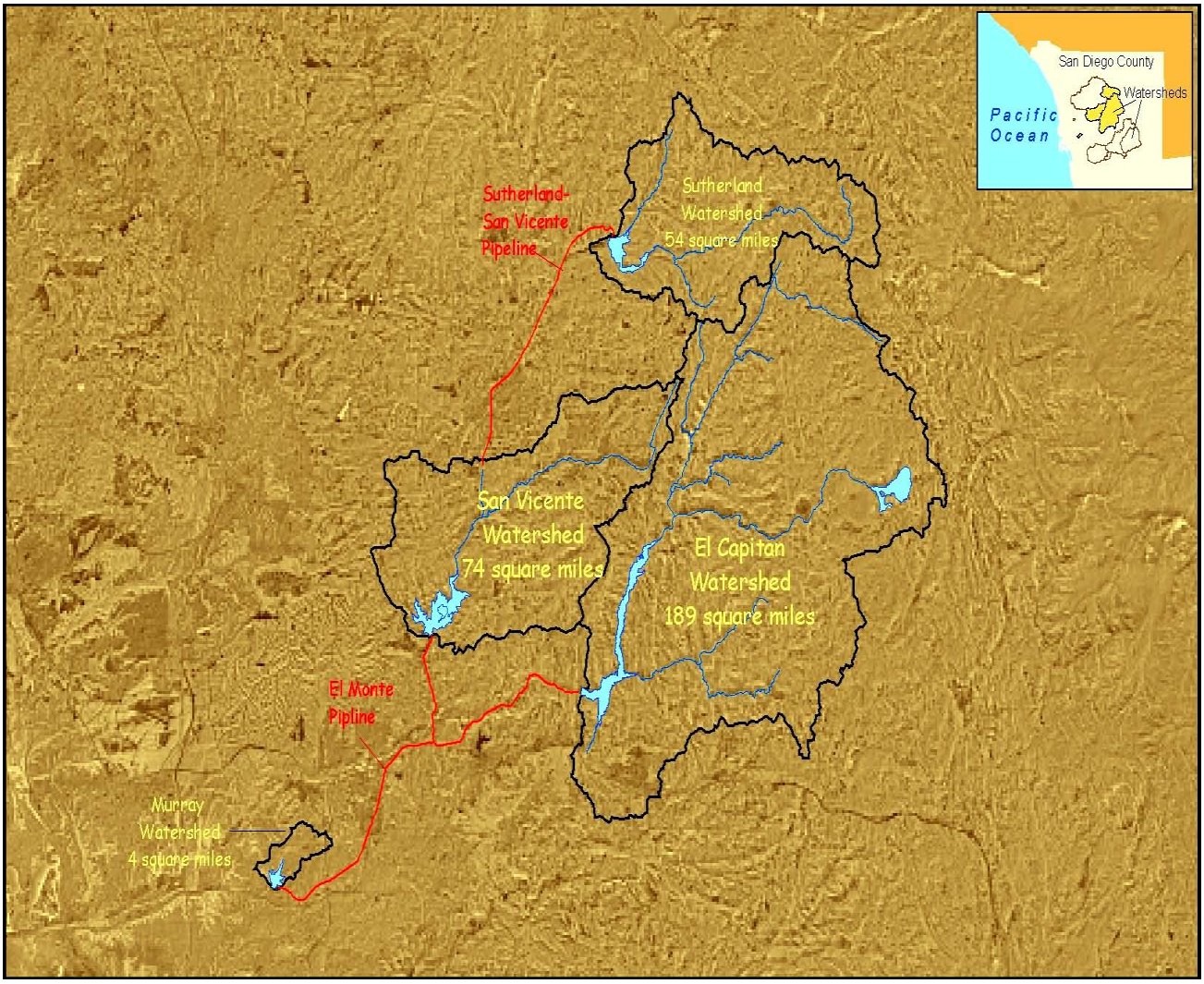

The City of San Diego Water Department 2005 Watershed Sanitary Survey

San Diego River System

Volume 2 of 5

Data Collected Between 01/01/01– 12/31/05

ABBREVIATIONS

ACOE	Army Corps of Engineers
ADT	Average daily traffic
ADWF	Average dry weather flow
AF/Y	Acre-Feet per Year
AWWA	American Water Works Association
BLM	Bureau of Land Management – U.S. Federal
BMPs	Best Management Practices
CDF	California Department of Forestry
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQA	California Environmental Quality Act
CFR	California Federal Regulation
cfs	Cubic feet per second
City	City of San Diego
CNDDB	California Natural Diversity Database
CNF	Cleveland National Forest
CNPS	California Native Plant Society
County	County of San Diego
CWA	San Diego County Water Authority
D/DBP	Disinfection/Disinfection By-Product
DHS	Department of Health Services
DMG	Division of Mines and Geology – State of California
dS/M	Decisiemens per meter
DSOD	Division of Safety of Dams
EPA	Environmental Protection Agency
ESWTR	Enhanced Surface Water Treatment Rule
GIS	Geographic Information System
gpd	Gallons per day
Gpm	Gallons per minute
HAAs	Haloacetic Acids

ABBREVIATIONS

Helix	Helix Water District
HPC	Heterotrophic Plate Count
HSU	Hydrographic Subunit
HU	Hydrographic Unit
HUMAN CON	Human Consumption
IOCs	Inorganic Chemicals
LPG	Liquid Propane Gas
LSE LF	Loose Leaf
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MG	Million Gallons
mg/L	Milligrams per liter (parts per million)
mgd	Million gallons per day
mgy	Million gallons per year
MHCP	Multiple Species Conservation Program
MSL	Mean Sea Level
MWD	Metropolitan Water District
N-GRNHS	Nursery Greenhouse
N-OUTDR	Nursery Outdoor
NEPA	National Environmental Protection Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTU	Nephelometric Turbidity Unit
OTC	Olympic Training Center
