resolution 2002-0142), the Office of Administrative Law approved it on September 19, 2002 (OAL File No. 02-0807-01-S), and the US EPA approved it on September 25, 2002. Resolution 01-018 updated the bacteria objectives for fresh and marine waters designated as REC-1. The revised objectives for marine waters consist of geometric mean objectives and single sample objectives for enterococcus and total and coliform, and are consistent with current USEPA guidance (1986). These revised objectives in the Basin Plan are equivalent to those in the Ocean Plan. Table 3, below, lists the Ocean Plan objectives for marine waters designated for REC-1.

TABLE 3. Ocean Plan Objectives for Ocean Waters Designated for REC-1

Parameter	Geometric Mean Objective	Single Sample Objective
Fecal coliform	200/100 mL	400/100 mL
Total coliform		1000/100 mL
Total coliform: less than 20% of samples in 30 days exceed		1000/100 mL

### 3.0 NUMERIC TARGET

#### 3.1 WATER CONTACT RECREATION

This TMDL is based on a multi-part numeric target based on the bacteria objectives for marine waters designated for water contact recreation, REC-1, specified in the Basin Plan amendment adopted by the Regional Board on October 25, 2001 and approved by the State Water Resources Control Board on July 18, 2002. These objectives are consistent with those specified in the California Code of Regulations, title 17, section 7958 "Bacteriological Standards" and "Ambient Water Quality for Bacteria - 1986" (U.S. EPA, 1986). The objectives include four bacterial indicators: total coliform, fecal coliform, enterococcus, and the fecal-to-total coliform ratio.

##### 3.1.1 Bacteria

For this TMDL, the numeric targets will be equivalent to the recently adopted Basin Plan objectives, as measured at point zero (also referred to as the "mixing zone" or "wave wash").<sup>1</sup> This approach recognizes that an effective means of protecting the beneficial use is by requiring compliance with the objectives wherever water contact recreation occurs. These samples will be taken at ankle depth. These targets apply during both dry and wet weather, since there is water contact recreation throughout the year, including during wet weather, at the beaches. The geometric mean targets are based on a rolling 30-day period, and may not be exceeded at any time.

The "point zero" and "ankle depth" approach was used in the Regional Board' Santa Monica Bay Beaches Dry and Wet Weather TMDLs. The State Board and USEPA have already approved this methodology through full approval of the Santa Monica Bay Beaches Dry Weather TMDL. Regional Board staff believe that a comparable strategy for numeric targets is appropriate in for the McGrath Beach bacteria TMDL as well.

The TMDL targets are:

#### **In Marine Waters Designated for Water Contact Recreation (REC-1)**

##### 1. Geometric Mean

- a. *Total coliform density shall not exceed 1,000/100mL*
- b. *Fecal coliform density shall not exceed 200/100mL*
- c. *Enterococcus density shall not exceed 35/100mL*

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<sup>1</sup> Point zero is the point at which water from the outfall initially mixes with ocean water. Point zero has been selected as the compliance point for the numeric target because access to these outfall is, on the whole, not restricted. People are often observed swimming near storm drains.



## 2. Single Sample Objectives

- a. *Total coliform density shall not exceed 10,000/100mL*
- b. *Fecal coliform density shall not exceed 400/100mL*
- c. *Enterococcus density shall not exceed 104/100mL*
- d. *Total coliform density shall not exceed 1,000/100mL, if the ratio of fecal-to-coliform exceeds 0.1.*

Current objectives for bacteria in marine waters, as listed in the California Ocean Plan (2001) (Ocean Plan) are shown in Table 3, above. The revised Basin Plan objective for total coliform has a higher single sample objective, but there now are geometric means for the pathogen indicators listed in the revised objectives. The numeric target is based on the geometric mean. This is the lowest value for coliform and the most stringent value. It is noted that for compliance purposes the revised objective also provides a single sample limit of 10,000/100 mL.

The numeric target for this TMDL will require samples to meet criteria from both the Ocean Plan and the Basin Plan as measured at point zero (also referred to as the "mixing zone" or "wave wash"). Point zero is the point at which water from the discharge initially mixes with ocean water, and is consistent with the 'point of initial dilution' as defined in the Ocean Plan. Point zero has been selected as the compliance point for the numeric target for two reasons. First, public access to this source is not restricted. Second, in a study conducted for the Santa Monica Bay Pathogen TMDL, researchers found that the dilution zone is specific and highly dependent on prevailing oceanographic and climatic conditions (e.g., wave height, tide height, longshore velocity, wind speed) (SCCWRP 2001). There are inadequate data to accurately define dilution zones, other than point zero, for the freshwater outlets at McGrath Beach under all possible oceanographic and climatic conditions. Section 6.2 describes the waste load allocations, which includes details of the MOS.

### *3.1.2 Beach Closures*

The US EPA criteria for beach closures are:

- Fully Supporting = Zero beach closures in the previous three years
- Partially Supporting = Averaging 1 beach closure per year, lasting less than one week long per closure.

Recent beach closure data show that McGrath and Mandalay Beaches have met water quality objectives for beach closures. Regional Board staff have recommended that they are removed from the 2002 303(d) list. Therefore, McGrath and Mandalay Beaches will not be addressed through load allocations for beach closures, however, they will continue to be monitored.

### 3.2 ANTIDegradation

The state of California's water quality objective has an Antidegradation Policy. As stated in the Basin Plan, "the Statement of Policy with Respect to Maintaining High Quality Waters in California (State Board Resolution No. 68-16), restricts degradation of

surface or ground waters. In particular, this policy protects waterbodies where existing quality is higher than is necessary for the protection of beneficial uses.

“Under the Antidegradation Policy, any actions that can adversely affect water quality in all surface and ground waters (i) must be consistent with the maximum benefit to the people of the state, (ii) must not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the federal Antidegradation Policy.”

Nothing in this document is meant to, or will allow, a degradation of the current quality of water on any of these waterbodies listed herein.

#### 4.0 SOURCE ASSESSMENT

This section on source assessment describes how the sources of coliform were investigated and the final source determined. It starts with a major source to McGrath Beach, the discharge from McGrath Lake. Following that is a report on the data used to determine the impairments of each beach. These data are detailed for each sampling location, and used to discuss the sources to the beach. Later a discussion of the seasonality of the data is presented. Finally, non-point sources of coliform for the area are described.

#### 4.1 HISTORY

McGrath Lake is approximately 10 acres.<sup>2</sup> It is elongated along a north-south axis, stretching between Harbor Boulevard and the dunes along McGrath Beach. The lake is situated in Ventura County, just south of the Santa Clara River and the City of San Buenaventura. It is as much as 140 meters (m) across, approximately 900 m long, and its depth varies from approximately 0.6 m deep in the north end to 1.5 m deep in the south end.<sup>3</sup> On the west side McGrath Lake is surrounded by sand dunes in the publicly owned area, and a natural incline leading up to a road in the privately held northern end.

The Santa Clara River Estuary and McGrath Lake are habitat to a number of endangered and threatened species including the bird species southwestern willow flycatcher, least bell's vireo, western snowy plover, brown pelican, and California least tern. In addition to requiring this habitat, these birds are also a source of total coliform to McGrath Beach.

According to the McGrath Lake WAC:

West of Harbor Boulevard and north of McGrath Lake is an area of arroyo willow riparian habitat which transitions to bulrush (tule) wetlands at the north end of the lake. Additional areas of bulrush habitat are found along the lake's eastern shore.

<sup>2</sup> Communication from California State Parks, September 30, 2002.

<sup>3</sup> Chemical and Biological Measures of Sediment Quality in McGrath Lake, February 1999, RWQCB-LA. et al.

A United States Coast Guard map of the area, produced in 1855, shows a much larger wetlands complex to the north and east of the current lake. Since the mid-1800's, the majority of these wetlands have been converted to agricultural land and public roads. The construction of Harbor Boulevard in 1958 significantly reduced the acreage of the remaining open water, as well as the remaining wetlands, and impacted the surface hydrology of the lake.

The Water level of McGrath Lake has been mechanically manipulated since the early 1900's. At the time, the agricultural landowner controlled wet-season flooding by breaching the sand dunes near the south end of the lake, allowing the lake to drain to the ocean. This practice was continued through the end of the 20th Century, when coastal regulations precluded this activity.

Additional flood control was provided by the installation of a pump/pipeline system in the mid-1900's. Water from the lake is pumped through a pipeline at the north end of the lake, where it is discharged onto the beach behind sand dunes. The water flows behind the dunes and often enters the surf zone at the Pacific Ocean. Some time before 1953, a 10-inch pipe and pump were installed. During the 1990's, a diesel pump and 15-inch pipe were added to the existing pipeline. The electric pump is normally used several times a week throughout the year, and every day during rain events. The diesel pump is used to augment the electric pump during particularly heavy rains. The capacity of the electric pump is 2,700 gallons per minute (gpm), or 1.3 MGD. The capacity of the diesel pump is 4,750 gpm or 2.28 MGD.

In the absence of pumping, high ground water and surface runoff may cause flooding or damage to crops on agricultural lands east of Harbor Boulevard. Flood waters have also been known to flow across Harbor Boulevard at Gonzales Road, and across lands to the south of McGrath Lake. Regular pumping helps to minimize this flooding and prevent crop damage.<sup>4</sup>

A study was completed in 1999 titled, "Chemical and Biological Measures of Sediment Quality in McGrath Lake," by Regional Board staff, Moss Landing Marine Laboratories, CA DFG, University of California, Santa Cruz, and the Institute of Marine Sciences. This report was completed as part of the Bay Protection and Toxic Cleanup Program (BPTCP or Toxic Hot Spots program. This program studied bays, estuaries, and estuary-like water bodies primarily for sediment quality. Additionally, this study looked at some water quality issues in McGrath Lake.

This study showed that the water in the lake exhibited toxicity. For the Subsurface Water Test, subsurface water samples from the pump house and agriculture drain, the survival rate of a mysid shrimp, the *Neomysis mercedis*, was 12% and 24%, respectively.

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<sup>4</sup> Kennedy/Jenks Report, 2002.

## 4.2 DATA ANALYSIS

This section will describe the data used for the 1996, 1998, and 2002 WQAs that lead to the 303(d) listings which lead to this TMDL.

### 4.2.1 1996 and 1998 Listings for Beach Closures

The State Board collects data on *beach closures*. Local health departments send this data to the Board, which compiles them. These data are not inclusive of all beach postings, only beach closures.

The 1996 and 1998 beach closure listings appear to be based on the State Board data. For the 1996 and 1998 WQAs, the State Board received data showing one beach closure for McGrath Beach. This closure was caused by an 80,000-gallon oil spill, and lasted from 12-27-93 to 1-11-94. Mandalay Beach was listed in the 1996 WQA for beach closures due to a sewage spill. All documentation shows that this sewage spill actually occurred in Mandalay Bay, not on Mandalay Beach. More recent data show that there have been no *beach closures* within the past three years.

### 4.2.2 1996 Coliform Listing Data

The EPA's 1996 303(d) list included Surfers' Knoll and McGrath Beach as not supporting the REC-1 beneficial use. Assessment guidelines for this listing were described as, "For entire data set, wet and dry weather fecal coliform objectives are exceeded more than 15% or wet and dry weather total coliform data are exceeded more than 20%."<sup>5</sup>

### 4.2.3 Beach Closure Data, 1997 to Present

There have been several *beach closures* on these beaches since the 1996 WQA.

- McGrath Beach was closed for a discharge of 20,000 gallons of raw sewage. An unknown amount entered the ocean. This spill closed McGrath Beach for two days, April 6 and 7, 1997.
- McGrath and Mandalay Beaches were closed for 2 weeks, from February 4th to the 18th, 1998 due to flooding.
- McGrath Beach was closed for four days from January 25 to the 29th, 1999, due to a spill from a sewage line.

Neither McGrath Beach nor Mandalay Beach has been closed in the last 3 years. EPA criteria states that for a beach to be fully supporting, it must have no closures in the last 3 years. These data indicate that these beaches meet that criterion. Regional Board staff have recommended these beaches for removal from the 2002 303(d) list.

### 4.2.4 Coliform Data, 1997 to Present

In 1997 Assembly Bill 411 was passed, requiring local health departments to analyze beaches for bacteria on a regular basis. This monitoring is required from April 1 to

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<sup>5</sup> US EPA 305(b) Guidelines.

October 30 of each year. The frequency and location of sampling are determined by local government. In Ventura County, this is overseen by the VC/EHD. VC/EHD routinely collects samples on a weekly basis, all year round. If samples exceed regulatory objectives, they may collect additional samples to show when the objectives are met.

VC/EHD samples are collected at one location on Surfers' Knoll and at three locations on McGrath Beach at the north end, middle, and south end. Samples are collected in the surf zone at ankle depth, approximately 50 yards from any freshwater outlet.

Data were submitted by the Regional Board to State Board for the 2002 WQA by June 15, 2002. That data came from a number of sources, including VC/EHD, Mandalay Generating Station, and Regional Board sampling. Data submitted indicate that Surfers' Knoll is no longer impaired. Regional Board staff have recommended its removal from the 2002 303(d) list.

Due to the AB 411 requirements, indicator bacteria data for beaches in general, and Ventura County Beaches specifically, are now plentiful. For the 2002 WQA, there are nearly 200 data per sampling location on McGrath Beach. Using data submitted by the initial May 2001 deadline, all three sampling locations exceeded water quality objectives for total coliform. Using all the data received by the final June 2002 deadline, only the middle of McGrath Beach exceeds water quality objectives for total coliform. Therefore, McGrath Beach is not recommended for delisting, and this TMDL will focus on that section of the beach and the source of bacterial contamination at McGrath Beach.

#### 4.3 SOURCE ANALYSIS

Data used for this TMDL were collected from four sources: (1) Ventura Wastewater Reclamation Facility (VWRF) and (2) Reliant's Mandalay Generating Station (Mandalay Generating Station) provided data required by their NPDES permits and otherwise collected. (3) Ambient beach data were collected by the VC/EHD for their AB 411 requirements. (4) Samples collected by Regional Board staff for development of this TMDL. The samples collected by VC/EHD were collected approximately 50 yards from any source to the beach. These sources are the Santa Clara River Estuary, which is estuary flow, McGrath Lake discharge, a freshwater outlet, and Mandalay Generating Station, mixed fresh and saline flow from the Edison Canal. They were collected at ankle depth. As they were not collected in the source, or where the source meets the tide water, these samples routinely underestimate the influence of the pathogens on the water in some areas. Regional Board staff also collected samples upstream in the watershed.

Regional Board staff determined that additional sampling was needed to augment the data that the Regional Board had received by January 2002. The sampling plan was designed to investigate the sources to McGrath Beach and their impact on the ocean water quality. Samples were collected from each of the areas where VC/EHD routinely collect samples, at the north end, middle, and south end of the beach. However, Regional Board staff collected the samples from wave wash, when possible, or near where wave

wash was expected. The nearest large and therefore most likely sources to those sites are the Santa Clara River Estuary outfall, the McGrath Lake outfall, and the Mandalay Generating Station outfall, respectively. Samples were collected on the same day, and nearly the same time at several sites and potential sources to show any correlation. Samples were collected weekly for five weeks. The results are discussed below.

Regional Board staff collected samples for two purposes. The first was to characterize the watershed relative to its listing on the 303(d) list. The second purpose was to collect data for the waterbody model, linking sources to the contamination in the tide. For that reason, not all of the data collected by Regional Board staff was used to describe the waterbody, even though it may have been used in the linkage analysis.

Additionally, data were analyzed for dry season (April 1 to October 31) versus wet season (November 1 to March 31). For all sites, wet season data were somewhat more likely to exceed objectives than dry season. This is most pronounced at the McGrath Lake discharge site, site 27000. This data is discussed in detail in sections 4.3.2 and 4.4.

The sites discussed below are shown in detail in Figure 1, above.

#### 4.3.1 *Surfers' Knoll/Santa Clara River Estuary Beach Coliform Bacteria*

Surfers' Knoll is also known as the Santa Clara River Estuary Beach. This location was listed on the 1998 303(d) list for coliform bacteria. For the 2002 (d) listing, recent data were analyzed by Regional Board staff for both total and fecal coliform bacteria. At this time the data indicate that the beach meets REC-1 objectives for both fecal coliform and total coliform bacteria and has been recommended by the Regional and State Boards for delisting. The data are described in Table 4, below. Because the recent data indicate that Surfers' Knoll complies with the water quality objectives, Regional Board staff did not include sampling of the estuary water quality and the beach water quality or analyze the linkage from the sources to water quality at Surfers' Knoll/Santa Clara River Estuary Beach. This TMDL Implementation Plan recommends continued analysis of the VC/EHD monitoring data at this location, as required by applicable laws, to ensure that this beach remains in compliance with the water quality objectives.

If such monitoring indicates impairment, the TMDL will be re-evaluated.

TABLE 4. Surfers' Knoll, McGrath Beach and Mandalay Beach Total Coliform Data

Sampling Location	Number of Samples	Percent total coliform samples exceeding the 2002 303 (d) listing single sample objective (1,000/100 ml)	Percent fecal coliform samples exceeding the single sample objective (400/100ml)
Surfers' Knoll	102	14.7 %	2%
McGrath Beach North	189	16.4 %	1%
McGrath Beach Center	185	22.7 %	2%
McGrath Beach South	186	17.2 %	0.5%

#### 4.3.2 McGrath Beach Total Coliform

VC/EHD collects weekly samples in compliance with AB 411. This law requires local governments collect weekly samples to document pathogen levels along coastal areas. VC/EHD collects samples weekly both during the AB 411 season (April 1 to October 31) as well as the rest of the year. They also collect samples to confirm contamination when it is found, and show when the water is no longer exceeds regulatory levels. Therefore, VC/EHD collects samples more often than weekly. During the study period, 1997 to 2002, VC/EHD collected additional study samples along the coast in this area, as well as inland samples. Samples are collected at three locations along McGrath State Beach. They are North Gonzales Road, Gonzales Road, and Go Kart sites at the north, middle, and south end of the beach.

##### 4.3.2.1 North Gonzales Road Site

The northern location, VC/EHD site number 26000, north of Gonzales Road, is just south of the Santa Clara River Estuary. The major source to this location appears to be the estuary, when it is open to the tide. The information from the original data for the 2002 303(d) list showed this site as exceeding the Ocean Plan total coliform objective of 1000 MPN/100 mL for 20% of the samples.

Recent data show site 26000 exceeds this objective for 16% of the samples from October 1998 to June 2002.<sup>6</sup> Criteria for listing on the 2002 303(d) list required exceedance for 20% of the samples. However, this site also exceeded the geometric mean<sup>7</sup> of 1000/100 mL for 13 of 157 data sets<sup>8</sup> or 8%. These geometric mean

<sup>6</sup> Note that this data set is a subset of the complete data set, which includes data from VC/EHD, Mandalay Generating Station, and the Regional Board. The complete data set included samples collected contemporaneously in near vicinity. The maximum of these duplicates was used for this table and data discussed in this section. All data was used in the modeling for the linkage analysis.

<sup>7</sup> The information on geometric mean is provided for illustrative use only.

exceedances occurred more frequently during wet than dry seasons. Total coliform data are shown in Table 5, below.

TABLE 5. Total Coliform Summary

Site	Number of Samples	Number of Exceeding Total Coliform Instantaneous	Percent Exceeding 2002 303(d) Single Sample Limit	Data Sets	Number of Data Sets Exceeding Geometric Mean	Percent Data Sets Exceeding Geometric Mean
North Gonzales Road	189	31	16%	157	13	8%
Gonzales Road	185	42	23%	151	24	16%
Go Kart	186	32	17%	156	17	11%

Fecal coliform data for this site include 3 exceedances of 204 samples, or 1%. Enterococcus data for this site include 11 exceedances of 203 samples, or 5%. This site is not recommended for listing as impaired for fecal coliform or enterococcus on the 2002 303(d) list.

#### 4.3.2.2 Gonzales Road Site

VC/EHD named the second sample location on McGrath State Beach as Gonzales Road. This is site number 27000, and it is near the outfall for the McGrath Lake discharge. Samples were collected in approximately the same location every week. However, the outfall from McGrath Lake meanders and reaches the tide at different locations. Previously, the outfall reached the tide north of the sampling location. Starting earlier this year, the outfall had moved enough that it is now south of the sampling location.<sup>9</sup> This could affect the sample results, if the tide continued moving in a southerly direction. Also, current data show lower total coliform concentrations.

Originally on the 2002 303(d) list, this site exceeded the 1000 MPN/100 mL objective for 40% of the samples. With the new data, it exceeds the objective for 23% of the samples. However, this site also exceeded the geometric mean of 1000/100 mL for 24 of 151 or 16% of data sets. These exceedances occurred only slightly more often during wet than dry seasons. This site is still impaired and is expected to remain on the 2002 303(d) list. Data for total coliform are shown in Table 3, above.

<sup>8</sup> The Basin Plan requires five samples in a 30-day period to assess the total coliform geometric mean. A data set is 5 or more samples that were collected during a rolling 30-day period.

<sup>9</sup> VC/EHD, personal communication, 2002.



Fecal coliform data for this site include 4 exceedances of 223 samples, or 2%. Enterococcus data for this site include 14 exceedances of 218 samples, or 6%. This site is not listed as impaired for fecal coliform or enterococcus on the 2002 303(d) list.

#### 4.3.2.3 Go Kart Site

VC/EHD named the third sample location on McGrath State Beach as Go Kart site, named after the business on Harbor Boulevard adjacent to the site. This is site number 28000, and it is at the southern end of the beach, just north of Reliant Energy's Mandalay Generating Station (Generating Station) outfall. In the original data analysis for the 2002 303(d) list, 30% of the samples exceeded the 1000 MPN/mL total coliform objective. With the new data, 17% of the samples exceed the objective. However, this site also exceeded the geometric mean of 1000/100 mL 17 of 156 or 11% of the data sets. These geometric mean exceedances occurred more often during wet than dry seasons. Data for total coliform are shown in Table 3, below.

Fecal coliform data for this site include 1 exceedance of 201 samples, or 0.5%. Enterococcus data for this site include 10 exceedances of 197 samples, or 5%. This site is not listed as impaired for fecal coliform or enterococcus on the 2002 303(d) list.

#### 4.4 SEASONALITY

In this TMDL, summer is defined by the AB 411 sampling requirements, which are April 1 to October 31. Winter is defined as the remaining months, or November 1 to March 31.

While there were significant summer exceedances of the 1000/100mL objective for total coliform, the number of exceedances were fewer than winter exceedences. Overall in winter, there were 61 exceedance of 257 samples, or 24%. The data for the individual sites showed more. The North Gonzales Road site, near the estuary, had 17 exceedances out of 85 winter samples, or 20%. This data is summarized in Table 5, below. This is slightly more than the overall rate of exceedance at that site. The source for that site is the Estuary, and VWRP provides the water in the Estuary at a constant rate all year long.

TABLE 6. Seasonal Total Coliform Data for McGrath Beach

Site	# Winter Samples	# Samples Exceeding	% Exceeding in Winter	# Samples Exceeding	# Summer Samples	% Exceeding in Summer
North Gonzales Road	85	17	20%	14	104	13%
Gonzales Road	85	26	31%	16	100	16%
Go Kart	87	18	21%	14	99	14%

The Gonzales Road site, near the McGrath Lake outfall, exceeds the objective for only 16% of its samples exceeding the objective during the summer, as opposed to 31% during the winter. This is also consistent with its source. The McGrath Lake outfall has

a much greater flow during the winter (10 MGD) than during the summer (0.6 MGD). The outfall water is also less likely to reach to marine water during the summer.

The summer data for the Go Kart site, near the Mandalay Generating Station outfall exceeds more often in the winter.

Appendix B contains the data used for this TMDL assessment.

TABLE 7. 303(d) List Status

Site	1998 303(d) Listing	2002 303(d) Listing (Recommendation)
Surfers' Knoll	Coliform bacteria	Remove from listing
North Gonzales Road	Coliform bacteria, <i>beach closures</i> <sup>10</sup>	Watch, remove from listing
Gonzales Road	Coliform bacteria, <i>beach closures</i> <sup>10</sup>	Impaired, remove from listing
Go Kart	Coliform bacteria, <i>beach closures</i> <sup>10</sup>	Watch, remove from listing
Mandalay Beach	<i>Beach closures</i>	Remove from listing

#### 4.5 POINT SOURCES

##### 4.5.1 McGrath Lake

McGrath Beach has two point sources, the McGrath Lake discharge and the Mandalay Generating Station discharge. The location of greatest impairment is at the Gonzales Road sampling site, near the McGrath Lake outfall. As discussed above, this lake constitutes the main source of total coliform bacteria to the beach at this location.

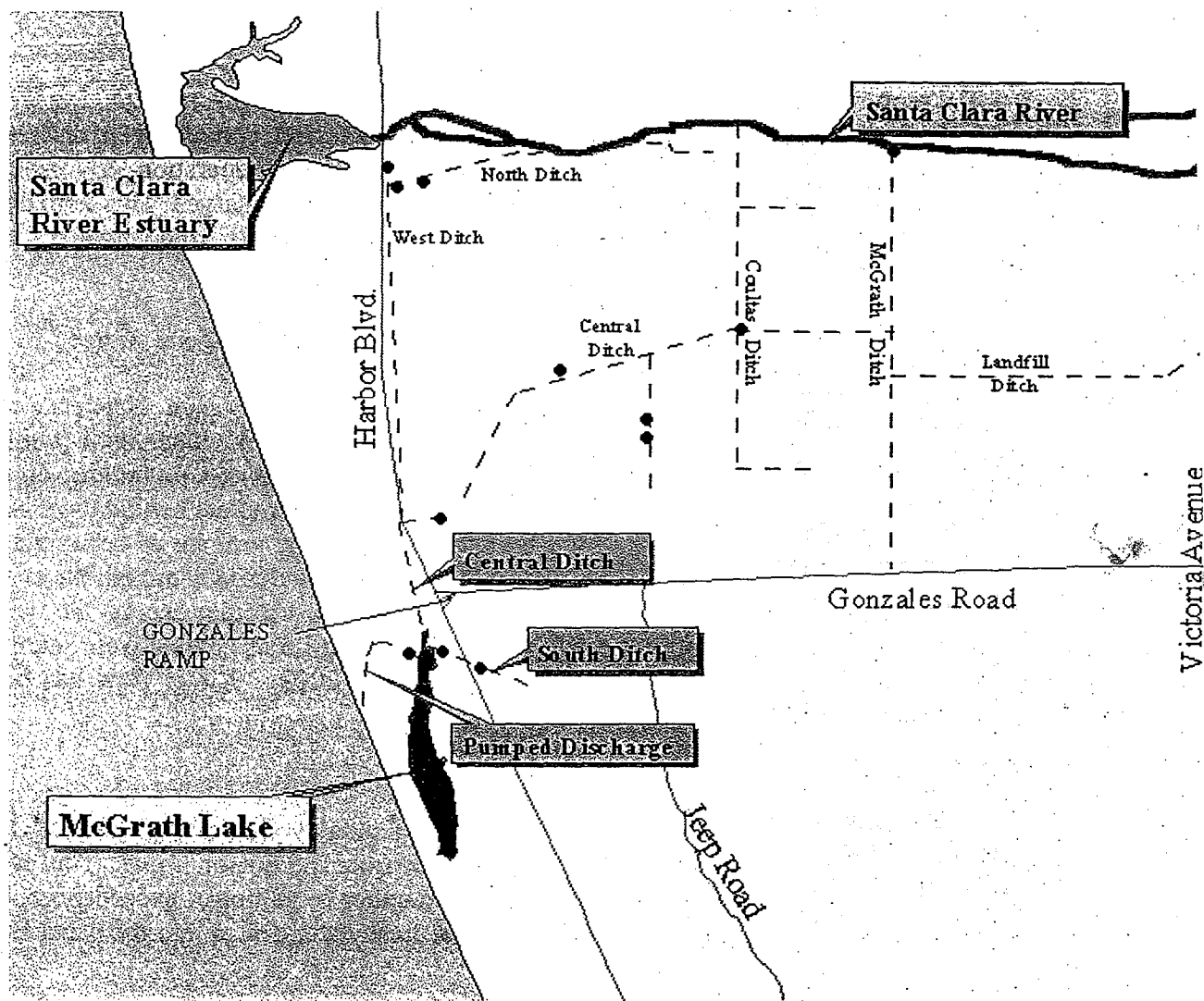
McGrath Lake has several sources of water. Sources of water include irrigation and drainage runoff, groundwater and rainfall.<sup>11</sup> The main source is water from the irrigation ditch, called Central Ditch that comes from agricultural property across Harbor Boulevard from the lake. This ditch starts at the eastern end of the nearest farm property, and goes through the fields westward. When viewed on two occasions, in winter and spring, Central Ditch had water from the start. Central Ditch had the ability to collect runoff from the fields, but was not observed doing so on either occasion. Water was added from tile drains. Water was also added from a pump that removes water from an

<sup>10</sup> This listing is for *beach closures* for all of McGrath Beach, not individual sites.

