VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

INTRODUCTION

PLACER COUNTY MAINTAINED PUBLIC SEWER SYSTEMS

The Placer County Department of Facility Services operates and maintains ten separate sanitary sewer systems within the County. Nine are either Sewer Maintenance Districts (SMD) or County Service Areas (CSA), which derive their operating revenue from sewer user fees within each of the Districts. Funds do not co-mingle between the Districts. The governing board of each District or service area is the Placer County Board of Supervisors. The tenth sewer system serves the Cabin Creek area, property owned by the County. Revenue for this sewer system comes from county budgets and the MRF operator.

Those ten sanitary sewer systems are summarized in the following table:

Table Int-1, Placer County Maintained Public Sewer Systems

Name	Abbreviation	Location	Miles of Sewer Pipe
Sewer Maintenance District 1	SMD 1	North Auburn	102
Sewer Maintenance District 2	SMD 2	Granite Bay	118
Sewer Maintenance District 3	SMD 3	Horseshoe Bar/Folsom Lake	16
County Service Area 28, Zone 2A3	CSA 2	Sunset Industrial Park	10
County Service Area 28, Zone 6	CSA 6	Sheridan	3
County Service Area 28, Zone 23	CSA 23	Blue Canyon	0.5
County Service Area 28, Zone 24	CSA 24	Applegate	2
County Service Area 28, Zone 55	CSA 55	Livoti	3
County Service Area 28, Zone 173	CSA 173	Dry Creek	22
Cabin Creek		Hwy 89/Lake Tahoe	1.5
Total			**278**

STATE GENERAL WASTE DISCHARGE REQUIREMENT

On May 2, 2006, the State Water Resources Control Board adopted Order 2006-0003-DWQ, which was a **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (GWDR)**. A copy of the order, its Monitoring and Reporting Program and a ten page fact sheet are contained in Appendix A. This new requirement affects all

public owned sanitary sewer systems greater than one mile in length. It requires each of the sewer systems to do the following:

- Begin reporting all Sewer System Overflows (SSOs) on a State maintained web site (prior to this requirement SSOs were reported, in writing, to individual Regional Water Quality Control Boards).
- Develop a Sewer System Master Plan (SSMP)

This document is intended to meet the second requirement of developing a SSMP for each of the ten Placer County maintained public sewer systems shown on the previous page. Even though the Blue Canyon Sewer System is less than one mile in length, for continuity a SSMP has been developed for it.

In their GWDR, the State Water Resources Control Board specified there be a minimum of twelve sections to the required SSMP and provided some detail of the minimum requirements for each twelve sections. The twelve section requirements are summarized in the following table:

Table Int-2, Required Sections of a Sewer System Master Plan (SSMP)

Number	Section	Sub Section	Description
1	Goals		Develop goals for the SSMP
2	Organization		Show the agency's organization and the chain of communication for reporting SSOs
3	Legal Authority		Provide legal authority (Ordinances) to operate and maintain the sewer systems
4a	Operations and Maintenance Program	Mapping	Provide adequate mapping of the sewer system to assist with maintenance
4b	Operations and Maintenance Program	Preventative Maintenance	Describe routine preventative maintenance activities
4c	Operations and Maintenance Program	Rehabilitation and Replacement Plan	Describe a rehabilitation program for the sewer system
4d	Operations and Maintenance Program	Training	Describe a training program for sewer system personnel.
5a	Design and Performance Standards	Installation and Repair Standards	Describe the standards for the design of new sewer projects and the design of rehabilitation projects
5b	Design and Performance Standards	Inspection and Testing Standards	Describe the standards for the inspection and testing of new, rehabilitated and repaired sewers

6	Overflow Emergency Response Plan		Describe the Overflow Emergency Response Plan to be used in the event of a sewer overflow.
7	Fats, Oils and Grease Control Program (FOG)		Describe the agency's FOG program.
8	System Evaluation and Capacity Assurance Plan		Develop a master plan showing sewer capacity (size) needed for existing and future sewer flows
9	Monitoring, Measurement and Program Modifications		Develop a program to maintain relevant information on sewer maintenance and use that information to assess and update the program
10	SSMP Program Audits		Conduct a periodic internal audit of the SSMP and update the document as needed
11	Communication Program		Develop and execute a communication program to provide the public with the opportunity to provide input into the SSMP
12a	Certification	Work Plan and Schedule Certification	Present the initial work plan and schedule of work to the governing body (Board of Supervisors) for approval and certify that action has been taken
12b	Certification	SSMP Certification	Present the Final SSMP to the governing body (Board of Supervisors) for approval and certify that action has been taken

GWDR REQUIRED COMPLETION DATES

The State Water Resources Control Board prescribed completion dates for each of the twelve sections of the SSMP:

Table Int-3, SSMP Required Completion Dates

Section	Required Completion Date
1	11/02/07
2	11/02/07
3	5/02/09
4a	5/02/09
4b	5/02/09
4c	5/02/09
4d	5/02/09
5a	8/02/09
5b	8/02/09
6	5/02/09
7	5/02/09
8	8/02/09
9	8/02/09
10	8/02/09
11	8/02/09
12a	11/02/07
12b	8/02/09

SSMP FORMAT

The Placer County Sewer System Master Plan (SSMP) is and will be a living document. It will first be made available to the public when only a portion of the twelve required sections have been completed and will have to be updated as the other sections are finalized. Furthermore, as monitoring and audits are completed in the future, existing sections of the SSMP will have to be updated. As noted above, Placer County maintains ten separate public sewer systems and, theoretically, each will need its own complete SSMP. However, many of the twelve required sections of the SSMP will be identical for each of the SSMP's for the ten sewer systems and it would be a duplication of effort to repeat and print the sections ten times.