PAHs	Polyaromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
RCA	Resource Conservation Area
RMWD	Ramona Municipal Water District
RO	Reverse Osmosis
RUIS	Regional Urban Information System

ABBREVIATIONS

RWQCB	California Regional Water Quality Board
SANDAG	San Diego Association of Governments
SCS	Soil Conservation Service – U.S.
SDWA	Safe Drinking Water Act - Federal
SMCL	Secondary Maximum Contaminant Level
SOCs	Synthetic Organic Chemicals
SP	Soluble Powder
SUB	Subtropical
SWPPPs	Storm Water Pollution Prevention Plans
TCR	Total Coliform Rule – Federal
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
THMs	Trihalomethanes
TTHMs	Total Trihalomethanes
TOC	Total Organic Carbon
TRANSPL	Transplants
ug/L	Micrograms per liter (parts per billion)
UNCUL	Uncultivated
UNSP	Unspecified
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Society
VOCs	Volatile Organic Compounds
WDRs	Waste Discharge Requirements
WPCF	Water Pollution Control Facility
WRF	Water Reclamation Facility
WSS	Watershed Sanitary Survey
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

VOLUME 2

THE SAN DIEGO RIVER SYSTEM

CHAPTER 1: SYNOPSIS

Introduction

This volume is the second five-year update of the 1996 Watershed Sanitary Survey (WSS) for the San Diego River System Watersheds (Figure 2-1.1). The San Diego River System is comprised of four reservoirs, their watersheds, interconnecting water pipelines, and the Alvarado Water Treatment Plant. The four watersheds of the San Diego River System have a combined area of 205,140 acres, or approximately 321 square miles.

Murray Watershed consists of the Murray Reservoir and the Alvarado Water Treatment Plant. The primary function of the reservoir is to store imported water from San Diego County Water Authority and act as the terminal storage reservoir for the water transferred from San Vicente, El Capitan, and Sutherland reservoirs via the El Monte pipeline.