<sup>11</sup> This is an estimated figure applicable to one set of conditions in the winter of 1992-1993. The data was from Chemical and Biological Measures of Sediment Quality in McGrath Lake, February 1999, RWQCB-LA. et al.

artesian-like well, water that would be used to water crops when needed.<sup>12</sup> Birds were along the sides of the ditch and in the water in the ditch. On a spring visit, there were over 15 birds in the entire length of the ditch, which staff estimated as less than ½-mile long. This water crosses under Harbor Boulevard, north of Gonzales Road, and travels through an undeveloped, wooded area before it contacts McGrath Lake. The ditches are detailed in Figure 2, below.

FIGURE 2. SOURCES TO AND DISCHARGE FROM MCGRATH LAKE



<sup>12</sup> Personal communication from David Murray of Coastal Berry during a tour of the site on April 9, 2002.

South of Gonzales Road there is a second ditch with a pump, called South Ditch. It leads from another farm and other property and flows under Harbor Boulevard to McGrath Lake. This ditch is rarely filled, flowing only during wet weather.<sup>13</sup> This ditch goes near a dog kennel. According to the McGrath Lake WAC, a diversion of this water is planned.

McGrath lake elevation rises in wet weather approximately 3 inches per day, or 2.8 MGD. This is from groundwater percolating into the lake and increased flows of surface water.<sup>14</sup> Therefore, the lake has a number of sources of water in addition to return flows from irrigated agriculture. Additionally, the water from the lake is pumped through a pipe onto the beach. Therefore, Regional Board staff find that this water does not meet the exemption for return flows from irrigated agriculture as stated in the Clean Water Act Section 502(14); 33 U.S.C. Section 1362(14).

The term "point source" means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

Therefore, Regional Board Staff conclude that this discharge is a point source.

This water pumped onto the beach typically reaches the tide. Stakeholders state that "the lake water that is pumped to the beach flows through the sand dunes until it either reaches the ocean or percolates into the sand. During winter months, sand buildup on the beach often creates a barrier that causes the outfall water to accumulate behind the dunes. Winter high tides often overtop the sand barrier, adding to the volume of accumulated outflow until the sand barrier is naturally breached."<sup>15</sup> The water as pumped out of the lake and the water in the "creek" on the beach contain coliform that exceed the ocean objective of 1,000/100 mL of total coliform bacteria. 17 million gallons were pumped from the lake onto the beach during the month of June 2002. Winter flow has been estimated at an average 10.1 MGD.

#### 4.5.2 *Mandalay Generating Station*

The second point source to McGrath Beach is Mandalay Generating Station. The water supplied to Mandalay Generating Station comes from the Edison Canal. This canal originates in Channel Islands Harbor, which has a number of pathogen exceedances, but not enough to be put on the 303(d) list. Additional freshwater drains into the canal from

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<sup>13</sup> Communication from State Parks on June 24, 2002.

<sup>14</sup> Chemical and Biological Measures of Sediment Quality in McGrath Lake, February 1999, RWQCB-LA. et al.

<sup>15</sup> Response to comments letter from McGrath Lake Watershed Action Committee, January 31, 2003.

various farms and stormdrains. These flows can also be high in coliform bacteria.<sup>16</sup> All of this water constitutes the cooling water for the generating station. After use as cooling water, it is discharged to McGrath Beach. The generating station has occasional high coliform counts, but routinely has very high flows. The Generating Station flows vary from approximately 50 MGD to 280 MGD<sup>17</sup>, or approximately 88 to 500 times the flow from McGrath Lake to the beach. This outfall flows directly to the beach as well. The high flows make the occasional high coliform counts a significant impact even compared to the routinely high coliform counts from McGrath Lake.

#### 4.6 NONPOINT SOURCES

The northern most sampling site on McGrath Beach is near the opening, or breach, to the Santa Clara River Estuary. The estuary, when it breaches, is a significant source of coliform to the beach. The major water source is VWRF, which has a total coliform objective of 2/100mL. Therefore, VWRF is not a source of total coliform.<sup>18</sup> The estuary is home to a large number of birds and other wildlife. The wildlife is likely to be the major source of total coliform from the estuary to the beach. However, the estuary also is the source for the least impaired part of the beach, i.e. the sampling site with the lowest coliform levels. This location is expected to be removed from the 2002 303(d) list.

#### 5.0 LINKAGE ANALYSIS

Linkage analysis for this TMDL is done using water quality modeling. The model used was based on the Water Quality Model, first developed by Lee et al. (1985). Water quality modeling is used to: (1) determine the contributions of different sources to bacteria loads (source assessment), (2) relate these loadings to water quality responses in the receiving water, (tide), and (3) estimate the necessary load reductions necessary to meet the numeric targets.

The linkage analysis for this TMDL was performed using a far field diffusion and buildup model. The mixing and dispersion of the wastewater discharge from a discharge point or structure like an outfall or a diffuser can be conceptually divided into two phases: (i) near field mixing, (ii) far field diffusion and buildup. The near field phenomenon occurs in a matter of minutes and within a region measured out to several hundred meters. The buildup in the far field occurs over days and weeks over distances beyond a few kilometers. The far field diffusion is in between these two scales, i.e., a time scale of hours to a few days and a distance scale of a few hundred meters to a few kilometers. For the near field, the mixing is dominated by discharge jet momentum.

Data utilized were obtained from VWRF, VC/EHD, and Mandalay Generating Station, and collected by Regional Board staff. Data for this model include 628 samples

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<sup>16</sup> Communication from Mandalay Generating Station on September 30, 2002.

<sup>17</sup> Communication from Mandalay Generating Station on June 7, 2002.

<sup>18</sup> Exceedances of this objective are uncommon. Any exceedance of this objective would constitute an upset and be handled as a spill. Therefore these exceedances will not be considered as part of this TMDL.

in 3 locations off McGrath Beach. For calibration purposes, 15 samples were used for model validation. For this model, coliform die-off is assumed at  $0.8d^{-1}$ <sup>19</sup>.

The resulting contributions, or loads, from the main sources and their required reductions are discussed in detail in Section 6, Allocations.

The report for this model is shown in Appendix C.

## 6.0 ALLOCATIONS

### 6.1 LOAD ALLOCATIONS (SANTA CLARA RIVER ESTUARY)

The waste load allocations (WLAs) and load allocations (LAs) have been devised from the modeling of the sources and the linkage analysis. The sole non-point source is the Santa Clara River Estuary. Water from the estuary reaches the beach at site 26000, the North Gonzales Road site, which is recommended for removal from the 2002 303(d) list. The total coliform sources in this estuary are mainly birds, which live in or use the estuary as migratory habitat. The total coliform load in summer is  $1.02 \times 10^{12}$  MPN/day. The LA to meet the numeric target based on the linkage analysis is  $4.87 \times 10^{12}$  MPN/day. Therefore, this source needs no source reduction during the summer. In the winter the total coliform load is  $9.24 \times 10^{12}$ . Therefore, this load will need further study.

### 6.2 WASTE LOAD ALLOCATIONS

For McGrath Beach there are only two point sources contributing to total coliform exceedances. Those sources, McGrath Lake and the Mandalay Generating Station have waste load allocations required for this TMDL.

The WLA is expressed as a concentration to allow for seasonal or operational flow variations. Mass based WLAs are provided for illustrative purposes and include an explicit MOS for the McGrath Lake discharge. The WLA is 1000/100 mL, and the mass based WLA includes a 20% MOS. The existing Mandalay Generating Station NPDES permit requires that they meet the 1000/100 mL for receiving water, which is consistent with the concentration based WLA in this TMDL.

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<sup>19</sup> This rate was used in the Santa Monica Bay Beaches Dry Weather Bacteria TMDL and is in the range of acceptable die-off rates. It is considered a conservative value. Section 6.3 provides additional discussion on this value.

TABLE 8. Concentration Waste Load Allocations for McGrath Lake and Mandalay Generating Station

Location	Total Coliform WLA/100 ml
McGrath Lake Discharge	1,000
Mandalay Generating Station	1,000

Both sources were modeled as discussed in Section 5.0, Linkage Analysis. Based on a monthly flow for June 2002 of 17 million gallons, McGrath Lake for dry weather was modeled to have total daily loads on average of  $2.37 \times 10^{11}$  MPN/day. In order to meet the WLA of 800 MPN/100mL, the Total Maximum Daily Load, or TMDL will be  $1.92 \times 10^{11}$ .<sup>20</sup> The reduction in total daily load would be 19%. If the amount of water discharged from McGrath Lake remains the same, the average total coliform count would also require a 19% reduction.

For winter, the average daily flow is as much as 10.1 million gallons per day. The average winter total coliform density is 23083 MPN/100 mL. This results in a coliform load of  $8.82 \times 10^{12}$ . To meet the TMDL of  $1.92 \times 10^{11}$ , the McGrath Lake discharge will need a 97% reduction.

Using the geometric mean of the data for the Mandalay Generating Station, the current total load is  $1.03 \times 10^{12}$ . To meet the numeric target, it would be allocated a TMDL of  $5.7 \times 10^{12}$ . Consequently, Regional Board staff assesses that the existing load is consistent with the TMDL.

TABLE 9. Load Reductions

Site	Current Summer Daily Load ( $\times 10^{12}$ )	Current Winter Daily Load ( $\times 10^{12}$ )	Mass TMDL ( $\times 10^{12}$ )	Percent Reduction
Santa Clara River Estuary	1.02	9.24	4.87	Load reduction pending studies for the Santa Clara River Coliform TMDL
McGrath Lake Discharge	0.237	8.82	0.192	19% summer 97% winter
Mandalay Generating Station	(Geometric mean) 1.03		5.7	None

<sup>20</sup>  $1.92 \times 10^{11}$  is equal to  $1.92 \times 10^{11}$ , or  $1.92 \times 10^{11}$ .

### 6.3 MARGIN OF SAFETY

A margin of safety (MOS) is applied to the available load to account for uncertainties in the TMDL analysis and can be implicit or explicit. An implicit MOS occurs when the linkage data follow conservative assumptions. An explicit MOS is stated separately from the data. For this TMDL, the MOS is added both implicitly and explicitly. The explicit MOS is the difference between the numeric target and the objective used in the model. The implicit MOSs are dilution between the outflow and wave wash, degradation of coliform bacteria, and selection of bacteria models.

#### 6.3.1 *Explicit Margin of Safety*

For this TMDL an explicit MOS of 20% is proposed for the WLA on a mass basis. That is, when considering the WLA on a mass basis, the model was chosen with an objective for total coliform of 800/100 mL to account for the limited data set available the model. Also, the model data used were chosen with the geometric mean representing the concentrations in the tide, not a higher percentile range of the data, as the geometric mean seems to most accurately reflect the ongoing situation in the area.

#### 6.3.2 *Dilution Between Sources and Wave Wash*

This model uses a quasi-steady-state condition for when the source water reaches the tide. Therefore, there is dilution between these sources. This is not a conservative assumption.

#### 6.3.3 *Bacterial Degradation*

The die-off rate for total coliform in seawater is 0.7 to 3.0 per day according to the *Protocol for Developing Pathogen TMDLs* (2000). This model uses a 0.8 d(-1) degradation rate. This is the same bacterial degradation rate used in the Santa Monica Bay Pathogen TMDL. Based on three experiments, two in fresh water and one in marine water, bacterial degradation was shown to range from hours to days. Transport time from most subwatersheds during wet weather is short. Therefore, the conclusion is that bacteria degradation is not fast enough to greatly affect bacteria densities in the wave wash. Based on the results of the fresh water experiments, the model assumes a bacteria die-off rate of 0.8 d-1. Degradation rates were shown to be as high as 1.0 d-1. (See Appendix D for a discussion of the experimental design and results of the bacteria degradation study.) (See Appendix C for details on the model.)

## 7.0 IMPLEMENTATION

The data show that for Surfers' Knoll, McGrath Beach and Mandalay Beach there are two sources that need to be addressed by WLAs. These are the McGrath Lake Outfall and the Mandalay Generating Station outfall.

California Water Code section 13360 precludes the Regional Board from specifying the method of compliance with orders issued by the Regional Board; however California Water Code section 13242 requires that the Basin Plan include an implementation plan to describe the nature of actions to be taken and a time schedule for action. This implementation plan contains additional studies to be conducted by Coastal Berry



Company, LLC (Coastal Berry) and Mandalay Generating Station to refine estimates of waste load allocations and assimilative capacity and options to attain compliance with the WQO for total coliform on McGrath Beach. The implementation plan includes additional studies and a time schedule to determine the best method to meet WLAs for McGrath Beach.

In accordance with the Clean Water Act, point sources, which include sources of discharged wastewater pumped through a pipe, are also required to have an NPDES permit. The Mandalay Generating Station has an NPDES permit. The McGrath Lake discharge does not currently have an NPDES permit.

#### 7.1 SANTA CLARA RIVER ESTUARY

The discharge from the Santa Clara River Estuary does not cause impairment due to exceedance of the single sample total coliform objective, but appears to cause or contribute to exceedences of the total coliform geometric mean objective. The discharge from the estuary is not well defined. Because the primary source of wastewater discharged into the estuary is effluent from the Ventura Wastewater Reclamation Facility which is disinfected, and the estuary supports a large bird population, Regional Board staff concludes that the coliform source into and from the Santa Clara River Estuary is primarily natural, i.e. birds in the estuary. These sources of coliform will be addressed in an upcoming pathogen TMDL for the Santa Clara River Estuary. This site will be monitored as described in the Implementation Plan for this TMDL and further investigated as part of the upcoming Santa Clara River Estuary TMDL. Regional Board staff will study AB 411 data to monitor the estuary discharge. Further information may be used in upcoming TMDLs.

#### 7.2 MCGRATH LAKE OUTFALL

In 1961, the coastal area now called McGrath Beach, and most of McGrath Lake was deeded to the State of California by the McGrath family. At that time, the McGrath family retained the right to discharge water from that lake, and, as stated in the grant<sup>20</sup>, to "maintain the level of (the) lake ... through whatever means seem desirable to" the McGrath family or anyone they authorize. That currently is Coastal Berry. The grant continues, "...however, that any installations necessary for the control and/or maintenance of the lake between the above specified levels shall be located on grantors' land or that portion of said lake situate on grantors' land, and further provided that any exercise of such rights shall in no way interfere with the use of the land herein conveyed or in any way disturb the improvements placed thereon in pursuit of its use for State purposes."

McGrath Lake receives flow from an agricultural ditch year round. It also receives flow from a second agricultural ditch south of Gonzales Road during wet weather.<sup>21</sup> It receives runoff from agriculture and the surrounding area. Additionally, the lake receives shallow groundwater that discharges into the lake, again in greater quantities during wet weather.

<sup>20</sup> Grant deed recorded on May 3, 1961, Book 2004, Page 224, Ventura County.

<sup>21</sup> Communication from State Parks, June 24, 2002.

The McGrath Lake WAC was formed as an adjunct to the McGrath Lake Trustee Council, which was formed in connection with a spill in McGrath Lake in 1993. The WAC consists of members of the McGrath family, who own the north end of the lake and some nearby land used for agriculture and other uses, State Parks, California Fish and Game, United States Fish and Wildlife, Coastal Berry, and Bailard landfill, which is near Coastal Berry property. The WAC is currently working to develop a watershed management plan that will address a broad spectrum of water quality issues affecting the watershed, including coliforms. It is also investigating the feasibility of ceasing discharge to and from the lake. The outcome of these studies may influence the implementation strategies for the McGrath Lake Discharge.

As shown in Load Allocations, Section 6.2, the TMDL is  $1.92 * 10^{11}$ . This location needs to reduce the dry weather coliform by approximately 19% to reach this total coliform bacteria TMDL. This discharge will be addressed through a Clean-up and Abatement Order (CAO) with a time schedule that will require the levels of coliform to be reduced such that they do not impair the beneficial uses of McGrath Beach. Additionally, other objectives must be met. Therefore, the solution to the coliform problems at McGrath Beach cannot impact the other beneficial uses for McGrath Beach of the beneficial uses of McGrath Lake. The impact of any treatment system or other method of removing the impairment must be analyzed to ensure that these uses do not become impaired. The WLA for total coliform will become effective upon order of the CAO by the Regional Board's Executive Officer. The CAO with time schedule will allow the Discharger to implement interim measures to reduce coliform loading and complete technical reports to determine the best option for meeting Ocean Plan and Basin Plan requirements for discharge. At the end of the three-year time schedule, the CAO requires that the discharge from McGrath Lake will meet all applicable requirements or be terminated. The CAO will also require this site to be studied further for a permanent reduction in total coliform load and ensure the McGrath Lake discharge meets Basin Plan and Ocean Plan requirements.

### *7.2.1 Implementation Strategies for McGrath Lake Discharge*

Staff have investigated several possible methods for reducing the pathogen output from McGrath Lake. Those strategies are reduced to diversion of the flow to the lake, treatment, or diversion of the outfall. Each of these systems is discussed below.

#### *7.2.1.1 Treatment*

Treatment of wastewater can be broken into two major categories: onsite above-ground treatment facilities and below ground treatment.

Above ground treatment of the water would require having the water from the lake, not just the agricultural fields, treated for pathogens. That is because the lake has sources of pathogens, i.e. birds, which may not be disturbed. Therefore, simply removing pathogens from the source water to the lake may sufficiently reduce the load of pathogens from the lake outfall.

Treatment facilities would need to be sized to address flows from less than 1 MGD of water in the summer, to over 10 MGD of wastewater in the winter. This is quite variable, and may require disinfection on the same scale as VWRF. Therefore, packaged pretreatment plants would not be adequate to address wet weather loads, but may be suitable for dry weather discharges.

However, treatment might be broken into seasonal treatment: summer and winter. In that scenario, onsite treatment during summer months would treat approximately 0.6 MGD. A small, prefabricated treatment plant could be used to treat the discharge in the summer. As a reduction of 19% of the total coliform is required to meet the TMDL, as little as 19% of the water might need to be treated. Therefore, a treatment plant could cost from approximately \$0.43 to \$1.3 million in initial capital costs, and about \$100,000 to \$250,000 in operating costs per year. Treatment would require a land footprint approximately 0.15 to 0.45 acres.<sup>22</sup>

Below ground treatment could be a leach field either with or without a septic system. A leach field would require a minimum distance between the leaching and the groundwater table. As there is shallow groundwater that discharges into the lake, exhibiting water contact between surface and lake waters and groundwater, it is unlikely that there would be sufficient distance between the water table and a leach field.

#### 7.2.1.2 Diversion

VWRF has a sewer line pipeline which extends southward next to Harbor Boulevard. VWRF is located approximately one mile from Gonzales Road, and has a capacity of 11 MGD, currently processing 9.5 MGD. It might be possible to divert the flow from the agricultural land to VWRF. In the summer this flow is about 0.6 MGD.

However, this quantity of flow might require a connection to the City of San Buenaventura's main trunk line terminus approximately 1 mile north of the entrance to the campground, or approximately 2 miles north of McGrath Lake. VWRF staff estimate connection fees at \$5,800,000, and treatment costs at \$300,000 to \$400,000 per year.

Additionally, City of San Buenaventura policy "prohibits properties located outside its boundaries to connect to its sewer system....The Ventura City Council must approve such agreements."<sup>23</sup>

During wet weather, however, the flow from the lake averages 10 MGD, which would exceed the capacity of VWRF. Total coliform levels in the winter in this area of the beach are slightly lower than summer levels, but not enough that the dilution would eliminate the need to reduce total coliform levels. This water would also need to be diverted. The cost for treating one million gallons is approximately \$1,170 per day. Therefore, the cost to treat this water during the 5 month wet season for 10 MGD would be \$1.8 million.

<sup>22</sup> Communication with Pollution Control Systems, November 13, 2002.

<sup>23</sup> Comment letter from VWRF, January 24, 2003.

There is another potential issue with treating the wet weather discharge at VWRP. The salinity at the lake is not known, but thought to be brackish, due to salt water intrusion during storms. VWRP has maximum salt levels for influent as follows: total dissolved solids (TDS): 4270 mg/L, sulfate: 3660 mg/L, chloride: 880 mg/L. If the McGrath Lake discharge exceeds these levels, it could not be treated at VWRP.<sup>24</sup>

Another form of diversion would be to change the location of the inlet to the McGrath Lake pump. Currently, the lake is pumped from the north end, very near the location where the agricultural ditch flows into the lake. According to recently collected RWQCB data, the south end of the lake has significantly lower levels of pathogens, possibly because it is deeper than the north end of the Lake and has greater assimilative capacity.<sup>25</sup> Therefore, if the flow from the lake to the ocean were to come from the south end of the lake, pathogens would be reduced significantly.

Finally, the outfall currently discharges water onto the beach. The outfall could be moved to discharge into the ocean. The length and diameter of the pipe would need to be determined, but for a simple 15-inch pipe of 500 feet the cost would be approximately \$40,000.<sup>26</sup> Studies and possibly treatment may be required for this alternative. Additional costs for permits, and other technical requirements would be necessary.

#### 7.2.1.3 Ceasing Ocean Discharge

Another option for the discharge from McGrath Lake to McGrath Beach is to cease discharge to the ocean. One method of ceasing discharge was covered briefly in section 7.2.1.2, above, where the discharge from Coastal Berry property was recommended to be diverted to VWRP. There are other possible methods of ceasing discharge. They include: 1) letting the water enter the lake, but not discharging to the ocean and 2) not discharging agricultural and other water to the lake by disposing of it using other means. These methods have the flaw that not all of the water in the lake comes from agricultural discharge and miscellaneous flows from Coastal Berry. There is a second drainage ditch flowing into McGrath Lake. It comes from the south side of Gonzales Road, and it passes by a kennel in addition to agricultural lands. According to the McGrath family<sup>27</sup> this ditch has water flowing in it only during wet weather. Additional water seems to enter the lake from ground water.

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<sup>24</sup> Communication with VWRP, November 7, 2002.

<sup>25</sup> This data does not necessarily agree with the data collected on May 19, 1999. However, all of that data exceeded the method's top concentration level, so a difference in concentrations is not shown. This data is shown in Appendix B.

<sup>26</sup> The cost estimate is based on standard factors from RS Means Environmental Remediation Cost Data, 6<sup>th</sup> annual edition (2000), including engineering and construction.

<sup>27</sup> Communication during WAC meeting (January 2002).

The first method would increase the size of the lake. If the lake did not breach, either naturally or anthropomorphically, it would flood eastward, as described in section 4.1.

The next possible method is to discharge this water to the Santa Clara River. This would be just upstream of the estuary, and therefore the flows would need to meet estuary water quality objectives. While the water from agriculture might meet coliform objectives for the river and estuary, the water might not meet other water quality objectives for the receiving waters.

The final method suggested above would require additional methods for disposal of the water. Methods could include use for agriculture if the water is of appropriate quality, or paid disposal.

All of these methods require additional study. The implementation plan requires that Coastal Berry submit a technical report that evaluates and proposes measures to meet requirements for waste discharged to coastal waters. This report will include complete characterization of the waste discharge for conventional, toxic and priority pollutants. The technical report will also include an analysis of measures that meet the requirements in wet and dry weather. The report will be certified by a registered civil engineer and submitted to the Regional Board within 365 days of the date of issuance of the CAO.

### *7.2.2 Implementation Plan*

In addition to studying and reporting on possible implementation strategies, the CAO requires Coastal Berry to complete several other measures. After the Regional Board's Executive Officer approves Coastal Berry must implement the measures to meet the requirements for waste discharge to the coastal waters within three years of CAO issuance.

The CAO also requires Coastal Berry to implement a monthly monitoring program to include coliform characterization of the discharge using AB 411 guidelines. Samples will be collected both at wave wash and at the discharge point, where the pump(s) discharges the water from McGrath Lake to the beach. This is necessary as there may be a change in the quality of the water before it reaches the ocean. As much of this water is absorbed into the sand, it may affect groundwater or other surface water despite not reaching the tide. Coastal Berry will submit monitoring reports on a quarterly basis.

Three years after the CAO is issued, Coastal berry will either cease discharge of water from McGrath Lake or submit a Report of Waste Discharge. At that time Coastal Berry will meet bacteria water quality standards as stated in the Basin Plan and the Ocean Plan. However, if the Discharger encounters delays beyond their control, the Executive Officer may provide an extension of up to six months to complete implementation.

### 7.3 MONITORING STRATEGY FOR MANDALAY GENERATING STATION

Listing data for the 2002 303(d) list show this site as exceeding the total coliform objectives for 28% of the samples. Current data show that this site exceeds the objective for 19% of the samples collected. To be listed on the 303(d) list, it must exceed 20%. Mandalay Generating Station, the major source at this site, currently has an NPDES permit to discharge with objectives for total and fecal coliform. Monitoring results from Mandalay Generating Station will be reviewed to ensure that the discharge meets the objectives for total coliform in ocean water.

TABLE 10. Implementation Schedule

Implementation Act	Responsible Party	Implementation Date
WLA for coliform bacteria apply to the McGrath Lake discharge.	Coastal Berry	Effective Date of Clean-up and Abatement Order (CAO)
Submit quarterly monitoring reports on the monthly monitoring of coliform in the discharge and at wave wash.	Coastal Berry	Monthly monitoring shall be implemented upon effective date of the CAO. Quarterly reports are due by the 15th of the month following the end of each calendar quarter.
Begin monitoring in wave wash at McGrath Lake Outfall, when possible, and Mandalay Generating Station Outfall.	Coastal Berry, Mandalay Generating Station, and VC/EHD to coordinate.	One year after effective date of CAO.
Report on interim methods for reducing coliform load from discharge.	Coastal Berry	120 days after effective date of CAO.
Complete study of ceasing discharge and associated methods.	Coastal Berry, McGrath WAC	Three years after effective date of CAO.
Obtain Permit for McGrath Lake Discharge, if necessary.	Regional Board/Coastal Berry	Three years after effective date of CAO.
Water from McGrath Lake Outfall Meets WLA of 800/100 mL, and all requirements of the Basin Plan.	Coastal Berry	Three years after effective date of CAO.