Accordingly, the Placer County Sewer System Master Plan will be contained in binders so they can be easily updated and revised. Furthermore, the sections of the SSMP pertaining to all ten sewer systems are contained in the first two binders. Each of the ten sewer systems will have its own binder for the sections of the SSMP where individual programs will be needed. In order to assist the reader in understanding what the GWDR requires in a particular section of the SSMP, a shadow box is presented at the beginning of each section containing the exact requirements for the section, copied from the adopted GWDR.

PLACER COUNTY ALL DISTRICTS
SEWER SYSTEM MASTER PLAN

Table of Contents

Volume 1
All Districts SSMP

Volume 2
All Districts Appendices

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

1 GOALS

1.1 Introduction

Goals are the crux of any plan. They are the defining targets at which more specific objectives of this SSMP are aimed. Even though Placer County could develop a number of very specific goals as developed in further sections of this SSMP, they are best summed up in the following general goals.

1.2 Placer County SSMP Goals

Placer County has established the following SSMP goals for the ten public sewer systems that it maintains:

- Effectively use the elements of the SSMP to reduce the amount of sewer system overflows to protect public health and the environment.
- Provide Operations and Maintenance in all Districts.
- Ensure that all new and rehabilitated sewers systems are designed and built to current standards.
- Update the existing emergency response plan to include new regulations for reporting.
- Reduce fats, oils and grease buildup in the sewer systems.
- Ensure adequate sewer capacity is available in all Districts for wet weather flows and growth.
- Ensure adequate funding support and resources are provided to meet the SSMP goals.
- Develop a Communication Program with elected officials and the public (our customers) to provide the support needed for the above goals.
- Workforce Planning and Development.

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

2 ORGANIZATION

2.1 Introduction

Of the many departments in the Placer County government structure, the one charged with the responsibility of maintaining the ten publicly owned (and County maintained) sewage collection systems is the Department of Facility Services. The department has a number of divisions. Utilities and Environmental Engineering are the two divisions involved in the operation and maintenance of County owned sewer systems. Additional information about the Department of Facility Services and its divisions can be found on the Placer County Website at www.placer.ca.gov.

2.2 Authorized Representative

With regards to the General Waste Discharge Requirements for Sanitary Sewer Systems, the authorized representative for Placer County is the Deputy Director of Environmental Engineering & Utilities. The name and phone number of that person is listed later in Table 2-1.

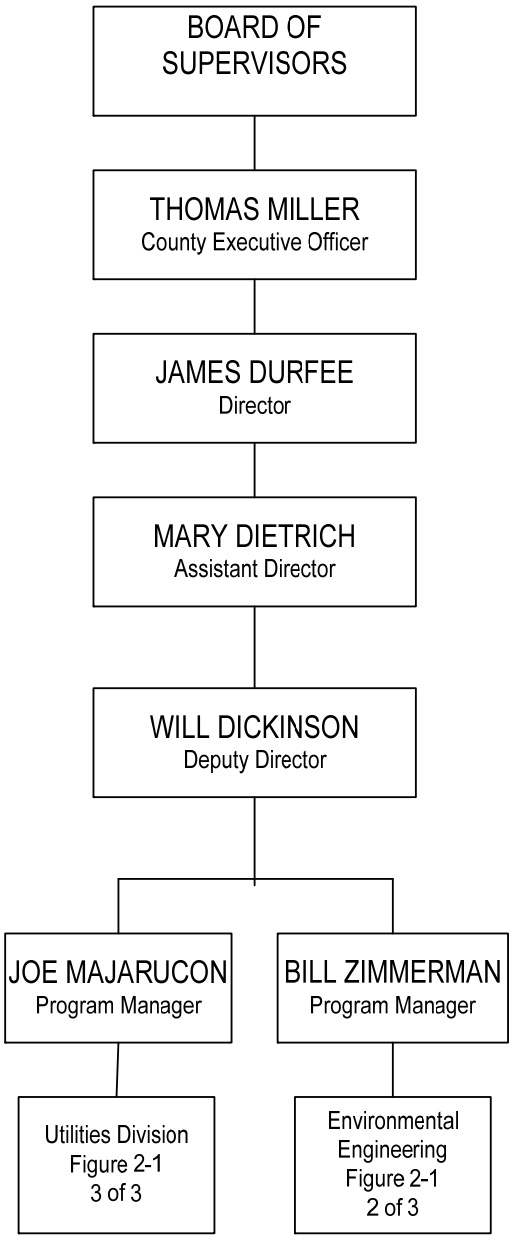
2.3 Organization Chart (Lines of Authority)

An organization chart listing the Department of Facility Services personnel is shown in Figure 2-1. The line of authority from the Placer County Board of Supervisors to the Utility Service Worker in the field is shown on the chart. As can be seen on the chart, the Deputy Director of Facility Services is responsible for maintenance of the ten sewage collection systems in Placer County and managing the Utilities and Environmental Engineering divisions.