San Vicente Watershed consists of the San Vicente Reservoir. The primary function of the reservoir is to store imported water from the SDCWA, local runoff water, and water transferred from Sutherland Reservoir located in the Hodges Watershed via the Sutherland-San Vicente Pipeline. Water from San Vicente Reservoir is either transferred to Murray Reservoir or directly to the Alvarado Treatment Plant for immediate use, via the Lakeside Pump Station Complex using the San Vicente and El Monte pipelines.

El Capitan Watershed consists of the El Capitan Reservoir. The primary function of this reservoir is to store local runoff water, water transferred from Lake Cuyamaca

via Boulder Creek, and water transferred from San Vicente Reservoir via the Lakeside Pump Station Complex, using the El Capitan & San Vicente pipelines. Water from El Capitan Reservoir is either transferred to Murray Reservoir or directly to the Alvarado Water Treatment Plant for immediate use, via the Lakeside Pump Station Complex using the El Capitan and El Monte pipelines.

Sutherland Watershed consists of the Sutherland Reservoir. The primary function of this reservoir is to store local runoff water. Water stored in Sutherland Reservoir can be transferred to San Vicente Reservoir via the Sutherland-San Vicente pipeline. Sutherland Reservoir also provides emergency storage for Ramona Municipal Water District (RMWD).

Watershed Sanitary Survey Requirements

The California Surface Water Treatment Rule (SWTR), in Title 22, Article 7, Section 64665 of the State Code of Regulations, requires every public water system using surface water to conduct a comprehensive sanitary survey of its watersheds every five years. The purpose of such a survey is to identify actual or potential sources of contamination, or any other watershed-related factor, which might adversely affect the quality of water used for domestic drinking water. The initial WSS was completed January 1, 1996 and is to be updated every five years thereafter.

The City of San Diego Water Department and its oversight agencies will use the Watershed Sanitary Survey Update (WSS Update) to evaluate water quality problems which might result from contaminants in the watersheds. The WSS Update will also serve as a basis for future watershed management and planning efforts.

Objectives

The main objectives of this WSS Update are to:

- Satisfy the regulatory requirement for a watershed sanitary survey.
- Identify and assess existing and potential future sources of contamination in the watersheds.
- Provide a general description of existing watershed control and management practices.
- Provide general recommendations for improving watershed management practices in order to protect the quality of the surface waters entering the reservoirs.

Conduct of the Study

This update of the WSS for the San Diego River System Watersheds was produced by the staff of the City of San Diego Water Department, Water Quality Laboratory. The survey covers the water supply system from the most remote points of the San Diego River System Watersheds to the treatment facility. It was conducted by reviewing existing aerial photographs, GIS data, reports, water quality data and other record documents, and was supplemented by field surveys and personal knowledge of Water Department staff.

Report Organization

The organization of this volume has changed since the 2001 WSS Update. The Executive Summary, formerly Chapter 1, has been removed from the individual volumes. The remaining chapters have been rearranged as follows:

Chapter 1: Synopsis
Chapter 2: Description of Watersheds/Source Water System and Review of 2001 Watershed Sanitary Survey Recommendations
Chapter 3: Existing Conditions in the Watersheds
Chapter 4: Water Quality Assessment
Chapter 5: Conclusions and Recommendations

CHAPTER 2: DESCRIPTION OF WATERSHEDS/SOURCE WATER SYSTEM AND REVIEW OF 2001 WSS RECOMMENDATIONS

Introduction

The following is a summary of the findings of the 2001 San Diego River System Watershed Sanitary Survey Update. It covers Potential Contaminant sources, Water Quality, Watershed Management and Control Practices, and Conclusions and Recommendations for management of the watershed.

El Capitan Watershed

Potential Contaminant Sources -

Recreation

Potential sources of contamination from recreational use include soil erosion from off-trail biking; discarded trash from hiking, picnicking, and day-camping; excretions of personal pets; and gasoline spillage from fishing boats and other personal craft. Incidental personal contact from waterskiing occurs, however, microorganism contamination from such contact is minimal.