### 8.0 MONITORING PROGRAMS

Currently, McGrath Beach is monitored by VC/EHD weekly at three locations. Each of these locations is purposefully located at least 50 feet from the location where the

outflow from the beach reaches the water. This is how most sampling is done throughout Ventura County by VC/EHD and Los Angeles County by a number of entities, as well as by others throughout the state.<sup>28</sup> This method of sampling is used to show the levels of coliform in the surf zone. However, this location of sample sites is inadequate for purposes of this TMDL. This TMDL requires samples reflecting the amount of total coliform that may be contacted during REC-1 use of the sites. For the purposes of meeting this TMDL, monitoring samples will be collected at ankle depth where the discharge meets the tide.

The monitoring sites will otherwise remain virtually unchanged. Three sites along McGrath Beach will be monitored at the northern end, middle, and southern end of the beach. All samples will be collected in wave wash, as discussed in Section 3.1 and at ankle depth (3 inches). The northern end sample will be collected at the Santa Clara River Estuary outflow, when flowing, or near to the expected flow when it is not. The mid-beach sample will likewise be collected in the McGrath Lake outfall flow, when flowing, or as near to the expected flow when it is not. According to their permit, Mandalay Generating Station collects samples at the southern end of the beach in its outflow. Currently, this sample is collected quarterly. Samples will be collected monthly. The Mandalay Generating Station has continuous flow, so it will always be collected in this location.

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<sup>28</sup> Santa Monica Bay Dry Weather Pathogen TMDL (2002).

## 9.0 REFERENCES

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# Appendices

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**Appendix A: Regional Board Resolution 01-018**

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**State of California**  
**California Regional Water Quality Control Board, Los Angeles Region**

**RESOLUTION NO. 01-018**  
**October 25, 2001**

**Amendment to the *Water Quality Control Plan for the Los Angeles Region* to Update the  
Bacteria Objectives for Water Bodies Designated for Water Contact Recreation**

**WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:**

1. The Federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board (Regional Board) to develop water quality objectives which are sufficient to protect beneficial uses designated for each water body found within its region.
2. The proposed amendment to the Water Quality Control Plan for the Los Angeles Region (Basin Plan) was developed in accordance with section 13241 of the Porter-Cologne Water Quality Control Act (California Water Code, Division 1, Chapter 4, Article 3).
3. The current Basin Plan contains total and fecal coliform bacteria objectives to protect waters designated for water contact recreation based on recommendations made by the U.S. EPA in 1976.
4. The amendment proposed for adoption into the Basin Plan will update the current bacteria objectives for waters designated for water contact recreation to include objectives for enterococcus, the ratio of fecal-to-total coliforms, and e. coli in addition to objectives for total and fecal coliform.
5. The amendment will revise Chapter 3 "Water Quality Objectives" of the Basin Plan.
6. The proposed amendment is based on more recent epidemiological studies and research on the most appropriate bacterial indicators.
7. Specifically, in 1983 and 1984, additional epidemiological studies were conducted by the U.S. EPA to determine the most appropriate bacterial indicators and corresponding objectives for waters designated for water contact recreation.
8. Based on these epidemiological studies, in 1986 the U.S. EPA revised its recommended bacteria criteria for waters designated for water contact recreation to include enterococcus for marine waters and enterococcus or e. coli for fresh waters.
9. In 1995, the Santa Monica Bay Restoration Project sponsored a local epidemiological study to determine the most appropriate bacterial indicators and corresponding objectives for marine waters designated for water contact recreation.
10. Based on the Santa Monica Bay epidemiological study and other national studies, the California State Legislature passed a law (Assembly Bill 411 (1997)) requiring the California Department of Health Services (Department) to establish minimum protective bacterial standards for waters adjacent to beaches, which include standards for total coliform, fecal

coliform, and enterococci bacteria, or for other microbiological indicators that the Department determines are appropriate.

11. The Department adopted regulations in 1999 that establish minimum protective bacterial standards for waters adjacent to beaches, including objectives for total coliform, fecal coliform and enterococcus as well as an objective for the ratio of fecal-to-total coliforms.
12. In March 1999, the U.S. EPA made a commitment in its *Action Plan for Beaches and Recreational Waters* that "where a State does not amend its water quality standards to include the 1986 criteria, EPA will act under Section 303(c) of the Clean Water Act to promulgate the criteria with the goal of assuring that the 1986 criteria apply in all states no later than 2003."
13. The U.S. EPA's 1986 bacteria criteria and the bacteria standards contained in the California Code of Regulations, title 17, section 7958 represent the best science available.
14. The Regional Board has considered the costs of implementing the amendment, and finds these costs to be a reasonable burden relative to the environmental benefits.
15. The proposed amendment results in no potential for adverse effect, either individually or cumulatively, on wildlife.
16. The regulatory action proposed meets the "Necessity" standard of the Administrative Procedures Act, Government Code, section 11353, subdivision (b).
17. The amendment is consistent with the State Antidegradation Policy (State Water Resources Control Board (SWRCB) Resolution No. 68-16), in that the changes to water quality objectives (i) consider maximum benefits to the people of the state, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies. Likewise, the amendment is consistent with the federal Antidegradation Policy (40 CFR 131.12).
18. The basin planning process has been certified as 'functionally equivalent' to the California Environmental Quality Act requirements for preparing environmental documents and is, therefore, exempt from those requirements (Public Resources Code, Section 21000 et seq.).
19. Regional Board staff has prepared a staff report dated July 31, 2001, describing the proposed amendment, and sent the staff report to all known interested persons to allow a 45-day public comment period in advance of the public hearing.
20. The Regional Board held a public hearing on October 25, 2001, for the purpose of receiving testimony on the proposed Basin Plan amendment. Notice of the public hearing was sent to all interested persons and published in accordance with California Water Code, section 13244.
21. The Basin Plan amendment must be submitted for review and approval by the SWRCB, Office of Administrative Law (OAL), and U.S. EPA. Once approved by the SWRCB, the amendment is submitted to OAL and U.S. EPA. The Basin Plan amendment will become effective upon approval by OAL and U.S. EPA. A Notice of Decision will be filed.



**THEREFORE, be it resolved that**

1. Pursuant to sections 13240 and 13241 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendment to the Water Quality Control Plan for the Los Angeles Region as set forth in the attachment.
2. The Executive Officer is directed to forward copies of the Basin Plan amendment to the SWRCB in accordance with the requirements of section 13245 of the California Water Code.
3. The Regional Board requests that the SWRCB approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward it to OAL and the U.S. EPA.
4. If during its approval process the SWRCB or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Board of any such changes.
5. The Executive Officer is authorized to sign a Certificate of Fee Exemption.

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on October 25, 2001.

**Original Signed By**

\_\_\_\_\_  
Dennis A. Dickerson  
Executive Officer

**10/25/01**

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Date

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## ATTACHMENT

In Chapter 3 "Water Quality Objectives" of the Basin Plan, replace Paragraph 2 under "Bacteria, Coliform" on p. 3-3 with the following:

### In Marine Waters Designated for Water Contact Recreation (REC-1)

#### 1. Geometric Mean Limits

- a. Total coliform density shall not exceed 1,000/100 ml.
- b. Fecal coliform density shall not exceed 200/100 ml.
- c. Enterococcus density shall not exceed 35/100 ml.

#### 2. Single Sample Limits

- a. Total coliform density shall not exceed 10,000/100 ml.
- b. Fecal coliform density shall not exceed 400/100 ml.
- c. Enterococcus density shall not exceed 104/100 ml.
- d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

### In Fresh Waters Designated for Water Contact Recreation (REC-1)

#### 1. Geometric Mean Limits

- a. *E. coli* density shall not exceed 126/100 ml.
- b. Fecal coliform density shall not exceed 200/100 ml.

#### 2. Single Sample Limits

- a. *E. coli* density shall not exceed 235/100 ml.
- b. Fecal coliform density shall not exceed 400/100 ml.

### Implementation Provisions for Water Contact Recreation Bacteria Objectives

The geometric mean values should be calculated based on a statistically sufficient number of samples (generally not less than 5 samples equally spaced over a 30-day period).

If any of the single sample limits are exceeded, the Regional Board may require, through a permit requirement, repeat sampling on a daily basis until the sample falls below the single sample limit in order to determine the persistence of the exceedance.

When repeat sampling is required because of an exceedance of any one single sample limit, values from all samples collected during that 30-day period shall be used to calculate the geometric mean.

SECRET

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

DATE 08-14-2010 BY 60322 UCBAW/STP

1. The purpose of this document is to provide information regarding the activities of the [redacted] in the [redacted] area.

2. The [redacted] has been identified as a [redacted] and is currently operating in the [redacted] area.

3. The [redacted] is believed to be involved in [redacted] activities.

4. The [redacted] is believed to be involved in [redacted] activities.

5. The [redacted] is believed to be involved in [redacted] activities.

6. The [redacted] is believed to be involved in [redacted] activities.

7. The [redacted] is believed to be involved in [redacted] activities.

8. The [redacted] is believed to be involved in [redacted] activities.

9. The [redacted] is believed to be involved in [redacted] activities.

## Appendix B: TMDL Assessment Data

COLIFORM, TOTAL	171.00	MPN/100 ML	G	12/08/98 13:10	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	12/15/98 08:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	12/21/98 08:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	323.00	MPN/100 ML	G	12/29/98 08:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	185.00	MPN/100 ML	G	01/05/99 09:03	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	292.00	MPN/100 ML	G	01/12/99 09:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	134.00	MPN/100 ML	G	01/20/99 08:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	7,270.00	MPN/100 ML	G	01/26/99 10:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	98.00	MPN/100 ML	G	02/02/99 09:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	02/09/99 09:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	02/17/99 08:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	02/23/99 08:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	03/02/99 08:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100 ML	G	03/09/99 08:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100 ML	G	03/15/99 09:05	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	933.00	MPN/100 ML	G	03/23/99 09:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	03/30/99 08:56	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24,192.00	MPN/100 ML	G	04/06/99 08:43	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	4,106.00	MPN/100 ML	G	04/13/99 08:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,450.00	MPN/100 ML	G	04/15/99 08:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	246.00	MPN/100 ML	G	04/15/99 08:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,081.00	MPN/100 ML	G	04/15/99 08:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,076.00	MPN/100 ML	G	04/15/99 08:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,255.00	MPN/100 ML	G	04/15/99 08:54	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,255.00	MPN/100 ML	G	04/15/99 08:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	7,270.00	MPN/100 ML	G	04/15/99 08:56	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	262.00	MPN/100 ML	G	04/20/99 08:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	84.00	MPN/100 ML	G	04/27/99 08:17	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	472.00	MPN/100 ML	G	05/04/99 08:36	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	05/11/99 08:33	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	05/18/99 08:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	598.00	MPN/100 ML	G	05/25/99 08:48	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	703.00	MPN/100 ML	G	06/02/99 08:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	06/08/99 08:29	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	168.00	MPN/100 ML	G	06/15/99 08:26	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,187.00	MPN/100 ML	G	06/23/99 10:28	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	161.00	MPN/100 ML	G	06/28/99 12:10	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	148.00	MPN/100 ML	G	07/06/99 12:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	697.00	MPN/100 ML	G	07/12/99 12:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100 ML	G	07/19/99 12:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	156.00	MPN/100 ML	G	07/26/99 10:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,098.00	MPN/100 ML	G	08/02/99 12:33	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	369.00	MPN/100 ML	G	08/09/99 12:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	08/16/99 12:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	199.00	MPN/100 ML	G	08/24/99 08:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,054.00	MPN/100 ML	G	08/30/99 11:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100 ML	G	09/08/99 09:10	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	09/13/99 12:40	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	09/20/99 12:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	09/27/99 12:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	10/04/99 11:53	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100 ML	G	10/11/99 12:21	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	Place 10	MPN/100 ML	G	10/18/99 12:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	10/25/99 12:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	158.00	MPN/100 ML	G	11/01/99 13:19	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	5,794.00	MPN/100 ML	G	11/08/99 12:36	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,145.00	MPN/100 ML	G	11/10/99 10:42	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	471.00	MPN/100 ML	G	11/10/99 10:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11



COLIFORM BACTERIA, FECAL	10 MPN/100 ML		2/26/02	816	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		2/26/02	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/5/02		26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/5/02	804	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/5/02	810	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/19/02	838	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/19/02	843	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/19/02	847	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/26/02	814	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/26/02	827	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		3/26/02	848	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/2/02	958	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/2/02	810	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/2/02	827	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/9/02	817	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/9/02	829	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/9/02	902	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/16/02	829	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/16/02	836	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/16/02	858	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/17/02	1020	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/23/02	809	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/23/02	818	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/23/02	851	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/30/02	805	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/30/02	1215	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		4/30/02	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/7/02	810	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/7/02	823	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/7/02	852	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/14/02	828	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/14/02	836	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/14/02	859	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	20 MPN/100 ML		5/21/02	1349	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	20 MPN/100 ML		5/21/02	813	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/21/02	840	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/29/02	849	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/29/02	856	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		5/29/02	920	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		6/3/02	1215	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		6/3/02	1158	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	10 MPN/100 ML		6/3/02	1132	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	2 MPN/100 ML		4/2/02	9:55	0402-11			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	2 MPN/100 ML		4/2/02	10:16	0402-12			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	1700 MPN/100 ML		4/2/02	10:40	0402-08			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	40 MPN/100 ML		4/2/02	10:53	0402-13			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	130 MPN/100 ML		4/2/02	11:05	0402-14			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	170 MPN/100 ML		4/9/02	9:59	0409-11			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	8 MPN/100 ML		4/9/02	10:30	0409-12			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	500 MPN/100 ML		4/9/02	10:50	0409-08			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	130 MPN/100 ML		4/9/02	11:11	0409-14			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	90 MPN/100 ML		5/6/02	11:31	0506-08			MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	2 MPN/100 ML		5/6/02	11:34	0506-09			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2.00 MPN/100 ML	G	10/19/98	11:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	119.00 MPN/100 ML	G	11/10/98	12:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	175.00 MPN/100 ML	G	11/17/98	12:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00 MPN/100 ML	G	11/24/98	13:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,201.00 MPN/100 ML	G	12/02/98	11:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11













































<u>Parameter</u>	<u>Qualifier</u>	<u>Result</u>	<u>Units</u>	<u>Sample Method</u>	<u>Sample Date</u>	<u>Sample Time</u>	<u>Station Name</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Waterbody</u>	<u>Hydrologic Unit</u>
COLIFORM BACTERIA, FECAL		2.00	MPN/100 ML	G	10/19/98	11:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		2.00	MPN/100 ML	G	10/19/98	11:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		5.00	MPN/100 ML	G	10/19/98	11:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		52.00	MPN/100 ML	G	11/02/98	09:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	11/10/98	12:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	11/10/98	12:25	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	11/10/98	12:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		31.00	MPN/100 ML	G	11/17/98	12:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		10.00	MPN/100 ML	G	11/17/98	12:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		74.00	MPN/100 ML	G	11/17/98	13:10	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		10.00	MPN/100 ML	G	11/24/98	13:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	11/24/98	12:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	11/24/98	12:30	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		41.00	MPN/100 ML	G	12/02/98	11:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		31.00	MPN/100 ML	G	12/02/98	11:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		41.00	MPN/100 ML	G	12/02/98	12:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/08/98	13:10	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		20.00	MPN/100 ML	G	12/08/98	13:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/08/98	12:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/15/98	08:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		121.00	MPN/100 ML	G	12/15/98	08:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/15/98	09:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/21/98	08:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		10.00	MPN/100 ML	G	12/21/98	09:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		30.00	MPN/100 ML	G	12/21/98	09:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/29/98	08:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/29/98	08:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	12/29/98	08:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	01/05/99	09:03	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	01/05/99	09:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	01/05/99	09:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		20.00	MPN/100 ML	G	01/12/99	09:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		41.00	MPN/100 ML	G	01/12/99	09:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	01/12/99	09:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		31.00	MPN/100 ML	G	01/20/99	08:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		20.00	MPN/100 ML	G	01/20/99	09:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	01/20/99	09:25	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		250.00	MPN/100 ML	G	01/26/99	10:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		74.00	MPN/100 ML	G	01/26/99	10:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		63.00	MPN/100 ML	G	01/26/99	10:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		31.00	MPN/100 ML	G	01/28/99	13:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		30.00	MPN/100 ML	G	01/28/99	13:43	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		52.00	MPN/100 ML	G	01/28/99	13:44	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		98.00	MPN/100 ML	G	01/28/99	13:48	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		52.00	MPN/100 ML	G	01/28/99	13:50	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		63.00	MPN/100 ML	G	01/28/99	13:53	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		20.00	MPN/100 ML	G	01/28/99	13:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	02/02/99	09:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		63.00	MPN/100 ML	G	02/02/99	09:14	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	02/02/99	09:44	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	02/09/99	09:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		31.00	MPN/100 ML	G	02/09/99	08:54	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		20.00	MPN/100 ML	G	02/09/99	09:17	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	02/17/99	08:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL		10.00	MPN/100 ML	G	02/17/99	08:25	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM BACTERIA, FECAL	<	10.00	MPN/100 ML	G	02/17/99	08:55	28000	34.21	119.25	MCGRATH STATE BEACH	403.11

COLIFORM, TOTAL	882.00	MPN	ML	G	11/11/99	10:50	26000	34.22	11	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100	ML	G	11/15/99	12:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100	ML	G	11/22/99	12:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30.00	MPN/100	ML	G	11/30/99	08:06	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100	ML	G	12/06/99	12:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100	ML	G	12/13/99	12:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100	ML	G	12/20/99	12:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	97.00	MPN/100	ML	G	12/28/99	12:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100	ML	G	01/03/00	12:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100	ML	G	01/10/00	12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	84.00	MPN/100	ML	G	01/19/00	10:12	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100	ML	G	01/24/00	12:42	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	512.00	MPN/100	ML	G	01/31/00	08:34	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100	ML	G	02/08/00	08:44	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100	ML	G	02/09/00	15:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100	ML	G	02/09/00	15:17	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100	ML	G	02/09/00	15:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100	ML	G	02/14/00	08:10	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	122.00	MPN/100	ML	G	02/16/00	08:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	118.00	MPN/100	ML	G	02/16/00	08:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	253.00	MPN/100	ML	G	02/16/00	08:40	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100	ML	G	02/22/00	09:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	9,208.00	MPN/100	ML	G	02/29/00	08:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	14,136.00	MPN/100	ML	G	03/07/00	12:49	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	487.00	MPN/100	ML	G	03/14/00	09:27	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100	ML	G	03/21/00	08:07	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100	ML	G	03/28/00	08:16	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100	ML	G	04/05/00	12:45	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100	ML	G	04/10/00	08:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100	ML	G	04/18/00	08:23	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,187.00	MPN/100	ML	G	04/25/00	08:16	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100	ML	G	05/02/00	08:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	520.00	MPN/100	ML	G	05/09/00	08:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	657.00	MPN/100	ML	G	05/17/00	08:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	85.00	MPN/100	ML	G	05/23/00	08:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	581.00	MPN/100	ML	G	05/31/00	08:16	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	135.00	MPN/100	ML	G	06/06/00	08:07	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100	ML	G	06/13/00	10:01	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	457.00	MPN/100	ML	G	06/20/00	08:13	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	110.00	MPN/100	ML	G	06/27/00	08:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	419.00	MPN/100	ML	G	07/06/00	08:05	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100	ML	G	07/11/00	08:05	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	816.00	MPN/100	ML	G	07/18/00	08:05	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,046.00	MPN/100	ML	G	07/25/00	08:18	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	247.00	MPN/100	ML	G	08/01/00	08:57	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	471.00	MPN/100	ML	G	08/08/00	08:07	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100	ML	G	08/14/00	12:19	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100	ML	G	08/21/00	12:40	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100	ML	G	08/28/00	12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20	MPN/100	ML		9/5/00	12:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100	ML	G	09/05/00	12:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	749	MPN/100	ML		9/11/00	12:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	749.00	MPN/100	ML	G	09/11/00	12:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	496	MPN/100	ML		9/12/00	15:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	546	MPN/100	ML		9/12/00	15:48	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	359	MPN/100	ML		9/12/00	15:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	496.00	MPN/100	ML	G	09/12/00	15:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	546.00	MPN/100	ML	G	09/12/00	15:48	26000	34.22	119.26	MCGRATH STATE BEACH	403.11



COLIFORM, TOTAL	359.00 MPN ML	G	09/12/00 15:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	163 MPN/100 ML		9/18/00 12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	163.00 MPN/100 ML	G	09/18/00 12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		9/25/00 12:08	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML		10/2/00 12:24	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63 MPN/100 ML		10/9/00 12:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		10/16/00 12:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		10/23/00 12:19	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	402 MPN/100 ML		10/31/00 8:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3654 MPN/100 ML		11/6/00 12:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	146 MPN/100 ML		11/13/00 12:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52 MPN/100 ML		11/20/00 11:53	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		11/27/00 12:34	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52 MPN/100 ML		12/4/00 12:37	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	231 MPN/100 ML		12/11/00 11:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2755 MPN/100 ML		12/18/00 12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		12/26/00 12:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		1/2/01 12:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		1/8/01 12:31	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	110 MPN/100 ML		1/16/01 12:17	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	301 MPN/100 ML		1/22/01 11:43	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74 MPN/100 ML		1/29/01 12:58	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	450 MPN/100 ML		2/5/01 12:18	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24192 MPN/100 ML		2/12/01 12:44	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	223 MPN/100 ML		2/21/01 8:26	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24192 MPN/100 ML		2/26/01 12:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24192 MPN/100 ML		3/6/01 8:21	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2481 MPN/100 ML		3/12/01 12:07	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	216 MPN/100 ML		3/19/01 12:57	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1396 MPN/100 ML		3/27/01 8:26	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63 MPN/100 ML		4/2/01 12:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1281 MPN/100 ML		4/9/01 12:21	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	393 MPN/100 ML		4/16/01 12:10	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML		4/24/01 8:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2909 MPN/100 ML		5/1/01 8:06	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3255 MPN/100 ML		5/7/01 12:17	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		5/15/01 8:24	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	181 MPN/100 ML		5/22/01 8:38	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	472 MPN/100 ML		5/30/01 8:44	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		6/5/01 8:26	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML		6/12/01 8:02	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	120 MPN/100 ML		6/19/01 8:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML		6/26/01 14:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	520 MPN/100 ML		7/2/01 9:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	285 MPN/100 ML		7/10/01 9:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	109 MPN/100 ML		7/17/01 8:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1210 MPN/100 ML		7/31/01 8:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1850 MPN/100 ML		8/7/01 8:13	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	146 MPN/100 ML		8/14/01 8:34	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML		8/20/01 12:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML		8/20/01 13:43	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	51 MPN/100 ML		8/28/01 8:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		9/5/01 8:11	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML		9/11/01 8:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74 MPN/100 ML		9/18/01 8:18	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		9/25/01 8:07	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		10/2/01 8:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		10/9/01 8:22	26000	34.22	119.26	MCGRATH STATE BEACH	403.11





COLIFORM, TOTAL	10 MPN/100 ML		10/16/01	813	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		10/23/01	808	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML		10/30/01	817	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML		11/6/01	818	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1725 MPN/100 ML		11/13/01	916	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML		11/20/01		26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74 MPN/100 ML		12/11/01	812	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		12/18/01	816	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	98 MPN/100 ML		12/27/01	807	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	51 MPN/100 ML		1/3/02	1234	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	97 MPN/100 ML		1/8/02	801	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		1/15/02	813	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	146 MPN/100 ML		1/23/02	822	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	169 MPN/100 ML		1/29/02	1206	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	240 MPN/100 ML		2/4/02	1157	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		2/12/02	817	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		2/20/02	824	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		2/26/02	810	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		3/5/02		26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		3/19/02	838	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		3/26/02	814	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31 MPN/100 ML		4/2/02	958	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	83 MPN/100 ML		4/9/02	817	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML		4/16/02	829	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31 MPN/100 ML		4/17/02	1020	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	85 MPN/100 ML		4/23/02	809	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		4/30/02	805	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		5/7/02	810	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		5/14/02	828	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74 MPN/100 ML		5/21/02	1349	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		5/29/02	849	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML		6/3/02	1215	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML		4/2/02	9:55	26009			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML		4/9/02	9:59	26009			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	6.00 MPN/100 ML	G	10/19/98	11:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	798.00 MPN/100 ML	G	11/02/98	09:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	86.00 MPN/100 ML	G	11/10/98	12:25	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	265.00 MPN/100 ML	G	11/17/98	12:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00 MPN/100 ML	G	11/24/98	12:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00 MPN/100 ML	G	12/02/98	11:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	622.00 MPN/100 ML	G	12/08/98	13:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,811.00 MPN/100 ML	G	12/15/98	08:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00 MPN/100 ML	G	12/21/98	09:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00 MPN/100 ML	G	12/29/98	08:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	364.00 MPN/100 ML	G	01/05/99	09:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,602.00 MPN/100 ML	G	01/12/99	09:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,223.00 MPN/100 ML	G	01/20/99	09:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	19,863.00 MPN/100 ML	G	01/26/99	10:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,785.00 MPN/100 ML	G	01/28/99	13:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,143.00 MPN/100 ML	G	01/28/99	13:43	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,255.00 MPN/100 ML	G	01/28/99	13:44	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,255.00 MPN/100 ML	G	01/28/99	13:48	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,515.00 MPN/100 ML	G	01/28/99	13:50	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,421.00 MPN/100 ML	G	01/28/99	13:53	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,664.00 MPN/100 ML	G	01/28/99	13:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00 MPN/100 ML	G	02/02/99	09:14	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	11,199.00 MPN/100 ML	G	02/09/99	08:54	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,255.00 MPN/100 ML	G	02/17/99	08:25	27000	34.22	119.26	MCGRATH STATE BEACH	403.11