Runoff

Microorganisms correlated to rainfall runoff occur in the El Capitan Reservoir. The total coliform count was consistently monitored from 1995 to 2000.

Significant Events

There have been seven small to semi-large brushfires since 1996, three of which were in the El Capitan Watershed. Consequences of burning include soil erosion, stream sediment, ash and debris, and chemical fire retardants. There have been no significant earthquakes from 1996 to 2000.

Agriculture

Most agriculture consists of intensive farm plots in the southern portion of the watershed, and a number of vineyards and orchards. Orchards and intensive plots rely more heavily upon fertilizers and pesticides.

Animal Grazing

Animal grazing is permitted within the Cleveland National Forest. Loss of vegetation from grazing may increase soil erosion and sedimentation of streams and rivers.

Concentrated Animals Facilities

There are no concentrated animals facilities in the El Capitan Watershed.

Wastewater Facilities & Reclaimed Water

The Julian Water Pollution Control Facility treats wastewater from the Julian sewer system, and is able to store up to 225,000 cubic feet of treated wastewater. Plant effluent is discharged on 14 acres of land used for growing cattle feed crops.

Septic Systems and Sewer Overflows

No septic system problems have been reported within the watershed. In the populated areas using septic systems, failures are infrequent and insignificant. No sewer overflows have been reported in the last five years.

Mines

There are ten mines in the El Capitan Watershed, located mainly in the northern and central areas. There have not been any recorded incidents at the mine sites.

Hazardous Materials

Solid and liquid hazardous wastes are collected in storage areas and hauled away by licensed haulers. There is also capacity for storing 523580 gallons of hazardous liquid, most of which is gasoline, kerosene, and diesel fuel.

Water Quality -

Monitoring

Samples were taken from the surface and several outlet gauges, and from one sample point within the watershed. The Alvarado Filtration plant influent and effluent points were also sampled. Data was provided by the City of San Diego Water Quality Laboratory. The source water was analyzed for organic and inorganic constituents, microorganisms, and general physical characteristics. Results were compared to the MCL and/or SMCL standards for drinking water.

Raw Water Quality

Results from the surface and outlet gauges at times exceeded limits for turbidity, pH, color, and odor. Microbiological studies indicated the presence of microorganisms at the surface and at the two outlets that were sampled. MTBE exceeded MCL at the surface, but not at the outlets. Inorganic constituents were not monitored at any of the outlets.

Treated Water Quality

Treated water from the Alvarado WTP consistently met or exceeded all standards for drinking water. The exception was pH, with 12 out of 98 samples exceeding the SMCL of 6.5 to 8.5.

Existing water quality data show that the Alvarado WTP is now in compliance with the IESWTR and Stage 1 D/DBP Rule, and would be in compliance with the Phase I Stage 2 D/DBP. A study will be required to determine the monitoring sites having the highest DBP. The Alvarado WTP would also meet the requirements of the LT2ESWTR, as well as proposed Arsenic and Sulfate regulations.

Emergency Plans

The City has procedures in place against the event of a water treatment emergency.

Watershed Management and Control Practices -

Much of the land is owned either by National Forest, State Park, or Indian Reservation. There is no significant development in the watershed, therefore, formal management plans have not been required or implemented.

The City of San Diego monitors the watershed at El Capitan Reservoir by limiting access to the reservoir, patrolling and observation, and water quality monitoring. Other federal, state, and local agencies also exercise control over land use and activities within the watershed.

Conclusions -

Potential Contaminant Sources

Potential contaminant sources include soil erosion, animal husbandry, accidental wastewater discharge, and recreational use.

Watershed Management

No formal watershed management program exists. Land ownership patterns limit control measures in the watershed; therefore, the focus is on cooperation between agencies. However, the City of San Diego exercises a number of management practices. On City-owned land, the City directly controls land use activity. On land not owned by the City, controls include monitoring land use, permits and other regulatory actions, and coordinating with other agencies. A Watershed/ Water Quality Protection Committee was established by the City in September, 1994.

Water Quality Conditions

Raw water monitoring at the El Capitan Reservoir has detected several water quality constituents at levels that may be of concern, including turbidity, coliforms, and TOC. All of these constituents are effectively treated at the Alvarado WTP.

San Vicente Watershed

Potential Contaminant Sources -

Recreation

Potential sources of contamination from recreational use include soil erosion from biking; discarded trash from hiking, picnicking, and day-camping; excretions of personal pets; and gasoline spillage from fishing boats and other personal craft. Incidental personal contact from waterskiing occurs, however, microorganism contamination from such contact is minimal.

Runoff

Microorganisms correlated to rainfall runoff occur in the San Vicente reservoir. The total coliform count was consistently monitored from 1995 to 2000.

Significant Events

There have been seven small to semi-large brushfires since 1996, three of which were in the San Vicente watershed. Consequences of burning include soil erosion, stream sediment, ash and debris, and chemical fire retardants. There have been no significant earthquakes from 1996 to 2000.

Agriculture

Most agriculture occurs on the Barona Indian Reservation. There are also intensive farm plots, vineyards, and orchards north of San Vicente Creek.

Animal Grazing

No animal grazing occurs in the San Vicente Watershed.

Concentrated Animals Facilities

Dairy farms exist in the San Vicente watershed. Tending each cow requires approximately 50 gallons per day of wastewater discharge, which is typically collected in retention ponds. There are also poultry farms on land adjacent to, but not within, the San Vicente watershed.

Septic Systems and Sewer Overflows

No septic system problems have been reported within the watershed. There was only one sewer overflow in the last five years, which was not considered a threat to the San Vicente Reservoir.

Hazardous Materials

Solid and liquid hazardous wastes are collected in storage areas and hauled away by licensed haulers. There is also capacity for storing 6500 gallons of hazardous liquid, in the form of gasoline and diesel fuel.

Water Quality -

Monitoring

Samples were taken from the surface and several outlet gauges, and from eight sample points within the watershed. The Alvarado Filtration plant influent and effluent points were also sampled. Data was provided by the City of San Diego Water Quality Laboratory. The source water was analyzed for organic and inorganic constituents, microorganisms, and general physical characteristics. Results were compared to the MCL and/or SMCL standards for drinking water.

Raw Water Quality

Results from the surface and outlet gauges, at times exceeded limits for turbidity, pH, color, and odor. Microbiological studies indicated the presence of microorganisms at the surface and at all of the outlet gauges. Outlet gauge 130 had the highest coliform count.

Treated Water Quality

Treated water from the Alvarado WTP consistently met or exceeded all standards for drinking water. The exception was pH, with 12 out of 98 samples exceeding the SMCL of 6.5 to 8.5.

Existing water quality data shows that the Alvarado WTP is now in compliance with the IESWTR and Stage 1 D/DBP Rule, and would be in compliance with the

Phase I Stage 2 D/DBP. A study will be required to determine the monitoring sites having the highest DBP. The Alvarado WTP would also meet the requirements of the LT2ESWTR, as well as proposed Arsenic and Sulfate regulations.

Emergency Plans

The City has procedures in place against the event of a water treatment emergency.

Watershed Management and Control Practices -

Much of the land is owned either by the Barona Indian Reservation or the Cleveland National forest. There is no significant development in the watershed, therefore, formal management plans have not been required or implemented.

The City of San Diego monitors the watershed at the San Vicente Reservoir by limiting access to the reservoir, patrolling and observation, and water quality monitoring. Other federal, state, and local agencies also exercise control over land use and activities within the watershed.

Conclusions -

Potential Contaminant Sources

Land ownership patterns limit control measures in the watershed; therefore, the focus is on cooperation between agencies. Potential contaminant sources include soil erosion, animal husbandry, accidental wastewater discharge, and lack of control over wastewater treatment on the Barona Indian Reservation.