COLIFORM, TOTAL	1,054.00	MPN/100 ML	G	02/23/99 08:48	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	294.00	MPN/100 ML	G	03/02/99 08:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	03/09/99 08:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	03/09/99 12:42	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	17,329.00	MPN/100 ML	G	03/15/99 09:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	862.00	MPN/100 ML	G	03/23/99 08:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,100.00	MPN/100 ML	G	03/30/99 08:50	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	249.00	MPN/100 ML	G	04/06/99 08:37	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24,192.00	MPN/100 ML	G	04/13/99 08:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,654.00	MPN/100 ML	G	04/15/99 08:59	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	4,611.00	MPN/100 ML	G	04/15/99 09:02	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	6,867.00	MPN/100 ML	G	04/15/99 09:04	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	6,131.00	MPN/100 ML	G	04/15/99 09:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	04/15/99 09:08	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	19,863.00	MPN/100 ML	G	04/15/99 09:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,281.00	MPN/100 ML	G	04/15/99 09:13	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	19,863.00	MPN/100 ML	G	04/20/99 08:35	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	160.00	MPN/100 ML	G	04/22/99 08:59	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	233.00	MPN/100 ML	G	04/22/99 09:06	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	04/22/99 09:08	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	145.00	MPN/100 ML	G	04/22/99 09:09	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24,192.00	MPN/100 ML	G	04/22/99 09:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	04/22/99 09:12	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	14,136.00	MPN/100 ML	G	04/22/99 09:17	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	04/27/99 08:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	04/27/99 08:23	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	04/27/99 08:26	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	04/27/99 08:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	05/04/99 08:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24,192.00	MPN/100 ML	G	05/11/99 08:41	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	19,863.00	MPN/100 ML	G	05/12/99 02:15	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	8,664.00	MPN/100 ML	G	05/12/99 02:16	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	05/12/99 02:17	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	51.00	MPN/100 ML	G	05/12/99 02:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,092.00	MPN/100 ML	G	05/12/99 02:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	457.00	MPN/100 ML	G	05/12/99 02:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	185.00	MPN/100 ML	G	05/18/99 08:53	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	413.00	MPN/100 ML	G	05/25/99 08:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,989.00	MPN/100 ML	G	06/02/99 08:35	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100 ML	G	06/08/99 08:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	4,106.00	MPN/100 ML	G	06/15/99 08:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	06/23/99 10:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	160.00	MPN/100 ML	G	06/28/99 12:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	109.00	MPN/100 ML	G	07/06/99 12:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	441.00	MPN/100 ML	G	07/12/99 12:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	07/19/99 12:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	134.00	MPN/100 ML	G	07/26/99 10:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	4,611.00	MPN/100 ML	G	08/02/99 12:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,282.00	MPN/100 ML	G	08/09/99 12:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100 ML	G	08/16/99 12:52	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	638.00	MPN/100 ML	G	08/24/99 08:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	933.00	MPN/100 ML	G	08/30/99 11:48	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	341.00	MPN/100 ML	G	09/08/99 09:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	84.00	MPN/100 ML	G	09/13/99 12:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	231.00	MPN/100 ML	G	09/20/99 12:36	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	09/27/99 12:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	10/04/99 11:50	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	504.00	MPN/100 ML	G	10/11/99 12:14	27000	34.22	119.26	MCGRATH STATE BEACH	403.11



COLIFORM, TOTAL	142.00	MPN/100 ML	G	10/11/99 12:17	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	10/25/99 12:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	201.00	MPN/100 ML	G	11/01/99 13:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	7,270.00	MPN/100 ML	G	11/08/99 12:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	85.00	MPN/100 ML	G	11/15/99 12:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100 ML	G	11/22/99 12:31	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	11/30/99 08:12	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	12/06/99 12:21	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	12/13/99 12:37	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	12/20/99 12:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	359.00	MPN/100 ML	G	12/28/99 12:42	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	01/03/00 12:43	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	01/10/00 12:44	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	01/19/00 10:18	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	01/24/00 12:37	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	01/31/00 08:29	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	02/03/00 08:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	02/03/00 08:02	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	496.00	MPN/100 ML	G	02/08/00 08:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	02/14/00 08:06	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	02/16/00 09:02	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100 ML	G	02/16/00 09:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	121.00	MPN/100 ML	G	02/16/00 09:17	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	02/22/00 10:02	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,255.00	MPN/100 ML	G	02/29/00 08:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	19,863.00	MPN/100 ML	G	03/07/00 12:53	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	03/14/00 09:32	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100 ML	G	03/21/00 08:11	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100 ML	G	03/28/00 08:22	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	04/05/00 13:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100 ML	G	04/10/00 08:29	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	04/18/00 08:28	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	960.00	MPN/100 ML	G	04/25/00 08:21	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	05/02/00 08:25	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100 ML	G	05/09/00 08:16	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	148.00	MPN/100 ML	G	05/17/00 08:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	161.00	MPN/100 ML	G	05/23/00 08:15	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	959.00	MPN/100 ML	G	05/31/00 08:22	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	187.00	MPN/100 ML	G	06/06/00 08:14	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	448.00	MPN/100 ML	G	07/06/00 08:17	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	571.00	MPN/100 ML	G	07/18/00 08:15	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	07/25/00 08:25	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	158.00	MPN/100 ML	G	07/26/00 14:34	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	121.00	MPN/100 ML	G	07/26/00 14:36	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	218.00	MPN/100 ML	G	07/26/00 14:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	345.00	MPN/100 ML	G	08/08/00 08:32	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	08/14/00 12:54	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	08/21/00 12:50	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	08/28/00 13:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		9/5/00 12:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	09/05/00 12:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	171	MPN/100 ML		9/11/00 12:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	171.00	MPN/100 ML	G	09/11/00 12:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	171	MPN/100 ML		9/18/00 13:02	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	171.00	MPN/100 ML	G	09/18/00 13:02	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74	MPN/100 ML		9/25/00 12:14	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		10/2/00 12:29	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52	MPN/100 ML		10/9/00 12:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11



COLIFORM, TOTAL	52 MPN./100 ML	10/16/00	1220	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	10/23/00	1226	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	397 MPN/100 ML	10/31/00	814	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1106 MPN/100 ML	11/6/00	1214	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML	11/13/00	1209	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	11/20/00	1158	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31 MPN/100 ML	11/27/00	1239	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	97 MPN/100 ML	12/4/00	1243	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	107 MPN/100 ML	12/11/00	1150	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	472 MPN/100 ML	12/18/00	1300	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	12/26/00	1205	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	1/2/01	1205	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	1/8/01	1237	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	158 MPN/100 ML	1/16/01	1222	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	169 MPN/100 ML	1/22/01	1148	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML	1/29/01	1300	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	413 MPN/100 ML	2/5/01	1223	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	6867 MPN/100 ML	2/12/01	1249	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	173 MPN/100 ML	2/21/01	831	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24192 MPN/100 ML	2/26/01	1213	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24192 MPN/100 ML	3/6/01	831	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2014 MPN/100 ML	3/12/01	1215	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	143 MPN/100 ML	3/19/01	1301	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	384 MPN/100 ML	3/27/01	832	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	4/2/01	1252	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	677 MPN/100 ML	4/9/01	1234	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	228 MPN/100 ML	4/16/01	1227	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML	4/24/01	826	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	311 MPN/100 ML	5/1/01	811	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	6867 MPN/100 ML	5/7/01	1225	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	5/15/01	835	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	98 MPN/100 ML	5/22/01	844	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	295 MPN/100 ML	5/30/01	852	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	6/5/01	834	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	6/12/01	809	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	73 MPN/100 ML	6/19/01	832	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	40 MPN/100 ML	6/26/01	818	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	332 MPN/100 ML	7/2/01	940	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	199 MPN/100 ML	7/10/01	914	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	197 MPN/100 ML	7/17/01	836	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	7/31/01	812	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1274 MPN/100 ML	8/7/01	820	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	98 MPN/100 ML	8/14/01	841	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML	8/21/01	824	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	119 MPN/100 ML	8/28/01	809	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	9/5/01	822	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML	9/11/01	828	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	110 MPN/100 ML	9/18/01	826	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	9/25/01	814	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	10/2/01	834	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31 MPN/100 ML	10/9/01	826	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31 MPN/100 ML	10/16/01	817	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML	10/23/01	917	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	10/30/01	826	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	11/6/01	823	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1467 MPN/100 ML	11/13/01	823	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML	11/20/01		27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	173 MPN/100 ML	12/11/01	818	27000	34.22	119.26	MCGRATH STATE BEACH	403.11





COLIFORM, TOTAL	10 MPN/100 ML		12/18/01	819	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML		12/27/01	812	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		1/3/02	1238	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63 MPN/100 ML		1/8/02	807	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		1/15/02	819	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	135 MPN/100 ML		1/23/02	828	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	187 MPN/100 ML		1/29/02	1201	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML		2/5/02	834	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		2/12/02	823	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		2/20/02	829	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		2/26/02	816	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		3/5/02	804	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		3/19/02	843	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		3/26/02	827	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		4/2/02	810	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	84 MPN/100 ML		4/9/02	829	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		4/16/02	836	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	341 MPN/100 ML		4/23/02	818	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML		4/30/02	1215	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		5/7/02	823	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		5/14/02	836	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML		5/21/02	813	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML		5/29/02	856	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31 MPN/100 ML		6/3/02	1158	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML		4/2/02	10:16	27009			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML		4/2/02	10:40	27008			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML		4/9/02	10:30	27009			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML		4/9/02	10:50	27008			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	79.00 MPN/100 ML	G	10/19/98	11:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00 MPN/100 ML	G	11/10/98	12:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	49.00 MPN/100 ML	G	11/17/98	13:10	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00 MPN/100 ML	G	11/24/98	12:30	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,909.00 MPN/100 ML	G	12/02/98	12:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	226.00 MPN/100 ML	G	12/08/98	12:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00 MPN/100 ML	G	12/15/98	09:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00 MPN/100 ML	G	12/21/98	09:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	135.00 MPN/100 ML	G	12/29/98	08:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	98.00 MPN/100 ML	G	01/05/99	09:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00 MPN/100 ML	G	01/12/99	09:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	384.00 MPN/100 ML	G	01/20/99	09:25	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,448.00 MPN/100 ML	G	01/26/99	10:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,382.00 MPN/100 ML	G	02/02/99	09:44	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	657.00 MPN/100 ML	G	02/09/99	09:17	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00 MPN/100 ML	G	02/17/99	08:55	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00 MPN/100 ML	G	02/23/99	09:15	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00 MPN/100 ML	G	03/02/99	09:15	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	213.00 MPN/100 ML	G	03/09/99	09:15	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00 MPN/100 ML	G	03/15/99	09:30	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,086.00 MPN/100 ML	G	03/23/99	09:30	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	158.00 MPN/100 ML	G	03/30/99	09:18	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24,192.00 MPN/100 ML	G	04/06/99	09:08	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24,192.00 MPN/100 ML	G	04/13/99	09:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	959.00 MPN/100 ML	G	04/15/99	09:30	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,597.00 MPN/100 ML	G	04/15/99	09:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,935.00 MPN/100 ML	G	04/15/99	09:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	4,352.00 MPN/100 ML	G	04/15/99	09:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,076.00 MPN/100 ML	G	04/15/99	09:40	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,255.00 MPN/100 ML	G	04/15/99	09:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11



COLIFORM, TOTAL	3,076.00	MPN/100 ML	G	04/15/99 09:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	561.00	MPN/100 ML	G	04/20/99 08:50	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	359.00	MPN/100 ML	G	04/27/99 08:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	05/04/99 09:14	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100 ML	G	05/11/99 09:00	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,658.00	MPN/100 ML	G	05/18/99 09:12	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,495.00	MPN/100 ML	G	05/25/99 09:15	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	06/02/99 08:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	3,654.00	MPN/100 ML	G	06/02/99 09:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	384.00	MPN/100 ML	G	06/08/99 09:00	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	143.00	MPN/100 ML	G	06/15/99 09:20	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2,046.00	MPN/100 ML	G	06/23/99 11:20	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100 ML	G	06/28/99 12:40	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100 ML	G	07/07/99 09:00	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	5,172.00	MPN/100 ML	G	07/12/99 01:00	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	480.00	MPN/100 ML	G	07/19/99 12:25	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	763.00	MPN/100 ML	G	07/26/99 12:00	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,576.00	MPN/100 ML	G	08/10/99 08:00	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	512.00	MPN/100 ML	G	08/17/99 08:18	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	189.00	MPN/100 ML	G	08/25/99 02:17	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	987.00	MPN/100 ML	G	08/31/99 08:03	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100 ML	G	09/08/99 09:39	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63.00	MPN/100 ML	G	09/13/99 12:20	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,918.00	MPN/100 ML	G	09/20/99 12:41	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	160.00	MPN/100 ML	G	09/27/99 12:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	10/04/99 11:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	195.00	MPN/100 ML	G	10/11/99 12:12	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	909.00	MPN/100 ML	G	10/18/99 12:06	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	10/25/99 12:06	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	201.00	MPN/100 ML	G	11/01/99 12:52	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,785.00	MPN/100 ML	G	11/08/99 12:18	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,017.00	MPN/100 ML	G	11/15/99 12:15	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52.00	MPN/100 ML	G	11/22/99 12:25	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	11/30/99 08:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	98.00	MPN/100 ML	G	12/06/99 12:18	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31.00	MPN/100 ML	G	12/13/99 12:31	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	12/20/99 12:25	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	243.00	MPN/100 ML	G	12/28/99 12:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	< 10.00	MPN/100 ML	G	01/03/00 12:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	01/10/00 12:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100 ML	G	01/19/00 10:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41.00	MPN/100 ML	G	01/24/00 12:32	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,658.00	MPN/100 ML	G	01/31/00 08:23	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	02/08/00 08:32	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	02/09/00 15:07	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74.00	MPN/100 ML	G	02/09/00 15:08	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	197.00	MPN/100 ML	G	02/09/00 15:09	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	02/14/00 08:43	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	627.00	MPN/100 ML	G	02/16/00 09:41	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	657.00	MPN/100 ML	G	02/16/00 09:42	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	627.00	MPN/100 ML	G	02/16/00 09:42	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	> 24,192.00	MPN/100 ML	G	02/22/00 10:25	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	4,884.00	MPN/100 ML	G	02/29/00 09:14	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	14,136.00	MPN/100 ML	G	03/07/00 12:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	5,172.00	MPN/100 ML	G	03/14/00 10:05	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	472.00	MPN/100 ML	G	03/21/00 08:51	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	132.00	MPN/100 ML	G	03/28/00 08:41	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	211.00	MPN/100 ML	G	04/05/00 12:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11



COLIFORM, TOTAL	74.00	MPN/100 ML	G	04/10/00	08:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24,192.00	MPN/100 ML	G	04/18/00	08:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	402.00	MPN/100 ML	G	04/25/00	08:42	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	145.00	MPN/100 ML	G	05/02/00	08:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10.00	MPN/100 ML	G	05/09/00	08:36	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,956.00	MPN/100 ML	G	05/17/00	08:42	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	820.00	MPN/100 ML	G	05/23/00	08:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	481.00	MPN/100 ML	G	05/31/00	08:43	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	633.00	MPN/100 ML	G	06/06/00	08:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	161.00	MPN/100 ML	G	06/13/00	10:22	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	359.00	MPN/100 ML	G	06/20/00	08:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	262.00	MPN/100 ML	G	06/27/00	08:41	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1,145.00	MPN/100 ML	G	07/25/00	08:48	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	723.00	MPN/100 ML	G	08/08/00	08:54	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	563.00	MPN/100 ML	G	08/15/00	08:30	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20.00	MPN/100 ML	G	08/22/00	08:17	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	337.00	MPN/100 ML	G	08/29/00	08:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	86	MPN/100 ML		9/5/00	1217	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	86.00	MPN/100 ML	G	09/05/00	12:17	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	373	MPN/100 ML		9/11/00	1240	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	373.00	MPN/100 ML	G	09/11/00	12:40	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63	MPN/100 ML		9/19/00	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	272	MPN/100 ML		9/26/00	1219	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		10/2/00	1229	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	110	MPN/100 ML		10/2/00	1327	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	431	MPN/100 ML		10/9/00	1236	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	213	MPN/100 ML		10/17/00	800	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31	MPN/100 ML		10/23/00	1232	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	309	MPN/100 ML		10/31/00	1245	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	288	MPN/100 ML		11/6/00	1220	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31	MPN/100 ML		11/13/00	1215	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		11/20/00	1205	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		11/27/00	1244	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	96	MPN/100 ML		12/4/00	1250	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		12/11/00	1156	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		12/19/00	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		12/26/00	1214	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10	MPN/100 ML		1/2/01	1213	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20	MPN/100 ML		1/8/01	1239	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	206	MPN/100 ML		1/17/01	1300	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	327	MPN/100 ML		1/22/01	1157	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	73	MPN/100 ML		1/29/01	1306	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	134	MPN/100 ML		2/5/01	1228	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	7701	MPN/100 ML		2/13/01	1205	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	86	MPN/100 ML		2/21/01	837	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	12033	MPN/100 ML		2/27/01	826	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	24192	MPN/100 ML		3/6/01	839	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	591	MPN/100 ML		3/13/01	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	907	MPN/100 ML		3/20/01	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	160	MPN/100 ML		3/27/01	842	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	633	MPN/100 ML		4/3/01	831	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	2247	MPN/100 ML		4/10/01	815	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	31	MPN/100 ML		4/17/01	820	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	146	MPN/100 ML		4/24/01	834	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41	MPN/100 ML		5/1/01	830	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	728	MPN/100 ML		5/8/01	810	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	243	MPN/100 ML		5/15/01	843	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	195	MPN/100 ML		5/22/01	949	28000	34.21	119.25	MCGRATH STATE BEACH	403.11



COLIFORM, TOTAL	108 MPN/100 ML	5/30/01	858	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	6/5/01	842	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML	6/12/01	914	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74 MPN/100 ML	6/19/01	838	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	265 MPN/100 ML	6/26/01	822	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	537 MPN/100 ML	7/2/01	947	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	328 MPN/100 ML	7/10/01	918	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52 MPN/100 ML	7/17/01	843	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	141 MPN/100 ML	7/31/01	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	373 MPN/100 ML	8/7/01	826	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	199 MPN/100 ML	8/14/01	845	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63 MPN/100 ML	8/21/01	834	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	121 MPN/100 ML	8/28/01	816	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	9/5/01	830	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63 MPN/100 ML	9/11/01	835	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63 MPN/100 ML	9/18/01	832	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	9/25/01	823	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	175 MPN/100 ML	10/2/01	843	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	97 MPN/100 ML	10/9/01		28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	256 MPN/100 ML	10/16/01	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	63 MPN/100 ML	10/23/01	823	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	10/30/01	831	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	11/6/01	931	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	1376 MPN/100 ML	11/13/01	831	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	97 MPN/100 ML	11/20/01	822	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	6867 MPN/100 ML	11/27/01	817	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	364 MPN/100 ML	11/28/01	1414	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	158 MPN/100 ML	12/4/01	821	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52 MPN/100 ML	12/11/01	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	12/18/01	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	12/27/01	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	520 MPN/100 ML	1/3/02	806	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	41 MPN/100 ML	1/8/02	813	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	1/15/02	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	83 MPN/100 ML	1/23/02	836	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	228 MPN/100 ML	1/29/02	1144	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	2/5/02	841	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	30 MPN/100 ML	2/12/02	834	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	134 MPN/100 ML	2/20/02	838	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	120 MPN/100 ML	2/26/02	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	3/5/02	810	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	3/19/02	847	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	3/26/02	848	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	74 MPN/100 ML	4/2/02	827	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	52 MPN/100 ML	4/9/02	902	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	4/16/02	858	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	4/23/02	851	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	10 MPN/100 ML	4/30/02	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	388 MPN/100 ML	5/7/02	852	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	108 MPN/100 ML	5/14/02	859	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	909 MPN/100 ML	5/21/02	840	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	148 MPN/100 ML	5/29/02	920	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	480 MPN/100 ML	6/3/02	1132	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML	4/9/02	11:11	28009			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	MPN/100 ML	5/6/02	11:34	28009			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	4/2/02	10:53	28009			MCGRATH STATE BEACH	403.11
COLIFORM, TOTAL	20 MPN/100 ML	4/2/02	11:05	28009			MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	6/3/02	1132	28000	34.21	119.25	MCGRATH STATE BEACH	403.11













ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	09/12/00	15:50	26000	34.22	119.2	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	09/18/00	12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		42	MPN/100 ML		9/11/00	12:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/12/00	15:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		42	MPN/100 ML		9/12/00	15:48	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/12/00	15:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/18/00	12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/25/00	12:08	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/2/00	12:24	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/9/00	12:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/16/00	12:15	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/23/00	12:19	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/31/00	8:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		11/6/00	12:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		11/13/00	12:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		11/20/00	11:53	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20	MPN/100 ML		11/27/00	12:34	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		12/4/00	12:37	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		12/11/00	11:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		31	MPN/100 ML		12/18/00	12:55	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		12/26/00	12:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/2/01	12:00	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/8/01	12:31	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20	MPN/100 ML		1/16/01	12:17	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/22/01	11:43	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/29/01	12:58	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		2/5/01	12:18	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		53	MPN/100 ML		2/12/01	12:44	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		87	MPN/100 ML		2/21/01	8:26	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		2005	MPN/100 ML		2/26/01	12:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		207	MPN/100 ML		3/6/01	8:21	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		42	MPN/100 ML		3/12/01	12:07	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		3/19/01	12:57	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		31	MPN/100 ML		3/27/01	8:26	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		4/2/01	12:46	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20	MPN/100 ML		4/9/01	12:21	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		31	MPN/100 ML		4/16/01	12:10	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		4/24/01	8:20	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20	MPN/100 ML		5/1/01	8:06	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		5/7/01	12:17	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		5/15/01	8:24	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		5/22/01	8:38	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		5/30/01	8:44	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		6/5/01	8:26	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		6/12/01	8:02	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		6/19/01	8:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		6/26/01	14:50	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		7/2/01	9:35	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		7/10/01	9:09	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		7/17/01	8:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		7/31/01	8:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		53	MPN/100 ML		8/7/01	8:13	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		8/14/01	8:34	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		8/20/01	12:30	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		8/20/01	13:43	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		8/28/01	8:04	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/5/01	8:11	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		53	MPN/100 ML		9/11/01	8:25	26000	34.22	119.26	MCGRATH STATE BEACH	403.11



ENTEROCOCCUS BACTERIA	10 MPN/100 ML		9/18/01	818	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		9/25/01	807	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		10/2/01	830	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		10/9/01	822	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	20 MPN/100 ML		10/16/01	813	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		10/23/01	808	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		10/30/01	817	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		11/6/01	818	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	254 MPN/100 ML		11/13/01	916	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	MPN/100 ML		11/20/01		26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		12/11/01	812	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		12/18/01	816	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		12/27/01	807	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		1/3/02	1234	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	53 MPN/100 ML		1/8/02	801	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		1/15/02	813	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		1/23/02	822	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		1/29/02	1206	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	31 MPN/100 ML		2/4/02	1157	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		2/12/02	817	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		2/20/02	824	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		2/26/02	810	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		3/5/02		26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		3/19/02	838	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		3/26/02	814	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		4/2/02	958	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		4/9/02	817	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		4/16/02	829	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		4/17/02	1020	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		4/23/02	809	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		4/30/02	805	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		5/7/02	810	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		5/14/02	828	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		5/21/02	1349	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		5/29/02	849	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML		6/3/02	1215	26000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	6.00 MPN/100 ML	G	10/19/98	11:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	591.00 MPN/100 ML	G	11/02/98	09:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	11/10/98	12:25	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10.00 MPN/100 ML	G	11/17/98	12:45	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	11/24/98	12:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	64.00 MPN/100 ML	G	12/02/98	11:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	12/08/98	13:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	20.00 MPN/100 ML	G	12/15/98	08:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	12/21/98	09:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	12/29/98	08:30	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10.00 MPN/100 ML	G	01/05/99	09:10	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	01/12/99	09:20	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	01/20/99	09:00	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	238.00 MPN/100 ML	G	01/26/99	10:05	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	31.00 MPN/100 ML	G	01/28/99	13:40	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	53.00 MPN/100 ML	G	01/28/99	13:43	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	42.00 MPN/100 ML	G	01/28/99	13:44	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	31.00 MPN/100 ML	G	01/28/99	13:48	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	53.00 MPN/100 ML	G	01/28/99	13:50	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	42.00 MPN/100 ML	G	01/28/99	13:53	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	31.00 MPN/100 ML	G	01/28/99	13:55	27000	34.22	119.26	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	< 10.00 MPN/100 ML	G	02/02/99	09:14	27000	34.22	119.26	MCGRATH STATE BEACH	403.11



























ENTEROCOCCUS BACTERIA	10.00	MPN/100 ML	G	04/25/00	08:42	28000	34.21	115.	MCGRATH STATE BEACH	403.11	
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	05/02/00	08:45	28000	34.21	119.25	MCGRATH STATE BEACH	403.11.
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	05/09/00	08:36	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	05/17/00	08:42	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20.00	MPN/100 ML	G	05/23/00	08:38	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	05/31/00	08:43	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10.00	MPN/100 ML	G	06/06/00	08:35	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10.00	MPN/100 ML	G	06/13/00	10:22	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20.00	MPN/100 ML	G	06/20/00	08:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10.00	MPN/100 ML	G	06/27/00	08:41	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10.00	MPN/100 ML	G	07/25/00	08:48	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20.00	MPN/100 ML	G	08/08/00	08:54	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	08/15/00	08:30	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	08/22/00	08:17	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		42.00	MPN/100 ML	G	08/29/00	08:37	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	<	10.00	MPN/100 ML	G	09/05/00	12:17	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10.00	MPN/100 ML	G	09/11/00	12:40	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/5/00	1217	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/11/00	1240	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		9/19/00	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		42	MPN/100 ML		9/26/00	1219	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/2/00	1229	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/2/00	1327	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/9/00	1236	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/17/00	800	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/23/00	1232	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		10/31/00	1245	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		11/6/00	1220	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		11/13/00	1215	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		11/20/00	1205	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		11/27/00	1244	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		12/4/00	1250	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		12/11/00	1156	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		12/19/00	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		12/26/00	1214	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/2/01	1213	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/8/01	1239	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/17/01	1300	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/22/01	1157	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		1/29/01	1306	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		2/5/01	1228	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		238	MPN/100 ML		2/13/01	1205	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		53	MPN/100 ML		2/21/01	837	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		150	MPN/100 ML		2/27/01	826	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		271	MPN/100 ML		3/6/01	839	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		3/13/01	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		3/20/01	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		3/27/01	842	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		4/3/01	831	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		4/10/01	815	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		4/17/01	820	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		4/24/01	834	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		5/1/01	830	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20	MPN/100 ML		5/8/01	810	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		20	MPN/100 ML		5/15/01	843	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		5/22/01	949	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		5/30/01	858	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA		10	MPN/100 ML		6/5/01	842	28000	34.21	119.25	MCGRATH STATE BEACH	403.11



ENTEROCOCCUS BACTERIA	10 MPN/100 ML	6/12/01	914	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	6/19/01	838	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	20 MPN/100 ML	6/26/01	822	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	20 MPN/100 ML	7/2/01	947	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	7/10/01	918	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	7/17/01	843	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	7/31/01	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	8/7/01	826	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	8/14/01	845	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	8/21/01	834	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	8/28/01	816	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	9/5/01	830	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	9/11/01	835	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	9/18/01	832	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	9/25/01	823	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	10/2/01	843	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	10/9/01		28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	10/16/01	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	10/23/01	823	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	10/30/01	831	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	11/6/01	931	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	124 MPN/100 ML	11/13/01	831	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	11/20/01	822	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	124 MPN/100 ML	11/27/01	817	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	11/28/01	1414	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	12/4/01	821	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	12/11/01	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	12/18/01	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	12/27/01	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	42 MPN/100 ML	1/3/02	806	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	64 MPN/100 ML	1/8/02	813	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	1/15/02	824	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	1/23/02	836	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	1/29/02	1144	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	2/5/02	841	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	2/12/02	834	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	2/20/02	838	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	2/26/02	825	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	3/5/02	810	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	3/19/02	847	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	3/26/02	848	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	4/2/02	827	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	4/9/02	902	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	4/16/02	858	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	4/23/02	851	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	4/30/02	819	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	5/7/02	852	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	5/14/02	859	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	20 MPN/100 ML	5/21/02	840	28000	34.21	119.25	MCGRATH STATE BEACH	403.11
ENTEROCOCCUS BACTERIA	10 MPN/100 ML	5/29/02	920	28000	34.21	119.25	MCGRATH STATE BEACH	403.11



## **Appendix C: Total Coliform Modeling for McGrath Beach**

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## Total Coliform Modeling for McGrath Beach

by

C.P. Lai, Ph.D., P.E.