Watershed Management

No formal watershed management program exists. However, the City of San Diego exercises a number of management practices. On City-owned land, the City directly controls land use activity. On land not owned by the City, controls include monitoring land use, permits and other regulatory actions, and coordinating with other agencies. A Watershed/ Water Quality Protection Committee was established by the City in September, 1994.

Water Quality Conditions

Raw water monitoring at the San Vicente Reservoir has detected several water quality constituents at levels that may be of concern, including turbidity, coliforms, ant TOC. All of these constituents are effectively treated at the Alvarado WTP.

Sutherland Watershed

Potential Contaminant Sources -

Recreation

Potential sources of contamination from recreational use include soil erosion from off-trail biking, hiking, and horseback riding; discarded trash from hiking and picnicking; excretions of horses and personal pets; and gasoline spillage from fishing boats and other personal craft.

Runoff

The Sutherland Reservoir is not monitored for microorganisms. There is no data to infer a relationship between microorganism count and seasonal rainfall.

Significant Events

There have been seven small to semi-large brushfires since 1996, one of which was in the Sutherland Watershed. Consequences of burning include soil erosion, stream sediment, ash and debris, and chemical fire retardants. There have been no significant earthquakes from 1996 to 2000.

Agriculture

Most agriculture consists of extensive activity in the areas near Santa Ysabel Creek and Bloomdale Creek. There is a very small area of orchards in the southeast corner of the watershed.

Animal Grazing

There is no animal grazing in the Sutherland Watershed.

Concentrated Animals Facilities

There are two dairy ranches in the Sutherland Watershed. Both are located near creeks that feed into the Sutherland Reservoir.

Wastewater Facilities & Reclaimed Water -

There are no wastewater facilities in the Sutherland Watershed.

Septic Systems and Sewer Overflows

No septic system problems or sewer overflows have been reported within the watershed.

Mines

There is one mine in the Sutherland Watershed. There have not been any recorded incidents at the mine site.

Hazardous Materials

There is no permitted hazardous waste in the Sutherland watershed. There is capacity for storing 45,700 gallons of hazardous liquid, most of which is diesel fuel.

Water Quality -

Monitoring

Samples were taken from the surface near the outlet tower, and from two sample points within the watershed. Outlet gauges were not monitored. Data was provided by the City of San Diego Water Quality Laboratory. The source water was analyzed for organic and inorganic constituents, and general physical characteristics. Microorganisms were not monitored. Results were compared to the MCL and/or SMCL standards for drinking water.

Raw Water Quality

Results at times exceeded limits for turbidity, pH, color, total dissolved solids, and MTBE. Inorganic constituents that exceeded limits were aluminum, iron and manganese.

Treated Water Quality

Treated water from the Alvarado WTP consistently met or exceeded all standards for drinking water. The exception was pH, with 12 out of 98 samples exceeding the SMCL of 6.5 to 8.5.

Existing water quality data show that the Alvarado WTP is now in compliance with the IESWTR and Stage 1 D/DBP Rule, and would be in compliance with the Phase I Stage 2 D/DBP. A study will be required to determine the monitoring sites having the highest DBP. The Alvarado WTP would also meet the requirements of the LT2ESWTR, as well as proposed Arsenic and Sulfate regulations.

Emergency Plans

The City has procedures in place against the event of a water treatment emergency.

Watershed Management and Control Practices -

The Sutherland Watershed is mostly rural or undeveloped land, part of which is within the Cleveland National Forest. There is no significant development in the watershed, therefore, formal management plans have not been required or implemented.

The City of San Diego monitors the watershed at the Sutherland Reservoir by limiting access to the reservoir, patrolling and observation, and water quality monitoring. Other federal, state, and local agencies also exercise control over land use and activities within the watershed.

Conclusions -

Potential Contaminant Sources

Potential significant contaminant sources include agriculture, concentrated animal facilities, accidental wastewater discharge, recreational use, and unauthorized waste disposal.