Los Angeles Regional Water Quality Control Board

### 1.0 Introduction

Water quality data collected indicate that portions of the McGrath Beach do not meet standards for total coliform. This report will describe the development of a model for use in identifying the pollutant sources in McGrath Beach Coastal Area and present the simulation results based on the data collected to help for the development of load reduction scenarios.

The mixing and dispersion of the wastewater discharge from a discharge point or structure like an outfall or a diffuser can be conceptually divided into two phases: (i) near field mixing, (ii) far field diffusion and buildup. The near field phenomenon occurs in a matter of minutes and within a region measured out to several hundred meters. The buildup in the far field occurs over days and weeks over distances beyond a few kilometers. The far field diffusion is in between these two scales, i.e., a time scale of hours to a few days and a distance scale of a few hundred meters to a few kilometers. For the near field, the mixing is dominated by discharge jet momentum. In this report, we will present the fundamentals of theory, description of the model, and simulation results for far field diffusion and buildup.

### 2.0 Theoretical Background of Water Quality Model (WQM)

Essentially, the far field model, as presented in the following, adopts the finite element model to provide more detailed analysis of pollutant's diffusion and buildup. It takes into account the complex geometry, such as intake structure, bay bathymetry and other environmental factors. In other words, the vertically integrated 2-D model considers the depth-wise variation in an average sense. Variations in the flow field in both the space and time are considered and included in the model. Given the design discharge layout and its environmental conditions, the model can be more readily applied to the detailed far field analysis for verification purposes.

### 2.1 Model Description

The numerical simulation is performed based on the WQM model first developed by Lee et. al. (1985) for Fox River and Green Bay in Wisconsin and was modified by Environmental and Ocean Technology, Inc. (E.O. Tech) in 1989.

Based on the conservations of mass, momentum, and energy, the physical processes of water flow and material transport in a water body can be described by a set of partial differential equations. In general, three dimensional formulations are necessary to fully depict the complicated flow and transport phenomena. However, for riverine and coastal areas where the water depth is shallow, the flow variation with depth is not significant; water movement is mainly horizontal; vertical pressure distribution is effectively

hydrostatic; and water mixture is relatively homogeneous. Hence, the governing equations can be simplified by vertically averaged procedures and result in a set of two-dimensional equations. This is the approach adopted in deriving the fundamental equations for the model used in this study.

The numerical models are developed by using Galerkin's finite element method to solve the two-dimensional shallow water equations. Linear triangular shape function is used in the model. The detailed expression of this shape function can be found in Zienkiewicz (1977). A modified leapfrog scheme with mass lumping is employed for time integration (Lynch 1979).

Based on the assumption of constant water density, the equations governing the flow are uncoupled from those controlling the water quality distributions, and can be solved independently. Therefore, the simulation of the far field diffusion involves a two-step procedure: first, the hydrodynamic simulation is used to calculate the tide-induced currents and water elevations; second, the water quality simulation is applied to estimate the water quality distributions resulting from pollutant discharge based on the results of hydrodynamic simulation.

The basic formulations and the numerical techniques are explained in the following sections. Detailed simulation procedures such as model setup and verification are also included.

## 2.2 Governing Equations

The governing equations for hydrodynamic simulation are the continuity and momentum equations. For two-dimensional case, the governing equations are as follows:

$$\frac{\partial H}{\partial t} + \frac{\partial(Hu)}{\partial x} + \frac{\partial(Hv)}{\partial y} = 0 \quad (1)$$

$$\frac{\partial u}{\partial t} + u \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} + g \frac{\partial \eta}{\partial x} - fv + \frac{\tau_x^b}{H} - \frac{\Psi_x}{H} - \frac{1}{H} \left[ \frac{\partial}{\partial x} (H\varepsilon_x \frac{\partial u}{\partial x}) + \frac{\partial}{\partial y} (H\varepsilon_x \frac{\partial u}{\partial y}) \right] = 0 \quad (2)$$

$$\frac{\partial v}{\partial t} + u \frac{\partial v}{\partial x} + v \frac{\partial v}{\partial y} + g \frac{\partial \eta}{\partial y} + fu + \frac{\tau_y^b}{H} - \frac{\Psi_y}{H} - \frac{1}{H} \left[ \frac{\partial}{\partial x} (H\varepsilon_y \frac{\partial v}{\partial x}) + \frac{\partial}{\partial y} (H\varepsilon_y \frac{\partial v}{\partial y}) \right] = 0 \quad (3)$$

In the above equations, all the dependent variables are vertically averaged quantities. Variable  $u$  and  $v$  are the velocity components in  $x$  and  $y$  directions,  $x$  direction is in the east and  $y$  direction is in the north;  $t$  the time;  $H$  the water elevation,  $f$  the Coriolis parameter;  $\eta$  the height of free water surface above the mean water level;  $\tau^b$  the bottom shear stress;  $\Psi$  the surface shear stress; and  $\varepsilon$  the eddy viscosity.

The equation governing the distribution of water quality in water is the advective-diffusion equation based on the energy conservation as follows (for two-dimensional case):

$$\frac{\partial Q}{\partial t} + V \cdot \nabla Q - \frac{1}{H} \nabla \cdot (HK_c \cdot \nabla Q) + S_c + G_c = 0 \quad (4)$$

where  $Q$  is the concentration of water quality in the water body,  $V$  is the velocity vector in the flow field,  $K_c$  the diffusion-dispersion coefficient tensor,  $S_c$  the source/sink and the growth/decay of each water quality constituent,  $G_c$  the kinetic reaction of each water quality constituent that represents all important chemical and biological kinetic reactions involving the mass balance of substance. This interaction and mutual dependency are imbedded in the formulation of the source and sink and the kinetic reaction term which may involve a substance other than itself in the equation.

### 2.3 Principal Assumptions

The principal assumptions adopted in deriving the governing equations and numerical models are summarized as follows:

- (1) The density of water is constant.
- (2) The pressure in the water is hydrostatic.
- (3) The vertical distribution coefficients of the velocity components are equal and constant throughout the simulation domain.
- (4) The shear stresses from the vertical velocity component are neglected.
- (5) Only the gravity and Coriolis forces are considered.
- (6) The bottom shear stress is calculated according to the following equation (Dronkers, 1964):

$$\tau_b = \frac{gn^2|V|}{H^3}$$

where  $n$  is Manning's roughness coefficient.

- (7) The surface shear stress is correlated to wind speed, and is estimated by the following equation:

$$\varphi = \frac{C_d \rho_a V_w |V_w|}{\rho}$$

where  $\rho_a$  and  $\rho$  are the densities of air and water respectively,  $V_w$  the wind velocity vector at 10 m above the water surface, and  $C_d$  the wind drag coefficient.

### 2.4 Initial and Boundary Conditions

#### 2.4.1. Hydrodynamic Simulation

For initial conditions, velocities  $u$ ,  $v$  ( $x$  and  $y$  components) and water elevations have to be specified for every point in the model region. The model may be started from either a cold condition or a prestarting function. For the case of cold start, velocities at all the

nodal points are set to be zero and the water elevations are level. The prestarting function provided by this model is as  $H_0 = H_1[0.5 - 0.5 \cos(\omega t)]$ , in which  $\omega$  is equal to  $2\pi/T_p$  ( $T_p$  is the period of prestarting determined by the user),  $t$  the elapsed time from the beginning,  $H_1$  the initial water level,  $H_0$  the water level specified at the open boundaries during the prestarting period.

Two types of boundary conditions can be prescribed as functions of time at each boundary node: velocities and water elevations. In general, water elevations are specified at open boundaries according to the changes of tidal amplitudes. At solid boundaries, the normal velocity component is often set to zero.

#### 2.4.2 Water Quality Simulation

The model requires a proper initial condition, which will specify water quality at every nodal point in the simulation domain at time zero. Usually, the model starts with a uniform water quality distribution with a typical value for the modeling area.

Two types of boundary conditions can be chosen for the convective transport equations for water quality pollutant discharge:

- (1) prescribed water quality concentration
- (2) prescribed dispersive flux perpendicular to the tangent at the boundary node

In general, normal dispersive flux is set as zero at land boundaries, while it is equal to the strength of flux at source or sink points.

The imposition of boundary conditions at the open boundaries is a difficult task for any numerical model that attempts to estimate the solution for the advective diffusion equation in a restricted area. No generally valid method is available for prescribing such a boundary condition. One method is to impose a no-flux boundary condition and assume the boundaries to be sufficiently far away so that within the times of simulation, that there is no effect from the boundaries. Sometimes it is possible to locate open boundaries of simulated regions at some actual physically meaningful boundaries (such as at the edge of major ocean current systems) and then utilize a Dirichlet boundary condition. If the water quality concentration at the boundaries is known or can be estimated using other methods, a type (1) boundary condition can also be used to specify fixed values at open boundary points.

### 2.5 Model Verification

Both the hydrodynamic and water quality models have been verified for the cases amenable to analytical solutions (Wang, 1975). In addition, these two models have been tested through the simulation of the Fox River and Green Bay system and proved to be a suitable numerical tool for studying the transport phenomena in the coastal areas (Lee et al., 1985). Other studies also show that they can be successfully applied for the far field simulations (E.O.Tech., 1991 and 1998).

### 3.0 Model Development

#### 3.1 Hydrodynamic Model Set-up

### 3.1.1 Finite Element Grid and Modeling Parameters

A finite element grid layout was set up for hydrodynamic and water quality simulations for the total coliform discharges from McGrath Beach Coastal Area. This grid (Figure 3.1) covers an alongshore distance of about 14 kilometers (km) and extends offshore about 7 km. This basin is constructed by describing the geometry of the area with triangular elements. The total number of elements is 3726, and that of nodal points is 1994. The linear dimension of the elements is from 100 to 300 meters (m).<sup>1</sup> The mesh size of the grid is chosen in such a way as to provide a satisfactory resolution of the water elevation and water quality distribution in the vicinity of McGrath Beach Area. The bathymetry topography used is digitized based on available charts (NOAA nautical chart No.18720, 7/29/2000).

The values of Manning n used in the hydrodynamic simulation to calculate the bottom friction is from 0.03 at the nearshore area down to 0.015 at the offshore area. These values are based on the calibrated flow speed. The computation time step  $\Delta t$  is 5 sec for the computational grid. Internal stresses and wind induced surface stresses are of less importance, so their effects were not simulated. The computation area is so small that wind induced current velocity will not vary significantly and the rip current is considered only for the deeper water depth, usually greater than 20 meters deep.

### 3.1.2 Boundary Conditions

The simulations adopt a cold start, which means that the water elevations are level and velocities are zero everywhere in the basin.

At the solid boundaries, zero normal flow is assumed as corresponding boundary condition. In addition, each grid has three open boundaries, all of which are implemented as water-level boundaries, i.e., water elevations are specified at boundary nodal points. The predicted tide data<sup>2</sup> (National Oceanographic Data Center, 2001) at Ventura are used as the basis for the interpolation of water elevations along the open boundaries (Figure 3.2).

## 3.2 Water Quality Model Set-up

### 3.2.1 Water Quality Simulation Parameters

The computation time step  $\Delta t$  used in water quality simulation is 180 sec.

The dispersion coefficients,  $D_x$ ,  $D_y$  are among the controlling factors in determining the solutions of the advective transport equation. They can also affect the stability of the numerical schemes used to solve this equation. It is very important to take into consideration their physical meanings and numerical implications when values are

<sup>1</sup> This was used over a 3-D model, as a 3-D model does not necessarily produce good results, especially for the shallow water area without a stratified flow situation.

<sup>2</sup> For tide data, there are only spring, mean and neap tide conditions. In this study, we use the mean tide condition.

selected for the modeling. In general, the dispersion coefficients vary locally according to velocity distribution, water depth, bottom roughness, etc. For this model, through extensive testing and calibration, the following equations are found to be suitable for the estimation of the dispersion coefficients (Lee 1986):

$$D_x = C_x \sqrt{2A} \sqrt{gH}$$
$$D_y = C_y \sqrt{2A} \sqrt{gH}$$

where A is the area of individual elements in the grid system, g the gravitational acceleration constant, H local water level,  $C_x$  and  $C_y$  dimensionless constants determined by numerical experiments in model calibration, and founded to be between 0.002 and 0.005 based on previous experience (Lee 1986).

The sources of total coliform in this study are the total coliform discharge from Santa Clara River, McGrath Lake, and Mandalay Generating Station. The average wet weather flow rates of three potential sources are 213, 10.1, and 143 MGD, respectively. A single die-off value is used as the first order decay coefficient for the whole computation domain. The die-off rate for total coliform in seawater is 0.7 to 3.0 per day according to the *Protocol for Developing Pathogen TMDLs* (2001). In this study, we use 0.8 per day for total coliform in the model.

### 3.2.2 Water Quality Boundary Conditions

Total coliform simulation is based on the finite element system described by the computational grid. Computation starts with a uniform zero concentration throughout the simulation basin. At the land boundary nodes, perpendicular flux is assumed to be zero.

## 4.0 Simulation Results

### 4.1 Hydrodynamic Simulation Results

Figure 4.1 shows the computed tidal water levels at the Mandalay Generating Station. This figure illustrates that the simulated tidal ranges are between 1.6 to 1.8 m, which are consistent with the mean tidal range of 1.7 m observed in the field.

The calculated time series of current speed and direction at the Mandalay Generating Station are also presented in the Figure 4.1. The magnitude of currents observed at the Mandalay Generating Station is between 3 to 5 cm/sec most of the time, with a median value around 4 cm/sec. The simulated current speeds are within this range with a smaller median of about 3.2 cm/sec. Concerning the direction of currents, the results show two dominant directions: northwest (corresponding to 135° in Figure 4.1), and between southeast and southwest (corresponding to 300°). Our simulation results agree well with the field observation. Similarly, the calculated tidal water levels and current speed at the McGrath Lake outfall and the Santa Clara River are presented in Figures 4.2 and 4.3 respectively. The directions change significantly for the Santa Clara River. This is because the Santa Clara River is measured at its mouth and therefore it is affected by boundary. The McGrath Lake outfall and Mandalay Generating Station are not measured at their respective boundaries, and therefore are not affected.

Previous studies also show that the flow in the vicinity of the McGrath Beach site is mainly tide-induced. Flow pattern is generally parallel to the shoreline. Flow direction is toward the northwest during the flood tide, and toward southeast during ebb tide. Figures 4.4 to 4.5 present the simulated patterns of tide-induced currents at different tidal phases in the study area. It can be seen that the simulation results are consistent with the general description of the local flow field.

#### 4.2 Validation of the Model

To further examine the model's ability to predict a real physical situation, a subsequent testing of a pre-calibrated model to additional field data is required. This process is usually called *validation of the model*. In this study, the field data collected at Santa Clara River, McGrath Lake, and Mandalay Generating Station were used for model validation. The data used for validation are summarized in Table 4.1. The results of model validation at the Santa Clara River, the McGrath Lake outfall, and the Mandalay Generating Station are presented in Figure 4.6 and 4.7, respectively. It can be seen that the results of the model and field results are well correlated, specially for Santa Clara River.

#### 4.3 Total Coliform Simulation Results

In water quality simulation, three different input conditions for dry and wet weather situations are used for evaluating the discharges from Santa Clara River, McGrath Lake, and Mandalay Generating Station. These three typical discharge conditions are based on the geometric mean, 80 percentile and maximum of historical effluent data collected during the period of 1984 to 2001 for Santa Clara River and that of 2002 for McGrath Lake and Mandalay Generating Station, which are shown in the Table 4.2 for dry weather and Table 4.3 for wet weather.

During water quality simulations, sufficient simulation time was used in each run to assure quasi steady-state conditions. Figure 4.8 shows typical time series of concentration rise of total coliform at Mandalay Generating Station in the simulation basin. It can be seen from Figure 4.8 that the solutions reach steady state after about 20 hours to 30 hours, with a periodic rise and fall. Ten days were used in this study to provide the results on total coliform concentration distributions. This Figure also illustrates that total coliform concentration rises change within a tidal cycle after reaching steady state. These results are the steady state results with variation due to the effect of tidal influence.

Figure 4.9 is an example illustrating the maximum total coliform concentration distribution for the whole computation domain the geometric mean concentration of the discharge from all three potential locations, during dry weather. Since this figure covers a large area, it does not give enough resolution for the surrounding area of the discharge points. In order to provide better spatial resolutions, all the other results are presented for a smaller area.

Figures 4.10 to 4.13 are the spatial distributions of maximum total coliform concentrations as simulated by the WQM model for the discharges of Santa Clara River, McGrath Lake, and Mandalay Generating Station. These figures consider the geometric

mean (Figures 4.10 and 4.12) and maximum (Figures 4.11 and 4.13) discharge conditions in dry (Figures 4.10 and 4.11) and wet (Figures 4.12 and 4.13) weather situations respectively. In all the figures, the concentration of total coliform are expressed in MPN/100 mL. From these figures, the areas affected by each discharge plume can be identified. Most of the plumes are toward the southeast after a repeated tidal effect simulated for 10 days. During dry weather, the highest simulated concentrations are at the discharge of the Mandalay GS, which also produces the largest plume due to the high discharge flowrate (Figure 4.11). However, when the geometric mean of the outfall concentrations is considered, the area near the discharge of McGrath Lake has the highest concentrations (Figure 4.10). Note that only a small area is affected along the two miles of beach front. During wet weather, the largest impact is from the SCR estuary when it breaches at maximum total coliform concentration, which generates a plume of coliform. (Figure 4.13). When the geometric mean concentrations in the outfalls are considered, the highest simulated concentrations at the beach occur near McGrath Lake (Figure 4.12)

Figure 4.14 and 4.15 show the results of the concentration rise versus the distance along McGrath Beach to represent the direct effects on the beach due to these discharge scenarios. In Figures 4.14 and 4.15, the reference point of distance is situated in the Oxnard State Beach and the distance of three discharge points are 5130 m, 6860 m, and 8680 m. Based on these figures, we can see that total coliform concentrations greater than 1000 MPN/100 mL in McGrath Beach are due to the Mandalay Generating Station, McGrath Lake, and Santa Clara River during dry weather conditions if the maximum or 80 percentile concentrations in the outfall are considered. During wet weather conditions the maximum total coliform concentrations are near the Santa Clara River estuary and the McGrath Lake outlet if the maximum outfall concentrations are considered, and near the McGrath Lake outlet if the 80 percentile outfall concentrations are considered.

## 5.0 Concluding Remarks

The water quality data collected from the field indicated that the McGrath Beach do not meet the water quality standard of total coliform. This report utilizes an accepted water quality model to simulate total coliform in the McGrath Beach Coastal Area. The results of the simulations show that the impairment of water quality in McGrath Beach are primarily due to the effluent discharge from Mandalay Generating Station and McGrath Lake during dry weather and Santa Clara River and McGrath Lake during wet weather. These results are based on the effluent discharge data collected and consider tidal effect only.

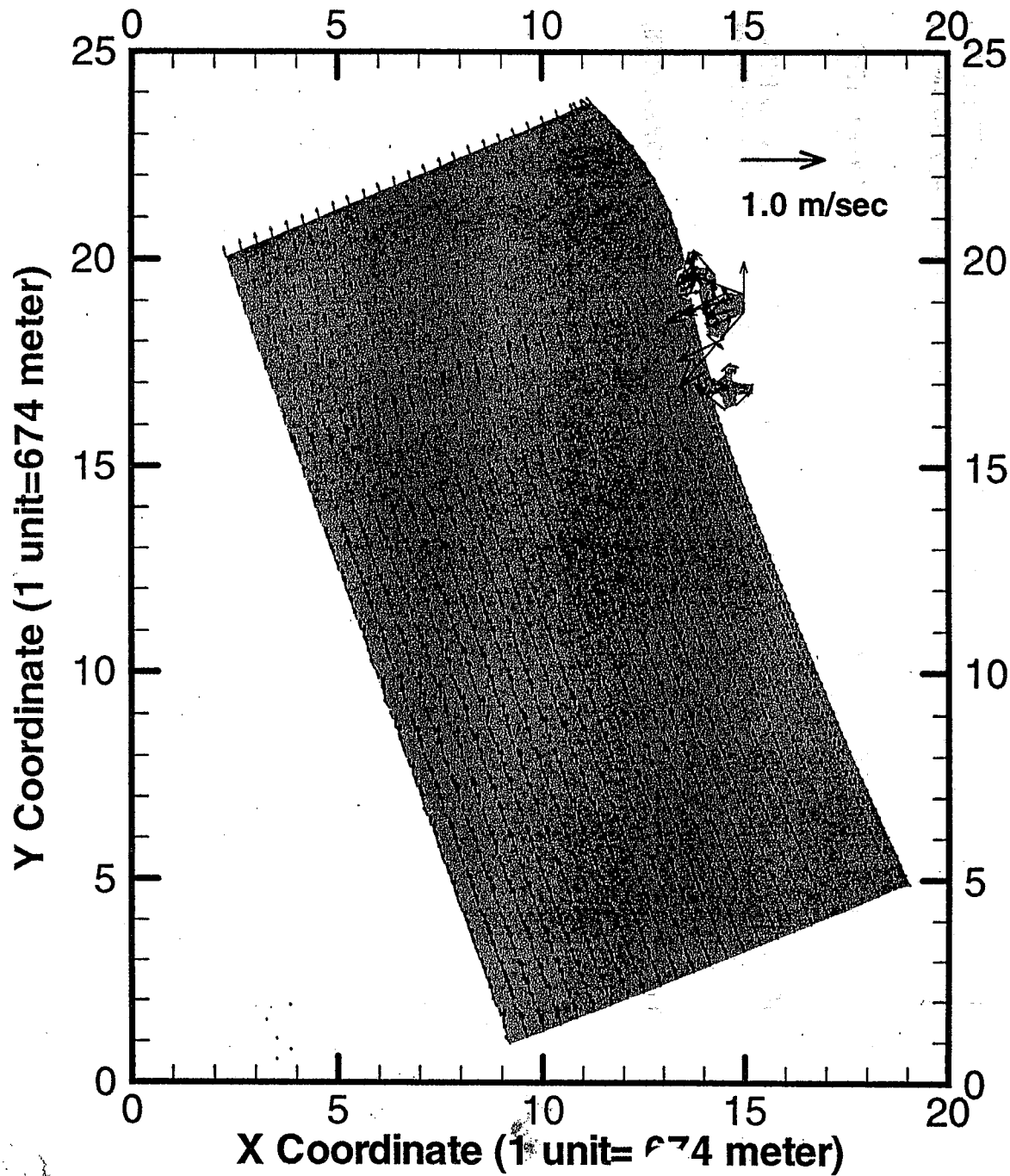
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Figure 4.4 Tide-Induced Current in McGrath Beach Coastal Area  
(Flood Tide)



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### McGrath Beach Total Coliform Modeling Input Tidal Water Level

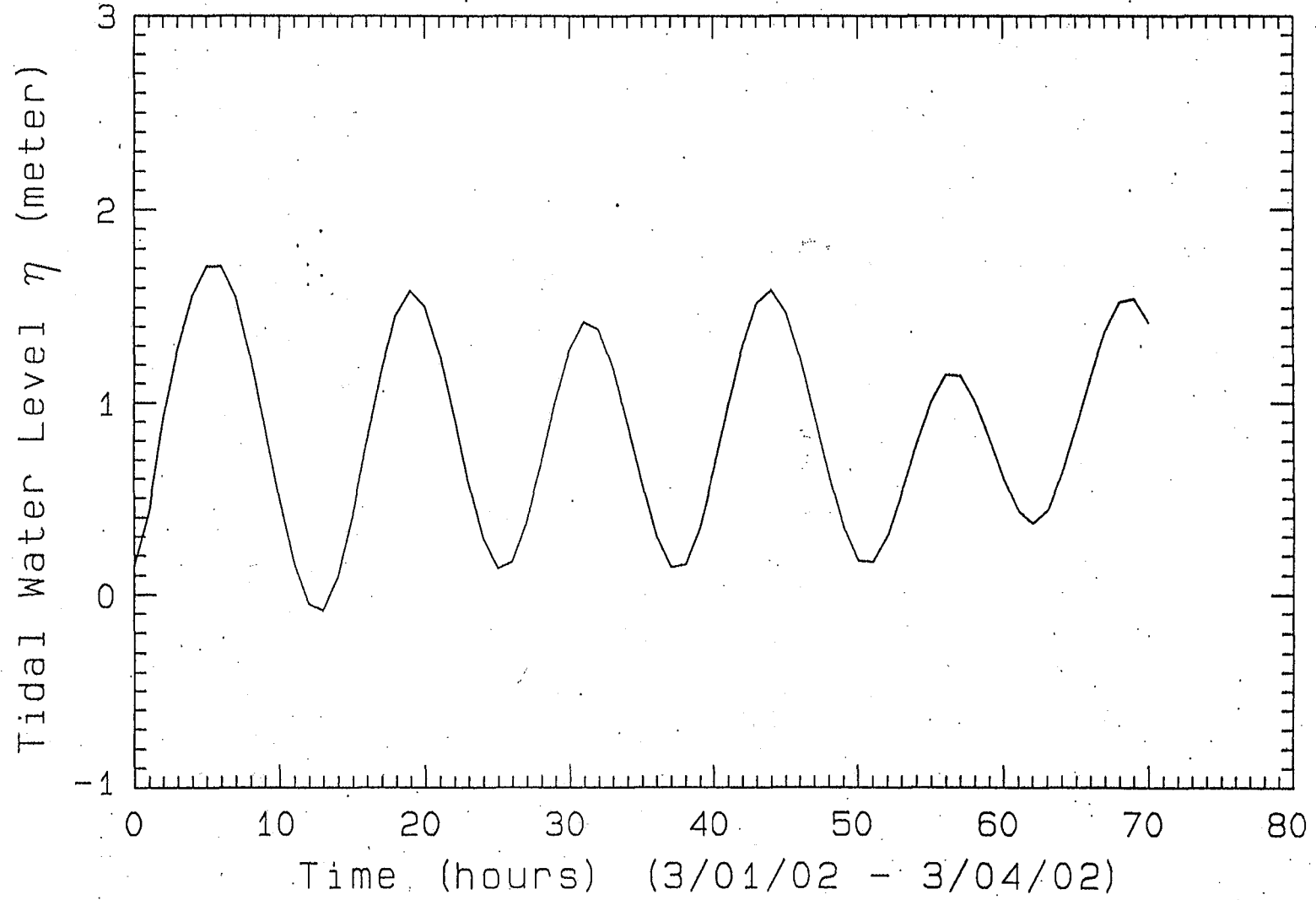


Figure 3.2 Input Tidal Water Level in McGrath Beach Coastal Area.