Watershed Management

No formal watershed management program exists. Land ownership patterns limit control measures in the watershed; therefore, the focus is on cooperation between agencies. However, the City of San Diego exercises a number of

management practices. On City-owned land, the City directly controls land use activity. On land not owned by the City, controls include monitoring land use, permits and other regulatory actions, and coordinating with other agencies. A Watershed/ Water Quality Protection Committee was established by the City in September, 1994.

Water Quality Conditions

Raw water monitoring at the Sutherland Reservoir has detected several water quality constituents at levels that may be of concern, including turbidity and MTBE. All of these constituents are effectively treated at the Alvarado WTP.

Murray Watershed

Potential Contaminant Sources -

Recreation

Potential sources of contamination from recreational use include soil erosion from off-trail hiking; discarded trash from hiking and picnicking; excretions of personal pets; fertilizer or nutrient runoff the Mission Trails Golf Course; and gasoline spillage from fishing boats and other personal craft.

Runoff

The Murray Reservoir is constantly monitored for microorganisms. Indicator bacteria levels are not affected by rainfall or runoff. The reservoir captures very little runoff.

Significant Events

There were no brush fires in the Murray Watershed, and there have been no significant earthquakes from 1996 to 2000.

Agriculture

No agriculture occurs in the Murray Watershed.

Animal Grazing

There is no animal grazing in the Murray Watershed.

Concentrated Animals Facilities

There are no concentrated animals facilities in the Murray Watershed.

Wastewater Facilities & Reclaimed Water

There are no wastewater facilities in the Murray Watershed.

Septic Systems and Sewer Overflows

There is a fully-developed sewer system. There have been sewer overflows; however, no known spills have entered the reservoir in the last five years.

Mines

There are no mines in the Murray Watershed.

Hazardous Materials

There is permitted liquid and solid hazardous waste in the Murray Watershed, most of which is hauled away by licensed haulers. There is capacity for storing 611,070 gallons of hazardous liquid.

Water Quality -

Monitoring

Samples were taken from the surface near the outlet tower, from three outlets and from nine sample points within the watershed. Data was provided by the City of San Diego Water Quality Laboratory. The source water was analyzed for organic and inorganic constituents, and general physical characteristics. Results were compared to the MCL and/or SMCL standards for drinking water.

Raw Water Quality

Results for surface water at times exceeded limits for turbidity, pH, color, iron, and MTBE. Samples from the outlets had turbidity and odor in excess of MCL/SMCL. Inorganic constituents were not monitored at the outlet gauges. Microorganisms were also equally present at the surface and at the outlets.

Treated Water Quality

Treated water from the Alvarado WTP consistently met or exceeded all standards for drinking water. The exception was pH, with 12 out of 98 samples exceeding the SMCL of 6.5 to 8.5.

Existing water quality data show that the Alvarado WTP is now in compliance with the IESWTR and Stage 1 D/DBP Rule, and would be in compliance with the Phase I Stage 2 D/DBP. A study will be required to determine the monitoring sites having the highest DBP. The Alvarado WTP would also meet the requirements of the LT2ESWTR, as well as proposed Arsenic and Sulfate regulations.

Emergency Plans

The City has procedures in place against the event of a water treatment emergency.

Watershed Management and Control Practices -

The Murray Watershed is mostly urban land, within the cities of San Diego and La Mesa. There is high density development surrounding the reservoir. No formal management plans have been developed or implemented. The City of San Diego maintains a storm runoff diversion system around the reservoir.

The City of San Diego also monitors the watershed at the Murray Reservoir by limiting access to the reservoir, patrolling and observation, and water quality monitoring. Other federal, state, and local agencies also exercise control over land use and activities within the watershed.

Conclusions -

Potential Contaminant Sources

Potential contaminant sources include soil erosion, accidental wastewater discharge, fertilizer/pesticide runoff, and recreational use.