Table 4.1 Validation Data for  
McGrath Beach Total Coliform Modeling

Validation Data for Santa Clara River

Month	Day	Year	R1	R2	R3	R4	L5	R5	R6	R7	R8	R9	Q(cfs)
6	10	86	16000	24001	24001	24001	16000	2401	2401	920	540	170	34
11	18	86	24001	24001	24001	24001	24001	2401	2401	2401	2401	2401	48.5
7	19	88	2200	1100	16000	9200	1100	33	240	350	23	140	5.92
6	9	92	9200	2400	16000	3500	24000	130	350	170	350	49	9.69
9	21	93	1400	1400	16000	3500	24001	350	540	170	79	79	12.93
11	23	93	790		24001	1700	24001	240	2401	540	49	33	29.73
7	5	94	350	24001	24001	350	5400	8	2401	17	27	13	24.13
11	7	95	5400	3500	9200	5400	3500	240	350	280	170	170	7.5
6	18	96	2400	2400	2400	700	24001	49	540	70	22	33	96.94
7	29	97	2400	9200	9200	9200	1	5	220	4	5	2	10.5
6	16	98	5400	490	1700	790	490	240	920	79	240	350	193.88

	R3	Q(cfs)	Q(cms)	R*Q	Index	R6 (sampling results)	R6*(calculated)	
1	24001	34	0.96288	1.99684E+13	1	2401	2505	(6/10/86)
2	24001	48.5	1.37352	2.84843E+13		2401		
3	16000	5.92	0.167654	2.3178E+12	3	240	291	(7/19/88)
4	16000	9.69	0.274421	3.79383E+12	4	350	478	(6/09/92)
5	16000	12.93	0.366178	5.06235E+12	5	540	637	(9/21/93)
6	24001	29.73	0.841954	1.74606E+13	2	2401	2193	(11/23/93)
7	24001	24.13	0.683362	1.41717E+13		2401		
8	9200	7.5	0.2124	1.68843E+12	6	350	211	(11/07/95)
9	2400	96.94	2.745341	5.69309E+12	8	540	713	(6/18/96)
10	9200	10.5	0.29736	2.3638E+12	7	220	294	(7/29/97)
11	1700	193.9	5.490682	8.06521E+12	9	920	1011	(6/16/98)

Validation Data for McGrath Lake

C(MPN/100 mL)

1	16,000	4.23	0.12	1.70E+12	1700	1845	(4/02/02)
2	1600	4.23	0.12	1.70E+11	500	185	(4/09/02)

Validation Data for Mandalay Generating Station

1	90	97.72	2.77	2.16E+11	2	35	(5/06/02)
2	240	34.92	0.99	2.04E+11	130	31	(4/09/02)





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### McGrath Beach Tidal Current Simulation

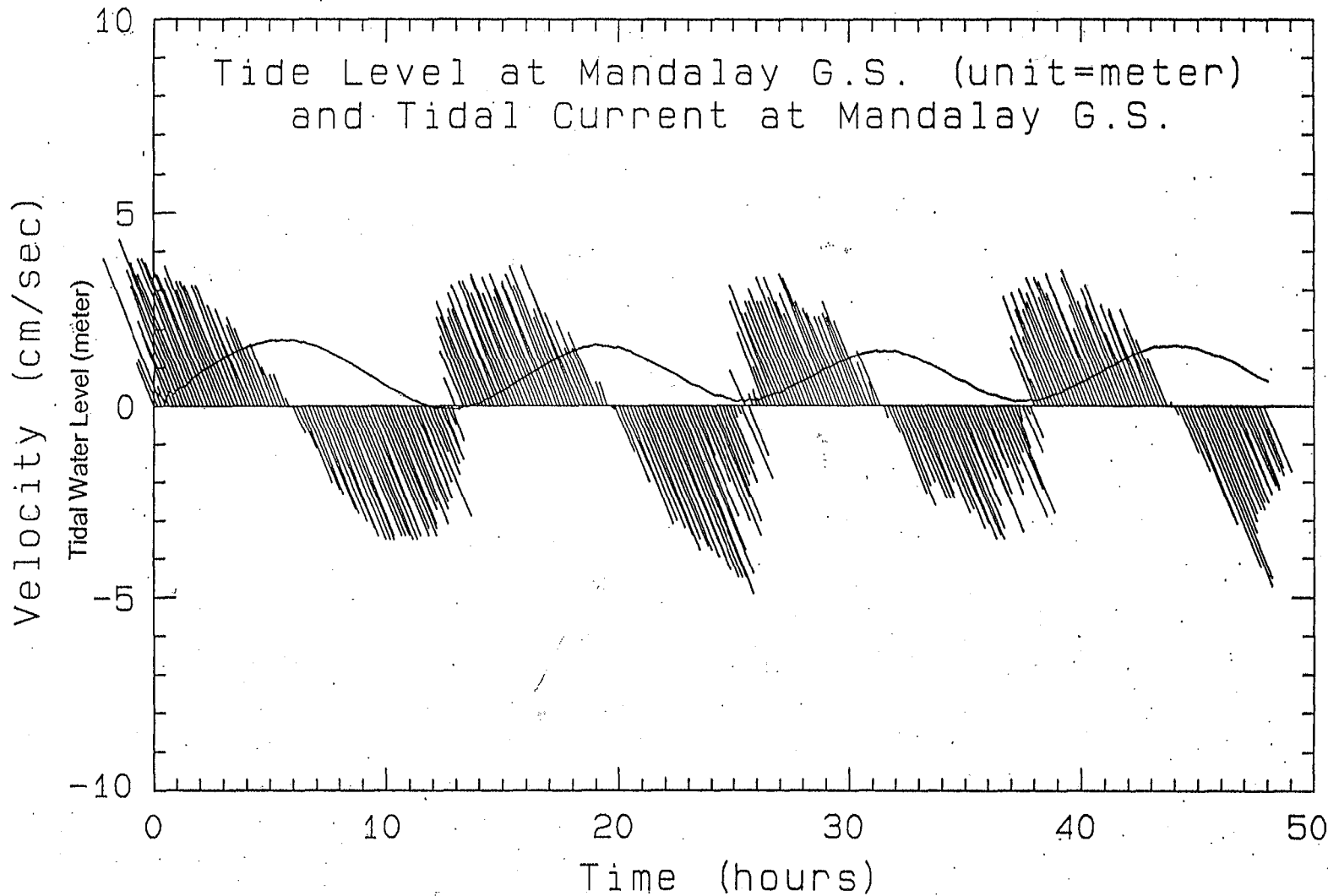


Figure 4.1 Calculated Tidal Water Levels and Currents at Mandalay Generating Station.

### McGrath Beach Tidal Current Simulation

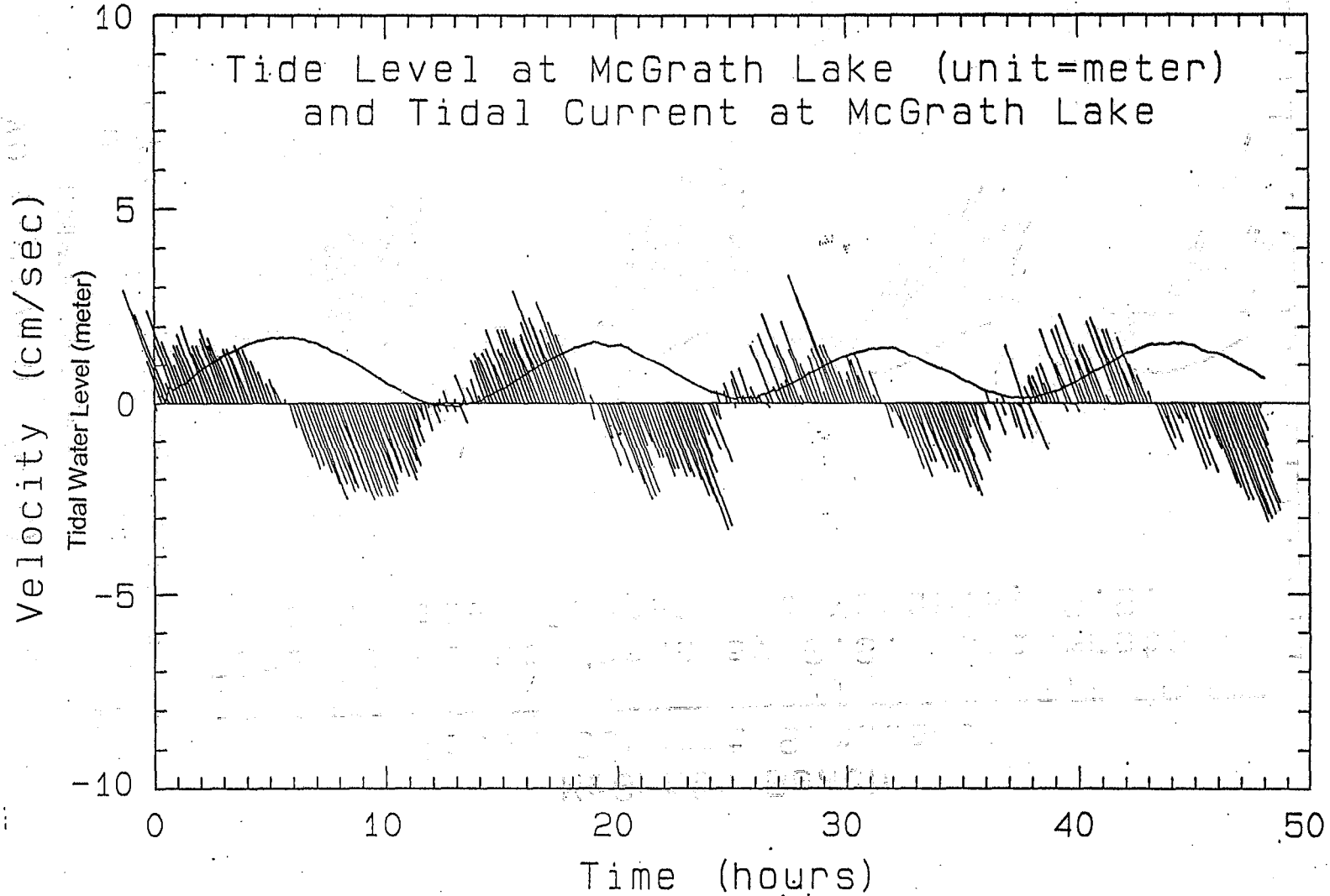


Figure 4.2 Calculated Tidal Water Levels and Currents at McGrath Lake.



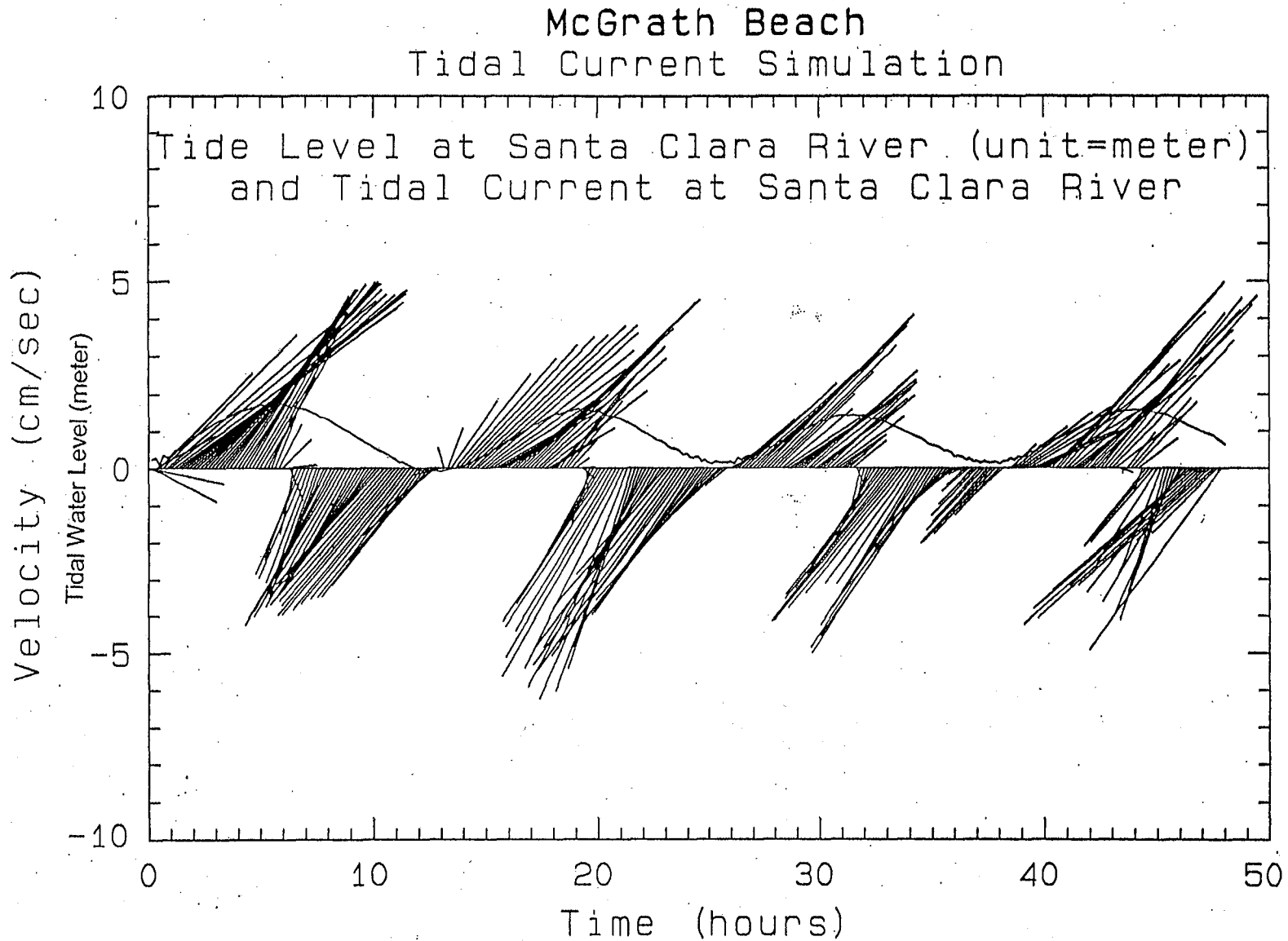
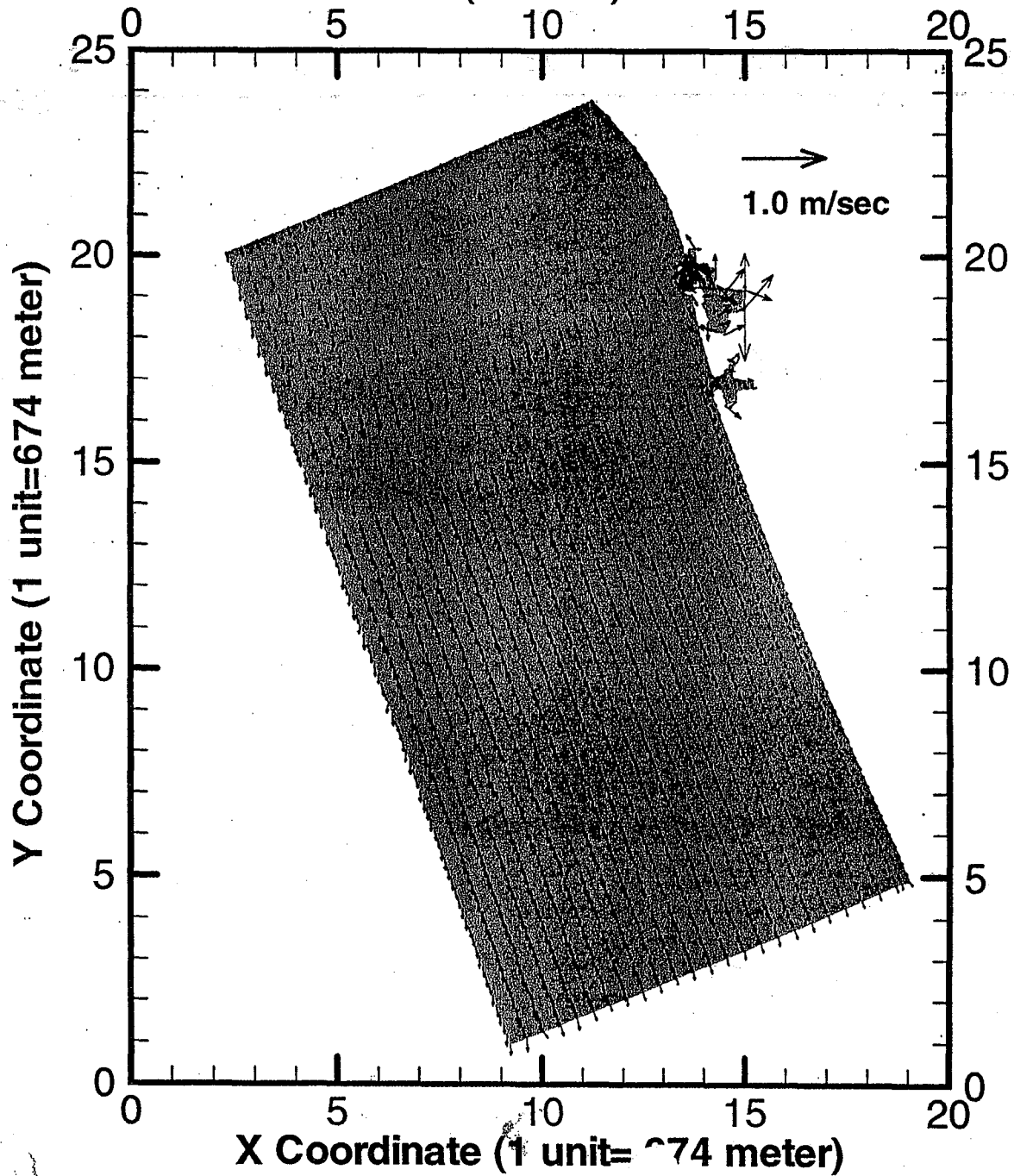


Figure 4.3 Calculated Tidal Water Levels and Currents at Satan Clara River.

Figure 4.5 Tide-Induced Current in McGrath Beach Coastal Area (Ebb Tide)



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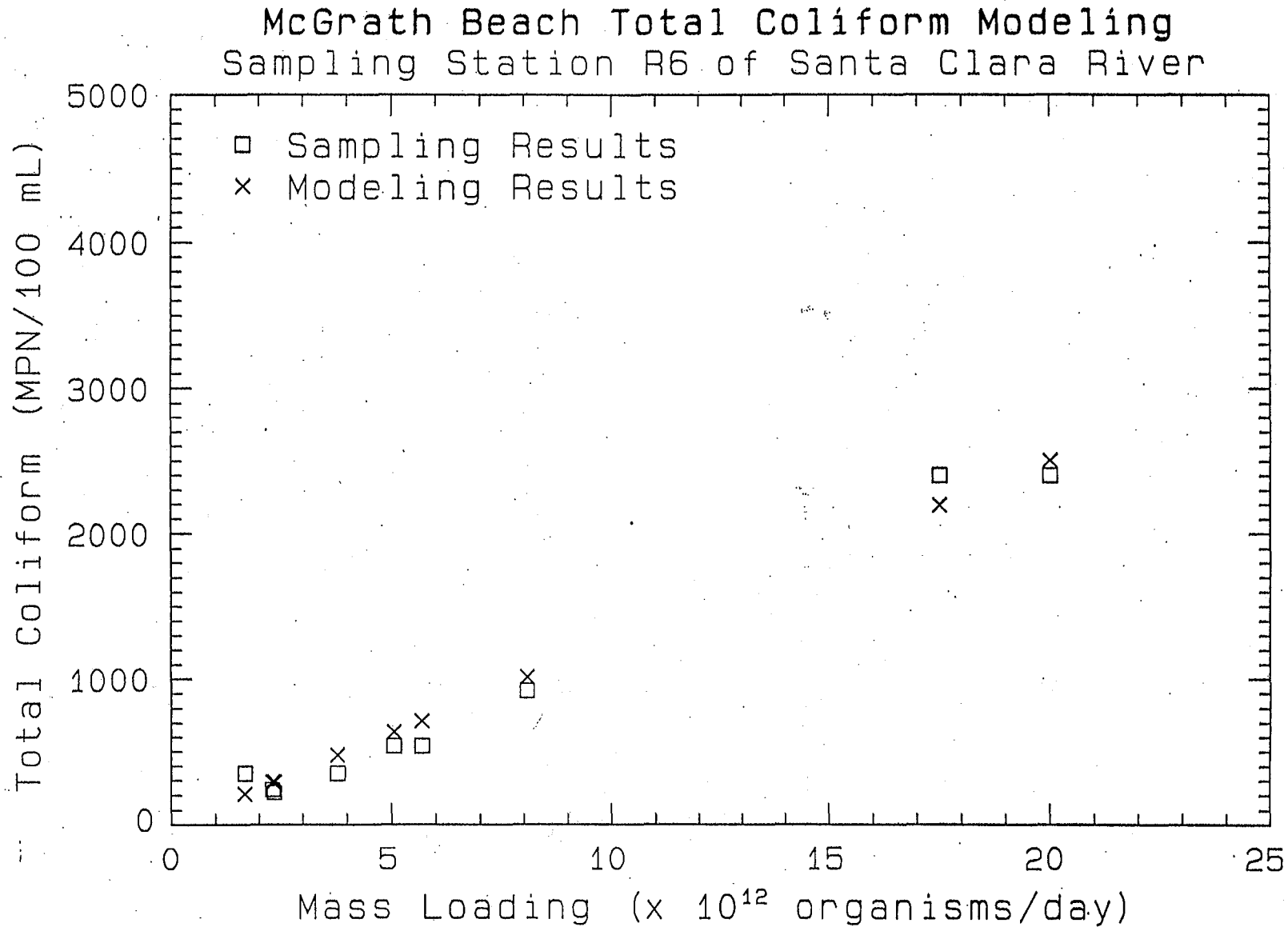


Figure 4.6 Comparison of Modeling Results and Sampling Results at Santa Clara River.

### McGrath Beach Total Coliform Modeling McGrath Lake and Mandalay G.S.

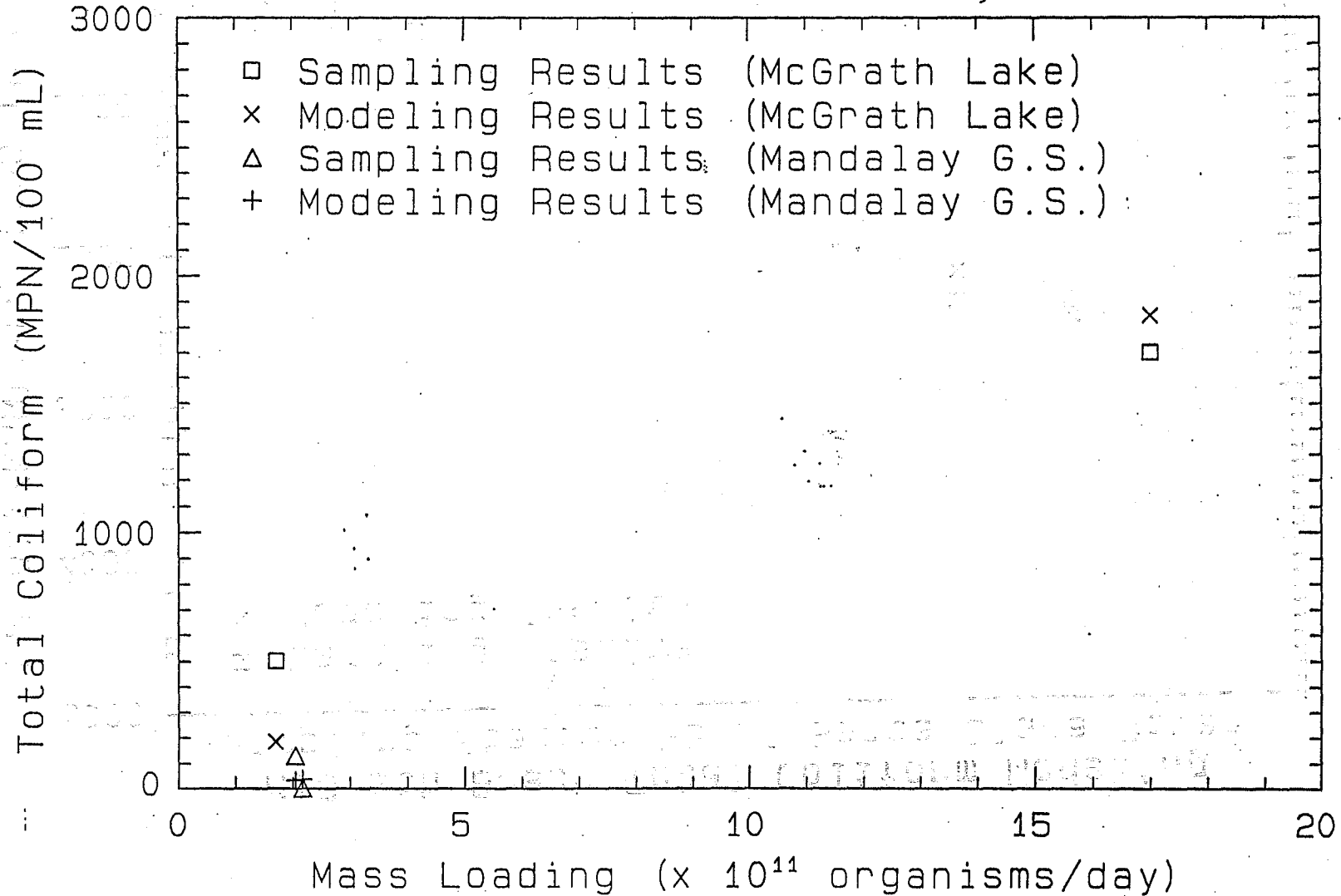


Figure 4.7 Comparison of Modeling Results and Sampling Results at McGrath Lake and Mandalay Generating Station

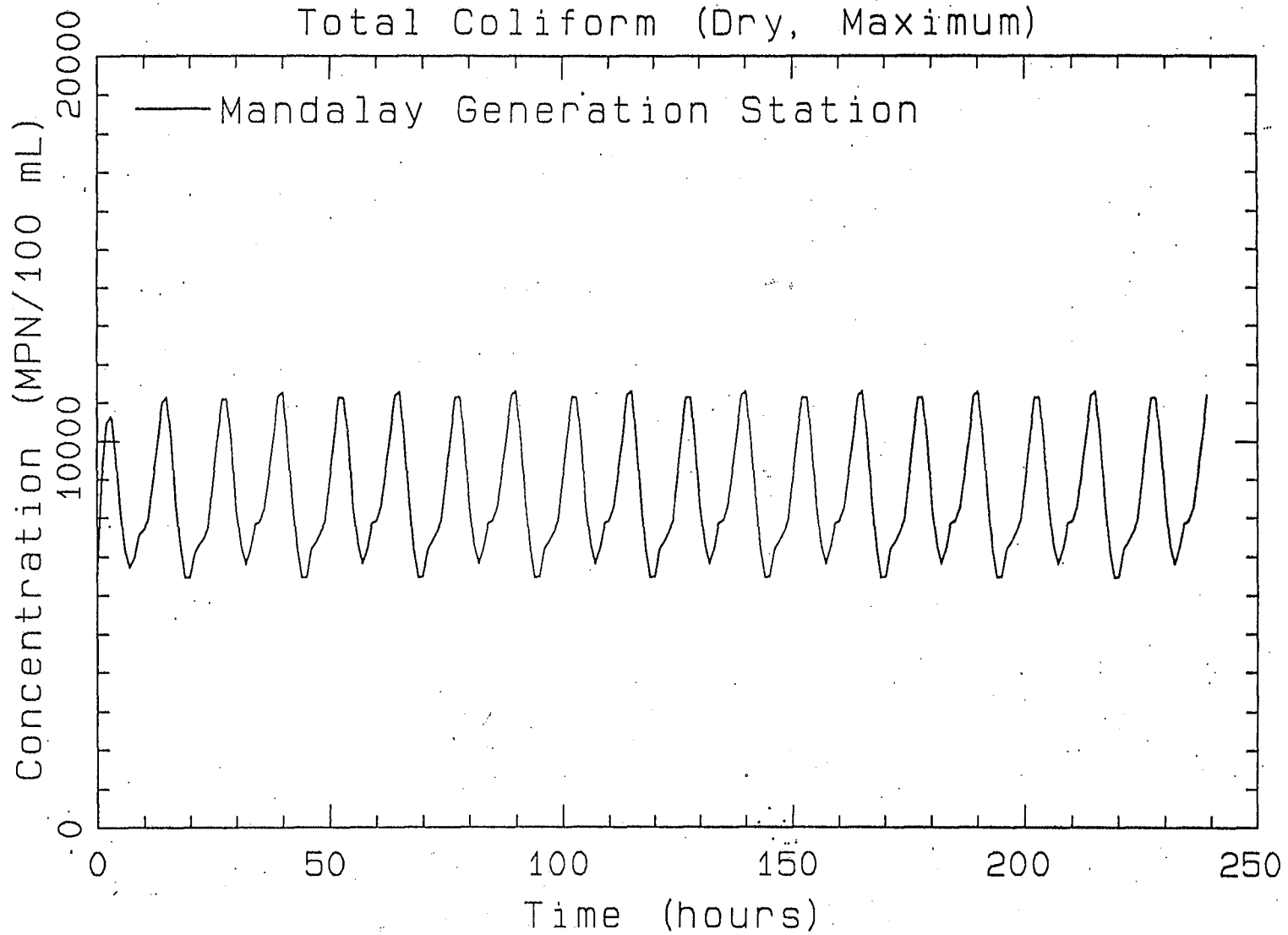
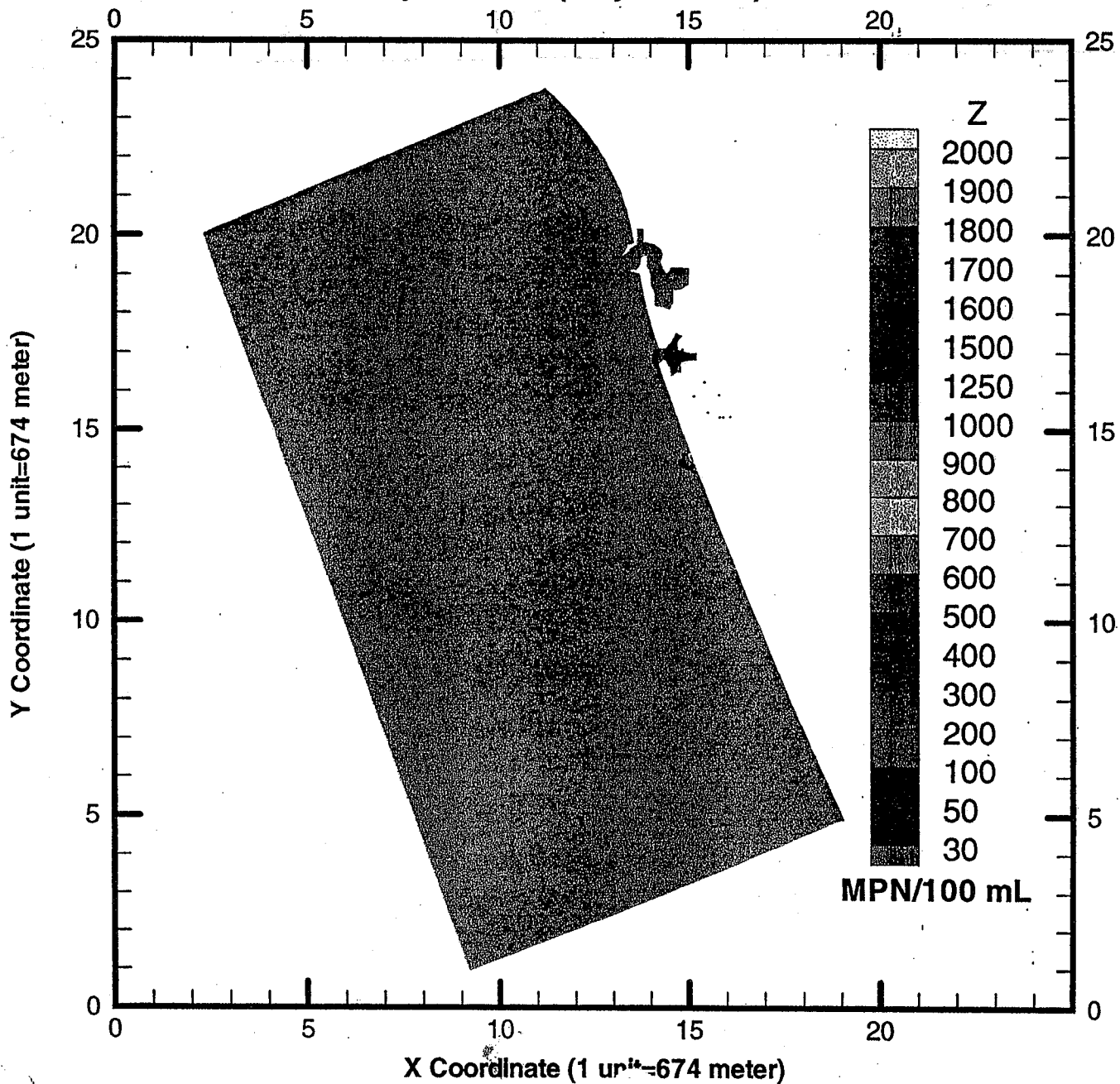


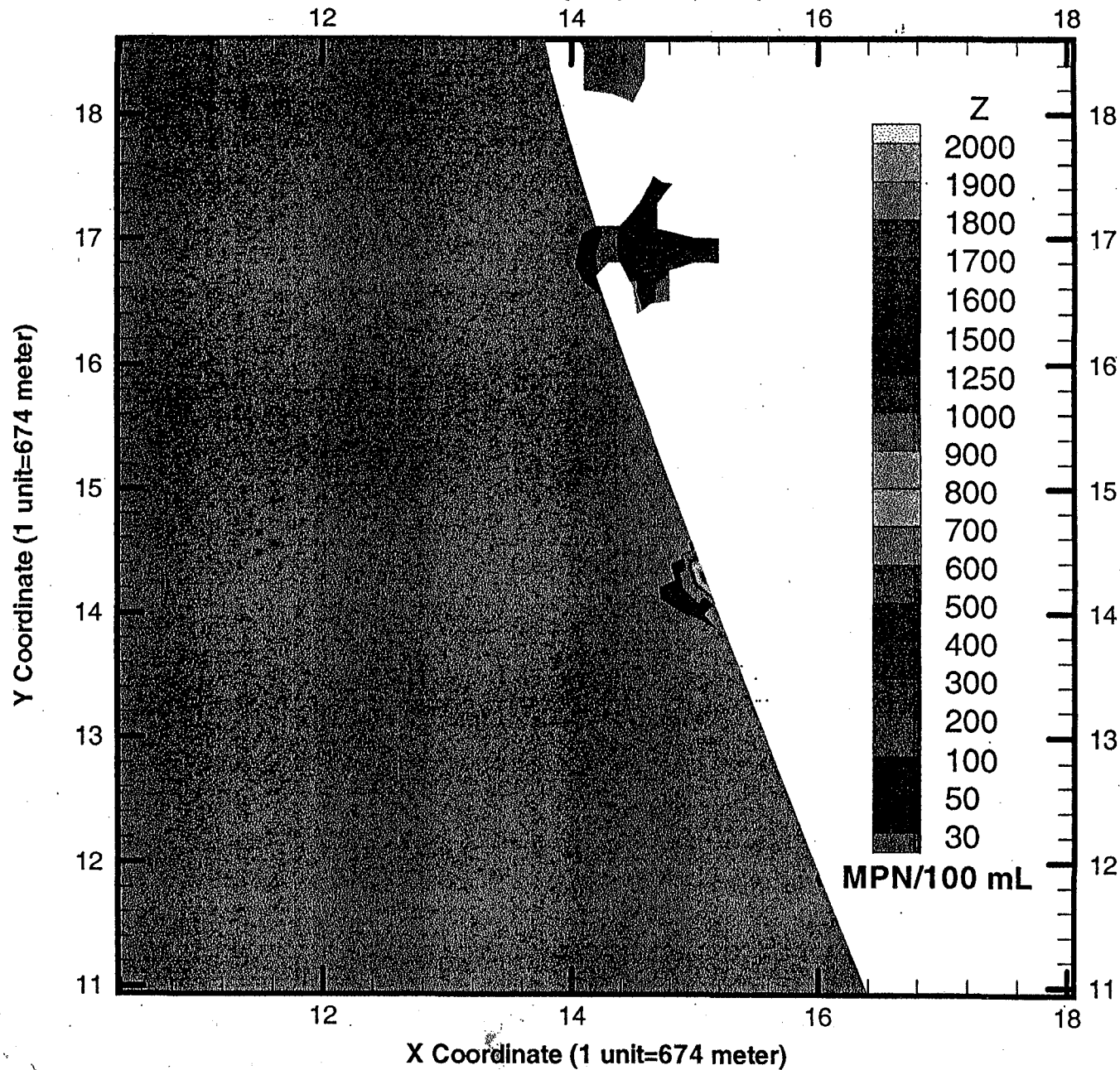
Figure 4.8 Calculated Time Series of Total Coliform Concentration Rises at Mandalay Generating Station.

**Figure 4.9 McGrath Beach Total Coliform Modeling  
Using Geometric Mean of Historical Effluent Data  
in Dry Weather (May-October)**



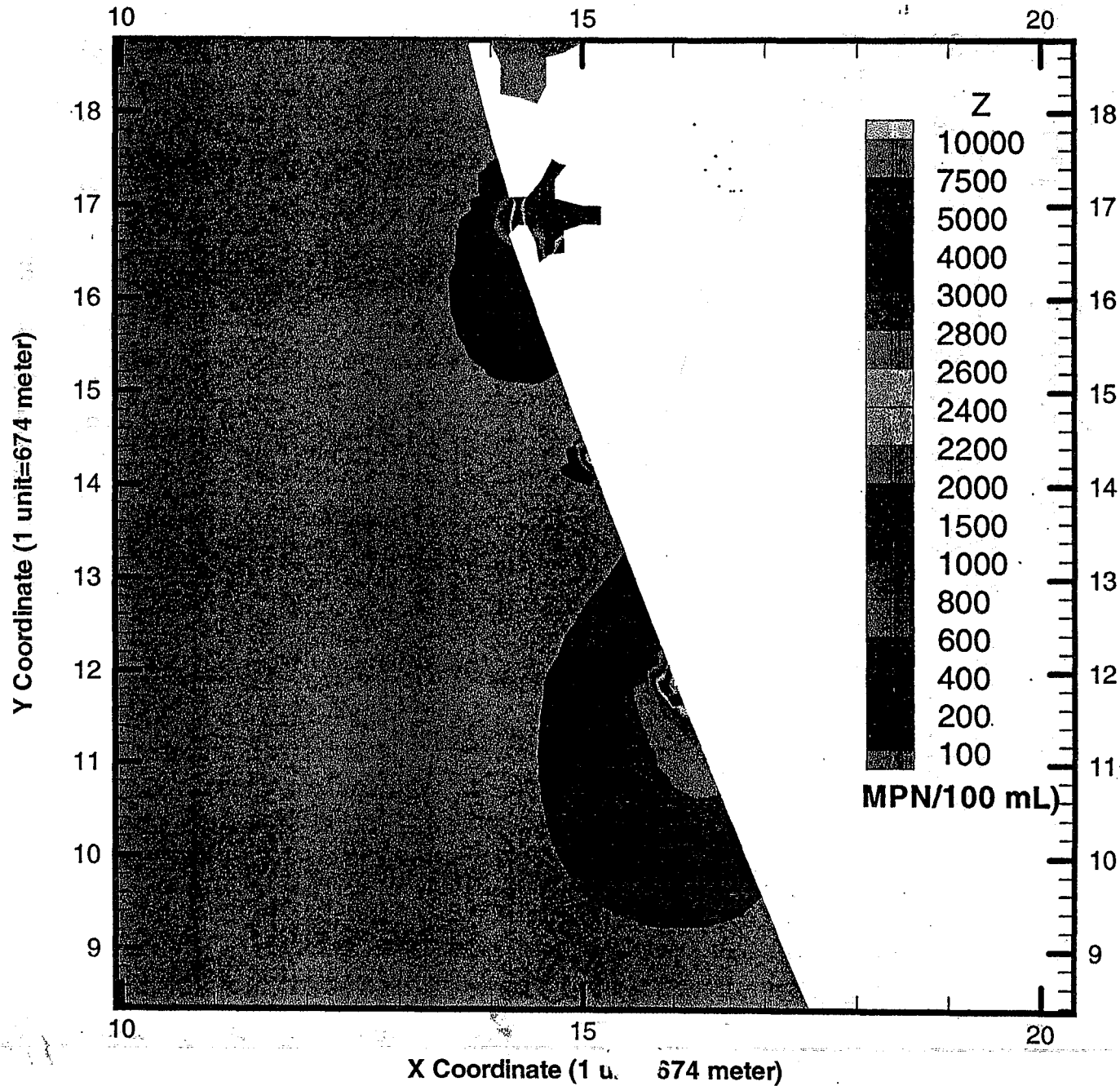
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**Figure 4.10 McGrath Beach Total Coliform Modeling  
Using Geometric Mean of Historical Effluent Data  
in Dry Weather (May-October)**



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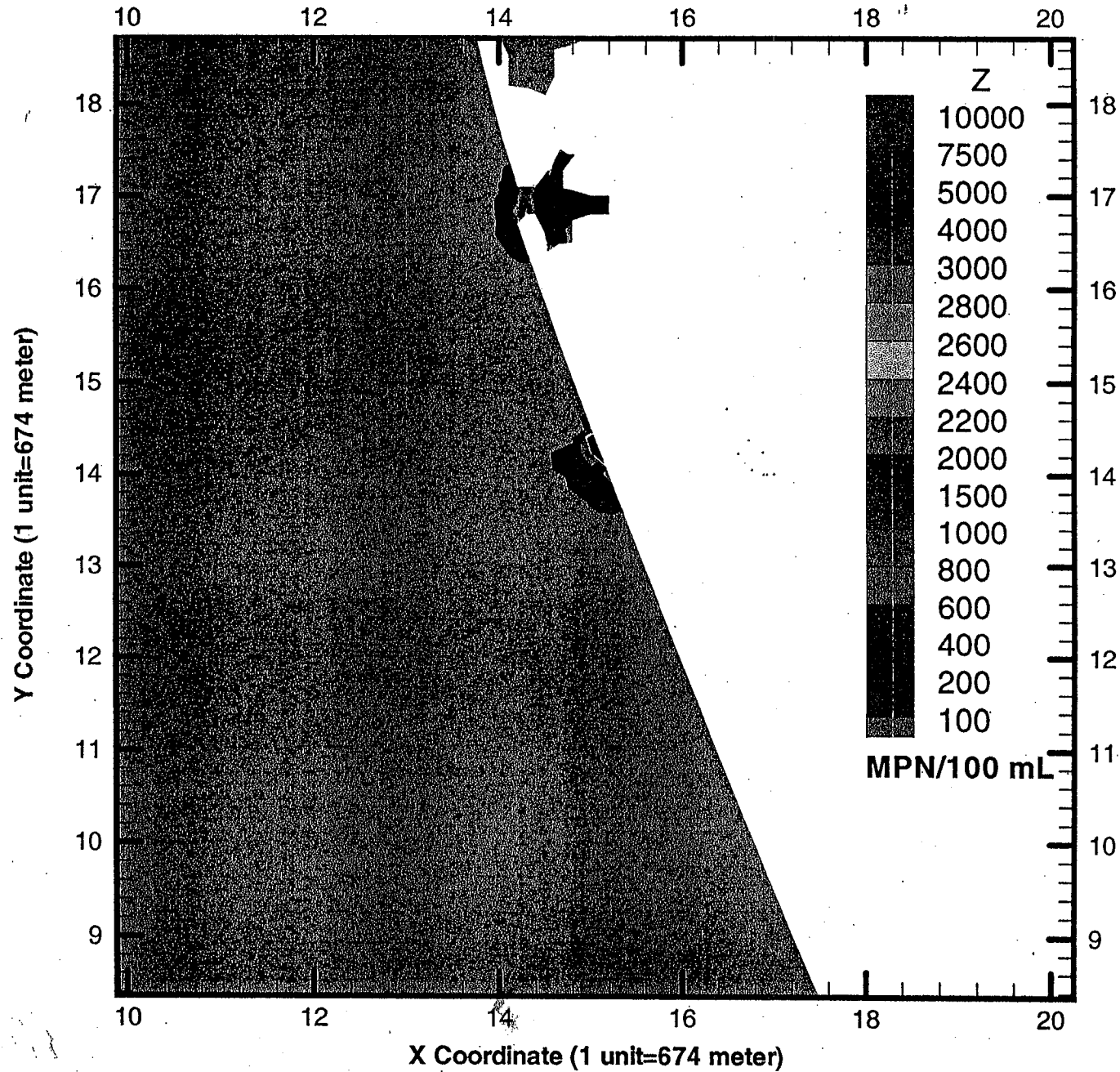
**Figure 4.11 McGrath Beach Total Coliform Modeling  
Using Maximum of Historical Effluent Data  
in Dry Weather (May-October)**



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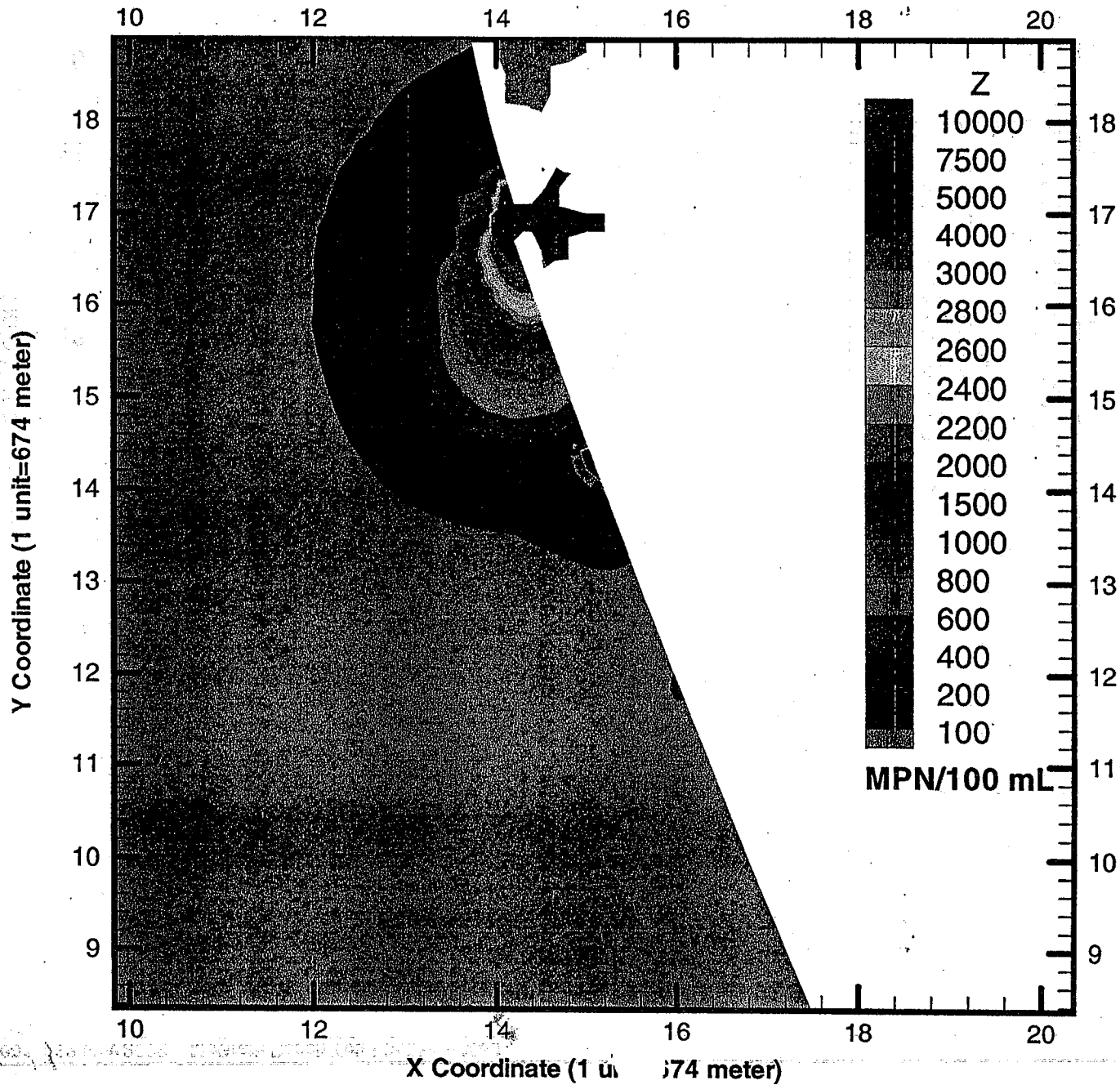


**Figure 4.12 McGrath Beach Total Coliform Modeling  
Using Geometric Mean of Historical Effluent Data  
in Wet Weather (November to April)**



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**Figure 4.13 McGrath Beach Total Coliform Modeling  
Using Maximum of Historical Effluent Data  
in Wet Weather (November to April)**



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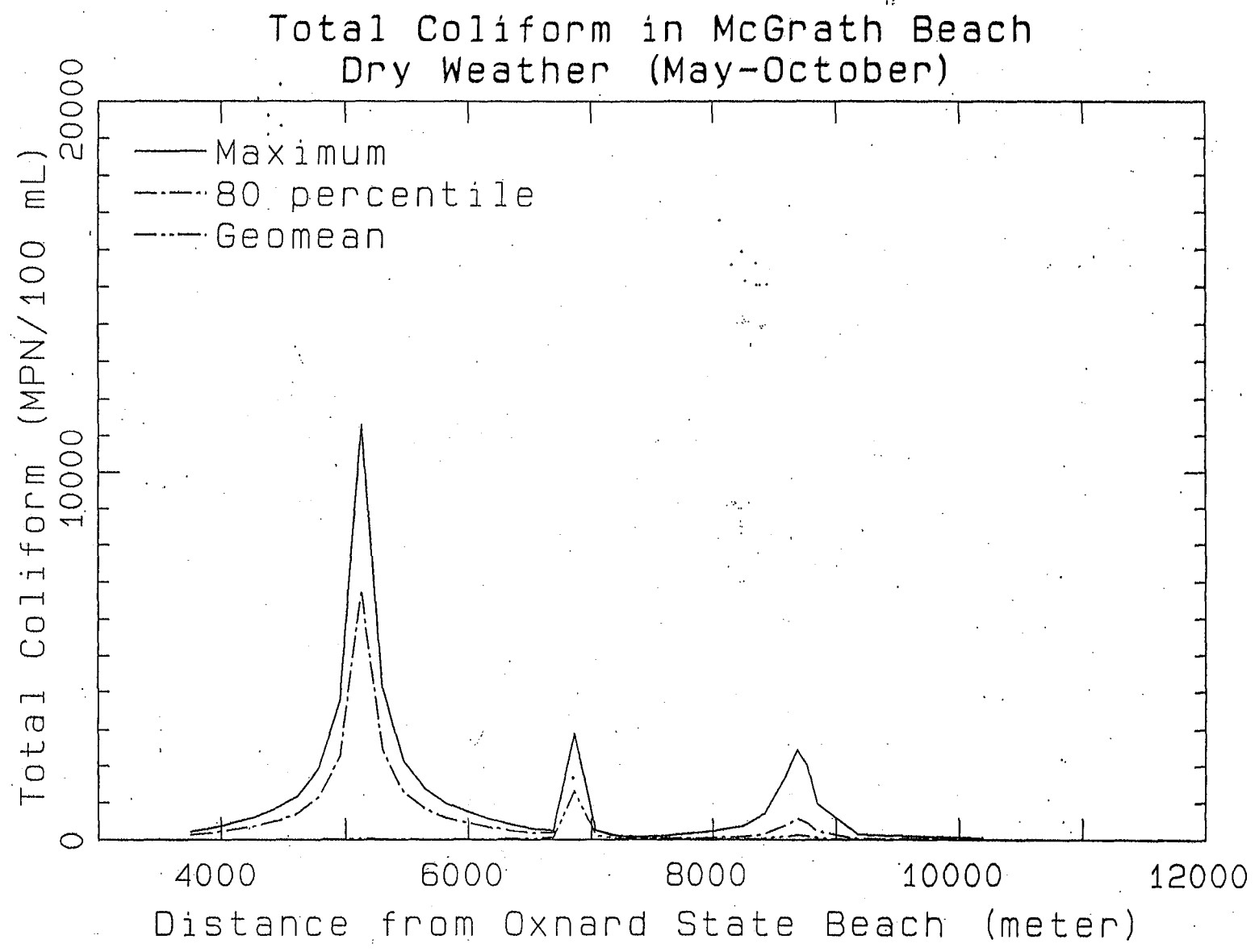


Figure 4.14 Modeling Results of Total Coliform Concentration Rises Along McGrath Beach in Dry Weather.