Watershed Management

No formal watershed management program exists. Land ownership patterns limit control measures in the watershed; therefore, the focus is on cooperation between agencies. However, the City of San Diego exercises a number of

management practices. On City-owned land, the City directly controls land use activity. On land not owned by the City, controls include monitoring land use, permits and other regulatory actions, and coordinating with other agencies. A Watershed/ Water Quality Protection Committee was established by the City in September, 1994.

Water Quality Conditions

Raw water monitoring at the Murray Reservoir has detected several water quality constituents at levels that may be of concern, including turbidity, pH, aluminum, iron, manganese, coliforms, and TOC. All of these constituents are effectively treated at the Alvarado WTP.

Recommendations & Review

The underlying theme of all recommendations is protection of the watershed and source water quality. The recommendations fall into four categories:

- Water Quality Monitoring,
- Interjurisdictional Coordination
- Watershed Management and Control Practices
- Public Education

Following each recommendation will be a review of the actions taken and/or current status of the recommendation.

Water Quality Monitoring –

Recommendations

1) Continue to develop and evaluate the long-term monitoring program for the watershed; and, in the final monitoring program, identify how the goals and objectives can be met with the monitoring plan.
2) Augment the existing City monitoring program with additional parameters and continue monitoring bromide.
3) Find and test methods of algae control while continuing to minimize use of copper sulfate.

Review

1) The City has instituted a program to measure flow, solids, pathogens and nutrients on a monthly basis and to measure metals and a suite of organics on a quarterly basis at 13 creeks that flow directly into the four reservoirs of this watershed system. The City has also collected bioassessment samples at three sites in the watershed system.
2) As noted above, the City has begun to test for total nitrogen and total phosphorus on a monthly basis at tributaries. Also we sample for these parameters on a monthly basis from the reservoir.
3) No change in status.

Interjurisdictional Coordination -

Recommendations

1) Establish lines of communication with neighboring agencies and overlapping jurisdictions by developing written City policies, developing workgroups, and setting up a City Control Review Committee.
2) Coordinate with Jurisdictional Agencies such as San Diego County, the USFS, and the CDF.
3) Devise an early review process for proposed land use projects with the planning departments of municipalities in the watershed.

Review

1) The City contracted with Brown & Caldwell to produce a document providing guidelines for new development in our watersheds. This document has been completed and is currently in use by the City Water Department in its review of projects. The City has established a Watershed Manager and a Watershed Project Officer and we have established contacts with other agencies by participating on watershed plan committees. The City is reviewing more projects than it has in the past; however, no formal clearinghouse has been established.

2) A Watershed Work Group comprising representatives of public agencies and non-governmental organizations was formed to guide and shape a watershed management plan for the San Diego River Watershed.
3) No change in status

Watershed Management and Control –

Recommendations

1) Develop a land acquisition strategy to gain control of lands proximate to water.

2) Work with landowners and regulatory agencies to reduce the potential impact of cattle grazing and other agricultural practices.

Review

1) The City has not adopted a strategy to acquire parcels, easements, or development rights; however, the City has worked with other agencies to purchase some privately owned lands that are proximate to water bodies for conservation purposes.
2) Lease agreements that allowed cattle grazing on City owned lands were not renewed.

Public Education –

Recommendations

1) Develop and distribute educational materials to landowners, businesses, residents, and recreational users of the land about the importance of protecting the watershed.
2) Conduct education sessions about the impact of various activities on water quality and supply.
3) Encourage a 'Friends of the Watershed' type of volunteer organization.
4) Launch a public awareness and signage campaign along transportation corridors.

Review

1) Everyone who purchases a lake permit receives a brochure that details the importance of keeping the reservoir clean because it is a source of our drinking water. In addition, posters are placed on kiosks at the reservoirs, asking people to recycle and help protect water quality.
2) As elements of the watershed management plan are developed, public outreach and education will be integrated.
3) No change in status.
4) Signs have been developed for placement on major corridors to let travelers know they are entering a watershed. The City is working with CalTrans on locations to place the signs.