### Total Coliform in McGrath Beach Wet Weather (November-April)

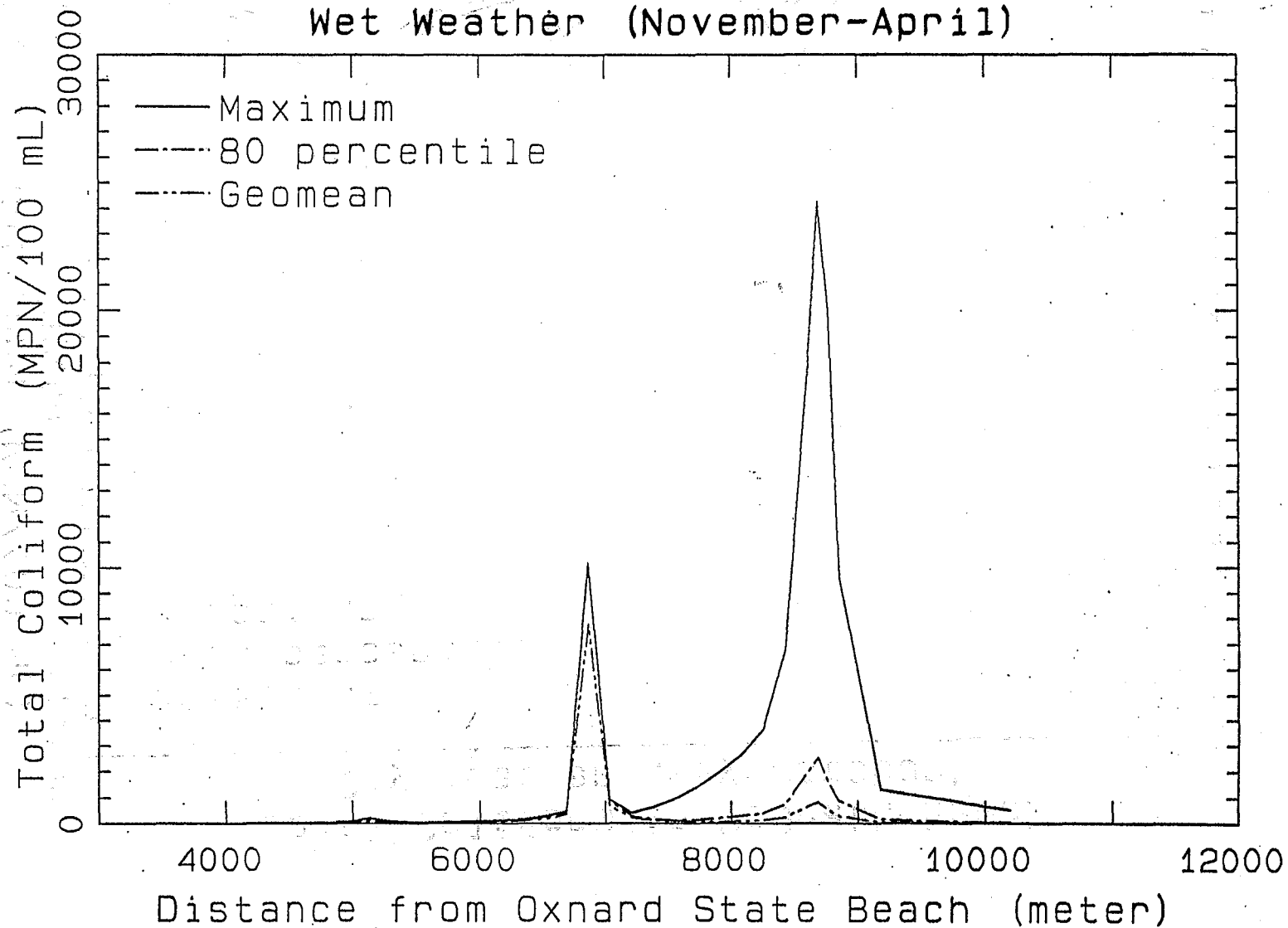


Figure 4.15 Modeling Results of Total Coliform Concentration Rises Along McGrath Beach in Wet Weather.

**Appendix D: Technical Note: Factors Affecting Dilution of  
Bacteria between the Storm Drain and Wave Wash**

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**Technical Note:**  
**Dilution of Bacteria between the Storm Drain and Wave Wash**

Two local studies have examined dilution between the storm drain and wave wash during dry weather, though no similar studies have been conducted during wet weather (Taggart, 2001; City of Los Angeles 2001). In the two studies conducted at storm drains discharging to Santa Monica Bay, researchers have observed a high degree of variability in the amount of dilution with dilution between the storm drain and wave wash spanning the gamut from 100% to negative values. In Taggart study, the researchers reported variability in the percent dilutions observed was large (see attached), with standard deviations nearly as high or higher than the average percent dilutions of the log densities of the bacteria indicators.

There are several potential explanations for the observance of "negative dilution". Negative dilution values indicate a higher indicator density was observed in the wave wash than in the storm drain discharge. First, in the study conducted by Taggart, initial analysis suggests that measurement error, as estimated from duplicate samples, is able to account for some, but not all, of negative dilution values observed. Second, there may be a source of bacteria in the surf zone other than the storm drain such as birds or bathers. Third, the apparent "negative dilution" observations may be due to the large amount of variability in the bacteria densities observed in the shoreline and in the discharge since the samples from the storm drain and shoreline were not collected from the same parcel of water.

## **1. Taggart Study**

### **1.1. Methodology**

The overall methodology used in this research was to repeatedly measure bacteria densities at one shoreline station located at the point where a storm drain discharges urban runoff over the course of the dry, summer season. Simultaneous measurements of the bacteria densities and flow rate of storm drain discharge were collected along with data on the ocean and surfzone conditions that existed during the sampling. This research was a collaborative effort by the Southern California Coastal Water Research Project (SCCWRP), Heal the Bay, the Santa Monica Bay Restoration Project, the City of Los Angeles, and the Los Angeles Regional Water Quality Control Board.

The storm drain investigated for this research is the Santa Monica Canyon storm drain located in central portion of the Santa Monica Bay. Throughout the dry season, 32 sampling events were conducted at the Santa Monica Canyon storm drain. The sampling events were scheduled to capture a range of discharge and ocean conditions. Each sampling event consisted of one grab sample at the shoreline discharge point where the storm drain discharge enters the surfzone and a grab sample from the storm drain discharge above the tidal prism. In addition, the flow rate of the storm drain discharge was measured and data on various ocean parameters that potentially affect dispersion of bacteria within the surfzone were collected from available online databases. These parameters included wave height, swell direction and frequency, wind direction and speed, and tide conditions. Longshore velocity in the surfzone was measured at each sampling event by releasing discrete dye loads into the surfzone and then timing the dye movement along the shoreline.

Sampling was conducted from late March through September, 2000. None of the sampling events were conducted during rain-influenced days, assumed to be during any rainfall event over 0.1 inch in the watershed and the following three days.

Three fecal bacteria indicators were measured in each sample collected: Total coliform, E. coli, and enterococcus. The standard monitoring protocols and laboratory methods used by the local health agencies and POTWs in Southern California were followed in this study. Laboratory analyses were initiated within 6 hours of collection time. Samples were analyzed by the City of Los Angeles' microbiology laboratory using the defined substrate methodology. Enterococcus was quantified by the Enterolert system and total coliform and E. coli were quantified using Colilert by Idexx Corporation.

### **1.2. Summary of Results**

In the dilution study by Taggart, researchers concluded that ocean conditions that significantly affect dilution are site-specific and that the scale of the variability observed in dilution was likely on the order of hours. Their study found that factors affecting dilution at the Santa Monica Canyon storm drain included tide height, and to a lesser extent, wind speed, wave height and longshore current. The effect these parameters have on dilution is likely site-specific. For example, the effect of tide height on dilution may be impacted by the slope and configuration of the storm drain channel. It is likely that more dilution would occur at channels with a shallow slope and a discharge point that easily allows ocean water to enter as the tide height increases. The impact of wind speed, wave height and longshore current on dilution will depend on the local beach topology and the general orientation of the beach to the predominant incoming swell and wind direction. The parameters found to affect dilution at Santa Monica Canyon can vary on time-scale of hours. For example, tide height fluctuates in a semi-diurnal manner in S. California and wind speed was correlated with time of day.

Lastly, the researchers point out that few significant relationships between dilution and the storm drain discharge parameters or ocean conditions in the surfzone were observed, indicating much of the variability observed in dilution was not explained. They conclude that the reason more of the variability could not be explained may be because additional factors not considered in their research are important and/or the relationships between dilution in the surfzone and the various ocean parameters studied are more complex than the relationships examined in their study.



Storm Drain Densities                      Shoreline Densities at Discharge Point  
**Dilution of Santa Monica Canyon Storm Drain Discharge in the Wavewash**  
 (from Plume Dispersion Study - SCCWRP, Heal the Bay, City of LA, SMBRP)

Date	Storm Drain Density			Wavewash Density			Dilution TC
	TC	EC	Ent	TC	EC	Ent	
21-Mar	14000	1300	720	200	5	20	99%
28-Mar	2100	1400	200	1700	180	31	19%
4-Apr	16000	520	450	1100	52	52	93%
12-Apr	12000	410	210	6100	720	150	49%
26-Apr	52000	7300	3200	150	10	31	100%
2-May	87000	9300	1200	400	97	41	100%
3-May	28000	2800	1200	2600	540	270	91%
4-May	24000	2500	840	930	120	75	96%
11-May	11000	410	500	7300	2200	440	34%
16-May	9900	1500	410	3100	170	200	69%
18-May	14000	1200	310	3600	190	220	74%
26-May	7900	1500	220	13000	1900	180	-65%
1-Jun	5300	100	9200	2300	250	130	57%
5-Jun	8600	310	260	2000	370	220	77%
8-Jun	10000	310	230	2600	97	130	74%
9-Jun	10000	410	170	3400	170	52	66%
11-Jun	9600	310	280	31	5	5	100%
15-Jun	33000	730	880	5800	430	270	82%
23-Jun	52000	3600	1500	2000	98	120	96%
6-Jul	92000	630	1100	3600	110	110	96%
25-Jul	240000	98000	24000	7300	1000	750	97%
27-Jul	37000	750	1500	310	75	98	99%
1-Aug	33000	1200	1600	4600	1100	960	86%
9-Aug	10000	410	280	4200	400	220	58%
23-Aug	55000	980	52	12000	2000	960	78%
12-Sep	27000	980	1200	31	10	10	100%
14-Sep	58000	630	3000	140	120	41	100%
15-Sep	100000	5400	4600	5200	1000	440	95%
17-Sep	14000	1100	810	200	30	63	99%
20-Sep	31000	750	1500	12000	580	510	61%
26-Sep	14000	520	930	10000	1100	630	29%

$n \left( \frac{1-ww}{sd} \right) * 100$

EC	Ent
100%	97%
87%	85%
90%	88%
-76%	29%
100%	99%
99%	97%
81%	78%
95%	91%
-437%	12%
89%	51%
84%	29%
-27%	18%
-150%	99%
-19%	15%
69%	43%
59%	69%
98%	98%
41%	69%
97%	92%
83%	90%
99%	97%
90%	93%
8%	40%
2%	21%
104%	-1746%
99%	99%
81%	99%
81%	90%
97%	92%
23%	66%
-112%	32%

**TOTAL MAXIMUM DAILY LOADS FOR  
SANTA CLARA RIVER ESTUARY BEACH/SURFERS' KNOLL,  
MCGRATH STATE BEACH, AND MANDALAY BEACH  
COLIFORM AND BEACH CLOSURES**

**STAFF REPORT**

**RESPONSE TO COMMENTS**

**California Regional Water Quality Control Board  
Los Angeles Region  
March 2003**

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
1.	Coastal Berry Company, LLC	01/27/03	Staff Report: Separate wet and dry weather accomplishments and TMDL goals. Wet weather option will be far more limited than those available during the dry weather months.	The TMDL and CAO will continue to cover both wet and dry weather. Regional Board staff understand that dry weather impairments may be fixed more easily, and the Regional Board may want to consider individual remedies for different weather. Therefore the following statement was added to the CAO: "The technical report shall also include an analysis of measures that meet requirements in wet and dry weather."
2.	Coastal Berry Company, LLC	01/27/03	Staff Report: TMDL Section 7.2.1 We appreciate...the RWQCB has attempted to evaluate several possible methods for reducing the pathogen output from McGrath Lake. However, we feel that the three strategies ... will be technologically challenging to design and implement.	These methods are only suggested. In the CAO these methods for reducing pathogen output are required to be investigated. Coastal Berry will investigate methods, therefore, these should be included for feasibility. The actual method to be used to reduce pathogens will be suggested by Coastal Berry, and approved by the Executive Officer.
3.	Coastal Berry Company, LLC	01/27/03	Staff Report: Page 18 paragraph 3 Water from McGrath Lake has been "pumped through a pipe onto the beach" for over 49 years without official attention or regulation from the RWQCB. We suggest a more detailed explanation of when the McGrath Lake outfall was legally designated a "point source" and What technical aspects of the water constituents qualify the McGrath Lake Outfall as a "point source".	Point source defined during the study leading to this Staff Report. As this is an existing discharge, it is allowed time to bring the discharge into compliance, as shown in the CAO. Were it a new discharge, it would have to meet NPDES requirements immediately.

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
			Additionally, we suggest a technical definition for " agricultural wastewater" is inserted into this paragraph for clarification purposes.	
4.	Ventura Water Reclamation Facility	01/24/03	<p>Staff Report:                      Include a discussion on why the diversion is actually more difficult than the difficulties already outlined by the TMDL.</p>	<p>The total capacity was changed from 14 MGD to 11 MGD.                      The following statements were included:                      However, this quantity of flow might require a connection to the City of San Buenaventura's main trunk line terminus approximately 1 mile north of the entrance to the campground, or approximately 2 miles north of McGrath Lake. VWRP staff estimate connection fees at \$5,800,000, and treatment costs at \$300,000 to \$400,000 per year.                      Additionally, City of San Buenaventura policy "prohibits properties located outside its boundaries to connect to its sewer system....The Ventura City Council must approve such agreements."</p>
5.	McGrath Lake Watershed Action Committee	01/31/03	<p>Section 1.0 Introduction:                      The introduction identifies the "major source" of coliform impairment as a "point source" discharge from McGrath Lake. The identification of the discharge from McGrath Lake as a "-point source" is a change from prior Regional and State Board literature, such as the 1998 303d List, which lists the source of impairment as "non-point sources". A clear explanation for this change is needed.</p>	<p>EPA Water Quality Assessments for the 303 (d) list include known use and source data to determine impairments, and a general background is used to state possible sources. TMDL investigations are much more extensive. The investigation leading to the TMDL and Staff Report found that McGrath Lake discharge was pumped out of McGrath Lake and therefore a point source.</p>
6.	McGrath Lake	01/31/03	Section 1.1 Regulatory Background	Definition added to Section 1.1.

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
	Watershed Action Committee		Add code sections defining the "agricultural exemption" to the Clean Water Act, for later reference with regard to point source discharge.	
7.	McGrath Lake Watershed Action Committee	01/31/03	Section 2.2 Geography Page 4: Change "The next beach south is Mandalay City Beach" to: "The next beach south is Mandalay <i>State</i> Beach".	Statement now reads " Adjacent to this beach heading southeast down the coast is McGrath Beach. McGrath Beach runs along a northwest to southeast direction, and is 1.7 miles long. For the purposes of the Regional Board and as used by VC/EHD as the major data source, this includes Mandalay State Beach."
8.	McGrath Lake Watershed Action Committee	01/31/03	Section 2.2 Geography Page 6: After"... to the north and south of Gonzales Road." add: "West of Harbor Boulevard at Gonzales Road are petroleum extraction facilities. Additional oil and gas wells are scattered throughout the agricultural lands."	Change made.
9.	McGrath Lake Watershed Action Committee	01/31/03	Section 2.3.1 Water Contact Recreation Page 7: Change, "These sites are routinely full during summer weekends." To: "These sites are routinely full throughout the summer season."	Change made.
10.	McGrath Lake Watershed Action Committee	01/31/03	Section 3.1.1 Numeric Target -- Bacteria Page 9: The statement "The new objective for total coliform has a higher single sample objective,..." is confusing. The single sample objective for total coliform shown in Table 3-Ocean	These objectives are from the new bacteria standards, which are applicable to both the Basin Plan and the Ocean Plan. However, at the time of the 2002 303 (d) listing, the objective of 1,000/100 mL was in place. To exceed the listing, a location had to exceed the objective 20% of the time, not 20% during a 30-day period. Only the Gonzales

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
			<p>Plan Objectives-is identical to that shown for the TMDL Single Sample Objectives. both are listed as 10,000/100 mL.</p> <p>Is it the intent of this TMDL to replace the Ocean Plan requirement that Total coliform not exceed 1,000/100 mL in 20% or more samples within 30 days with Item 2.d.-the Fecal/Total ration requirement? Please clarify. This is especially important because the data analysis given throughout the report focuses almost entirely on the percent of total coliform samples that exceed 1,000/100 mL. If the "20%" standard is being replaced by the "Fecal/Total ratio" standard, this needs to be clearly stated.</p>	<p>Road site exceeded the listing that often, and therefore was still exceeding the 303 (d) criteria. Additionally, the data for that site exceed the geomean standard of 1000 /100 mL for a minimum of 5 samples in a 30 day period 17% of the data sets. This does not require a 20% exceedance.</p>
11.	McGrath Lake Watershed Action Committee	01/31/03	Section 4.1 History Footnote # 3: Change Source from "Kennedy/Jenks report 2002: to Chemical and Biological Measures, etc. (Footnote #14), since this is the source quoted by Kennedy/Jenks.	Change made.
12.	McGrath Lake Watershed Action Committee	01/31/03	Section 4.1 History Pages 10 & 11: Omit paragraph "...The east side... and to the ocean." with another set of paragraphs with a significant amount of data.	Change made.
13.	McGrath Lake Watershed Action	01/31/03	Section 4.1 Page 11, paragraph 2 & 3:	These paragraphs describe the area, possible sources, and value of the area and McGrath Lake



	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
	Committee		Omit these two paragraphs. This information bears no relationship to the coliform issues that are the subject of this TMDL.	in particular. No change made.
14.	McGrath Lake Watershed Action Committee	01/31/03	Section 4.3.1 Surfer's Knoll Page 14 Table 4: Column 3 is titled "Percent total coliform samples exceeding the single sample objective (1,000/100 mL). Change to read: "Percent total coliform samples exceeding 1,000/100 mL". It is confusing to have references to two different "single sample objectives for total coliform of 10,000/100 mL used interchangeably throughout the report. Since the Numeric Target single sample objective for this TMDL is 10,000/100 mL, we suggest the report use this number when referring to the "single sample limit" for total coliform.	The Numeric Target has been updated to show current bacteria standards of 10,000/ 100 mL. However, these data still show the exceedance as it applied in the 2002 303 (d) listing.
15.	McGrath Lake Watershed Action Committee	01/31/03	Section 4.3.2.1 Table 5 Page 15: A new term is used in this table ("Instantaneous"), which is not defined. Change column headings to read: "# Samples Exceeding 1,000/100 mL Total Coliform."	Table now reads "Exceeding 2002 303(d) Single Sample Limit."
16.	McGrath Lake Watershed Action Committee	01/31/03	Section 4.4 Seasonality Page 17 Paragraph 1: Change (15 MGD) to (10 MGD)..	Change made.
17.	McGrath Lake	01/31/03	Section 4.5.1 McGrath Lake	Statement now reads, ". Sources of water include

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
	Watershed Action Committee		<p>page 18 Paragraph 1:                      Change to read: "McGrath Lake has several Sources of water. <i>The primary sources of water are irrigation and drainage runoff, groundwater, and rainfall*</i>. The main source of <i>agricultural</i> water is the <i>drainage</i> ditch...".                      *Source: Chemical and Biological Measures, page1.</p>	<p>irrigation and drainage runoff, groundwater and rainfall.<sup>1</sup> The main source is water from the irrigation ditch that comes from agricultural property across Harbor Boulevard from the lake."</p>
18.	McGrath Lake Watershed Action Committee	01/31/03	<p>Section 4.5.1 McGrath Lake page 18 second paragraph:                      Delete this paragraph. Drainage from this parcel is being diverted away from McGrath Lake. Only flood waters that overtop Harbor Boulevard would impact the lake.</p>	<p>Statement now reads, " According to the McGrath Lake WAC, a diversion of this water is planned."</p>
19.	McGrath Lake Watershed Action Committee	01/31/03	<p>Section 4.5.1 McGrath Lake page 18 third paragraph:                      This paragraph is very vague. Is it the intent to articulate the definition of the lake discharge as a point source? This is a very significant issue for agriculture in the Oxnard Plain. Please clarify.                      Regarding the reference to 3 inches per day and 2.8 million MGD, we are unable to locate this in the referenced report (footnote 14). The number "3 inches per day" was an</p>	<p>This paragraph describes the water contained in the lake and discharged onto the beach. It states that the water in the lake is not solely agricultural discharge water. The final sentence now reads, " Therefore, this water does not meet the agricultural exemption stated in Section 1.1, and therefore it is a point source."                      The reference of 3 inches per day is the reference the Regional Board has for Lake water. It shows that there is additional water in the lake when other flows are cut off. It also gives a reasonable estimate for the amount of water that may flow</p>

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<sup>1</sup> Chemical and Biological Measures of Sediment Quality in McGrath Lake, February 1999, RWQCB-LA. et al.

	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
			<p>estimated figure applicable to one set of conditions in the winter of '92-'93 and should not be generalized.</p>	<p>into the lake from sources outside the agricultural ditch. The following statement was added to the footnote: "This is an estimated figure applicable to one set of conditions in the winter of 1992-1993."</p>
20.	McGrath Lake Watershed Action Committee	01/31/03	<p>Section 4.5.1 McGrath Lake page 18 second paragraph: There is no such water body as "McGrath Creek". The use of this term is misleading and should be deleted. We suggest the following: (a paragraph.)</p>	<p>McGrath Creek is a term coined by VC/EHD and was used to describe the location of their data. It is also descriptive of the flow along the beach to the tide. The following statement was added: Stakeholders state that "the lake water that is pumped to the beach flows through the sand dunes until it either reaches the ocean or percolates into the sand. During winter months, sand buildup on the beach often creates a barrier that causes the outfall water to accumulate behind the dunes. Winter high tides often overtop the sand barrier, adding to the volume of accumulated outflow until the sand barrier is naturally breached."</p>
21.	McGrath Lake Watershed Action Committee	01/31/03	<p>Section 7.2 McGrath Lake Outfall page 23 paragraph 3: Omit paragraph. Replace with (a 2-paragraph statement)</p>	<p>The paragraph has been revised to read, "The McGrath Lake Watershed Action Committee (WAC) was formed in as an adjunct to the McGrath Lake Trustee Council, which was formed in connection with a spill in McGrath Lake in 1993. The WAC consists of members of the McGrath family, who own the north end of the lake and some nearby land used for agriculture and other uses, State Parks, California Fish and Game, United States Fish and Wildlife, Coastal Berry, and Bailard landfill, which is near Coastal Berry property. The WAC is currently working to develop a watershed management plan that will</p>

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
				address a broad spectrum of water quality issues affecting the watershed, including coliforms. It is also investigating the feasibility of ceasing discharge to and from the lake. The outcome of these studies may influence the implementation strategies for the McGrath Lake Discharge."
22.	McGrath Lake Watershed Action Committee	01/31/03	Section 7.2 McGrath Lake Outfall page 23 paragraph 4: Change to read: "...reduce the dry weather coliform by approximately 19% and wet weather coliform by 97% to reach this...TMDL."	Change made.
23.	McGrath Lake Watershed Action Committee	01/31/03	Section 7.2.1.1 Treatment page 24 paragraph 2: Change last sentence to read: "...removing pathogens from the source water to the lake may <i>not</i> reduce the load."	Change made.
24.	McGrath Lake Watershed Action Committee	01/31/03	7.2.1.2 Diversion page 25 paragraph 1: Add: "It might be possible to divert the <i>dry weather</i> flow..."	A discussion of this diversion is now included in the TMDL.
25.	McGrath Lake Watershed Action Committee	01/31/03	7.2.1.2 Diversion page 25 paragraph 2: Because there is not sufficient capacity at the plant to provide a 97% reduction in wet weather coliform (i.e. (sic) treat 10 MGD), this discussion is irrelevant and should be omitted.	While in their current capacity, there may be insufficient capacity to treat 10 MGD of lake water, an additional discussion on why this might not occur is helpful. The statement remains relevant, and remains in the Staff Report. Change not made.
26.	McGrath Lake	01/31/03	7.2.1.2 Diversion page 25 paragraph	This is a discussion of the water quality in the lake

	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
	Watershed Action Committee		3: Change to read: "treating the <i>dry</i> weather discharge..."	during storms, and therefore is about <i>wet</i> weather. Change not made.
27.	McGrath Lake Watershed Action Committee	01/31/03	7.2.1.2 Diversion page 25 paragraph 4: States that the south end of the lake has significantly lower pathogens than the north end. While this seems intuitively correct (longer residence time in the lake would result in dieoff), we wonder if there is sufficient data to be assured of this relationship? Sampling conducted by VC/ EHD on 5-19-99 found total coliform levels uniformly high (24,192/100 mL) throughout the lake. (Source: Kennedy/Jenks 2002, pages 27-29). Is it possible that the natural biota (plants and wildlife) in the lake may be contributing additional coliforms that counterbalance the die off?	Actually, Regional Board sampling in April 2002 confirms this. Although this data show the south end of the lake has lower levels of total coliforms, natural biota may increase total coliforms. However, Regional Board data show lower levels in the south end of the lake.
28.	McGrath Lake Watershed Action Committee	01/31/03	7.2.1.2 Diversion page 25 paragraph 5: The cost of an ocean outfall is quoted as \$40,000. This seems extremely low. Does this cost include construction, or is it only the purchase of 500 feet of 15 inch pipe? Can you provide any estimate of the costs for engineering, technical reports and permits?	The cost estimate is based on standard factors from RS Means Environmental Remediation Cost Data, 6 <sup>th</sup> annual edition (2000). Trenching costs are based on \$28.31/cubic yard (Means reference 17030212), and costs are based on an assumed 6-foot deep, 3-foot wide, 250-foot long trench. Installed piping costs are based on \$28.08 per linear foot (Means reference 19020130). Based on engineering judgement, these costs (\$18,706) are multiplied by a factor of two to account for the portion of pipe installed offshore to yield a

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
				rounded cost estimate of \$40,000.
29.	McGrath Lake Watershed Action Committee	01/31/03	7.2.1.2 Diversion page 26 Table 10. Implementation Schedule Column Two Responsible Party. For "Issue CAO", change Coastal Berry to-- "Regional Board Executive Director".	Change made.
30.	McGrath Lake Watershed Action Committee	01/31/03	Section 8.0 Monitoring Programs Page 26: This section states that the normal monitoring protocol specified by AB 411 is "inadequate for the purposes of this TMDL" and sets forth a different protocol. It goes on to state that monitoring for the TMDL will be done at three locations at the northern, middle and southern end of the beach. Who will do the monitoring at those three locations for this TMDL? Will VC/EHC take two sets of samples weekly-one using the AB 411 protocol and one using the TMDL protocol?	Monitoring and its exact form will be proposed by Coastal Berry. They may cooperate with VC/EHD and Reliant's Mandalay Generating Station to eliminate redundancies.

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	Commenter	Date Received	Summary of Comment	Regional Board Staff Response
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Glossary of Terms and List of Abbreviations Used

303(d) List	List of impaired water bodies developed by the Regional Board, or water bodies that fail to attain one or more water quality objectives for one or more specified pollutants or sources of impairment.
Basin Plan	The Water Quality Control Plan for the Los Angeles Basin, the ****
TMDL	Total Maximum Daily Load, the document encompassing a set of analyses and implementation plans adopted by the Regional Board to achieve specified water quality objectives and support beneficial uses in each waterbody. TMDLs are prepared for
NPDES	National Pollutant Discharge Elimination System, the system of Federal regulations governing permits for wastewater discharges. In California, those permits are issues by the Regional Water Quality Control Boards.
Regional Board	Regional Water Quality Control Board, the agency in California responsible for NPDES permitting and for the preparation of this TMDL. Consists of nine appointed members, oversees the actions of staff and adopts permits and other state regulations in public hearings. Except where noted, in this document "Regional Board" refers to the Los Angeles Regional Board, Region 4.
Staff	Staff of the Los Angeles Regional Water Quality Control Board

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