The Utilities Division provides personnel, equipment and materials to maintain approximately 278 miles of public sewage collection systems listed on Table INT-1. The Utilities Division also provides wastewater treatment plant personnel, equipment and materials to maintain the four treatment plants and a community leachfield in which five of the ten sewer systems connect to. The remaining five systems connect to wastewater treatment systems operated by outside agencies and are considered satellite collection systems. The Utilities Division is managed by a Program Manager.

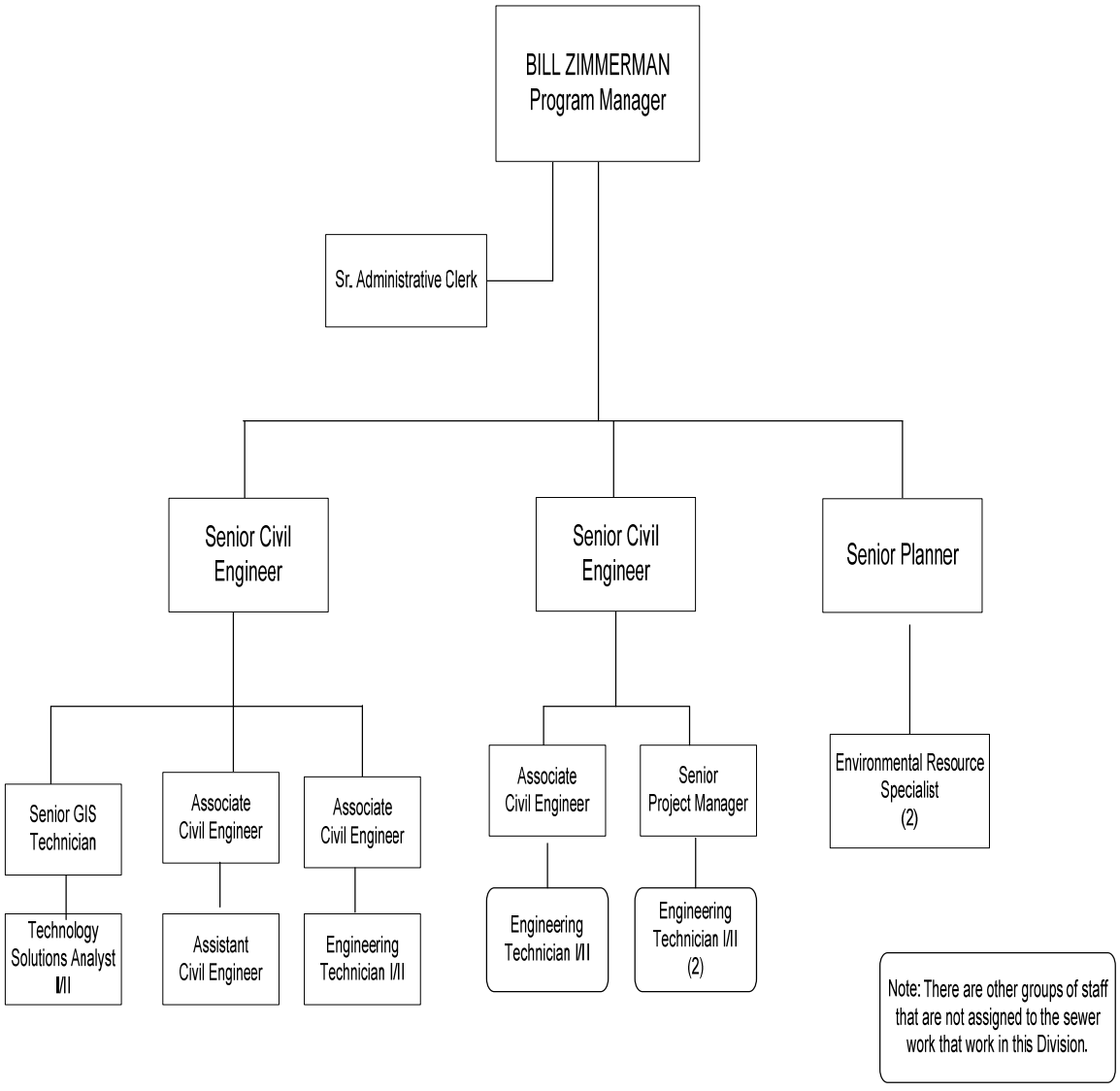
The Environmental Engineering Division personnel provide engineering services to the ten sewage collection systems along with the five wastewater treatment systems and County landfills. Environmental Engineering will contract with outside consultants for engineering services when needed.

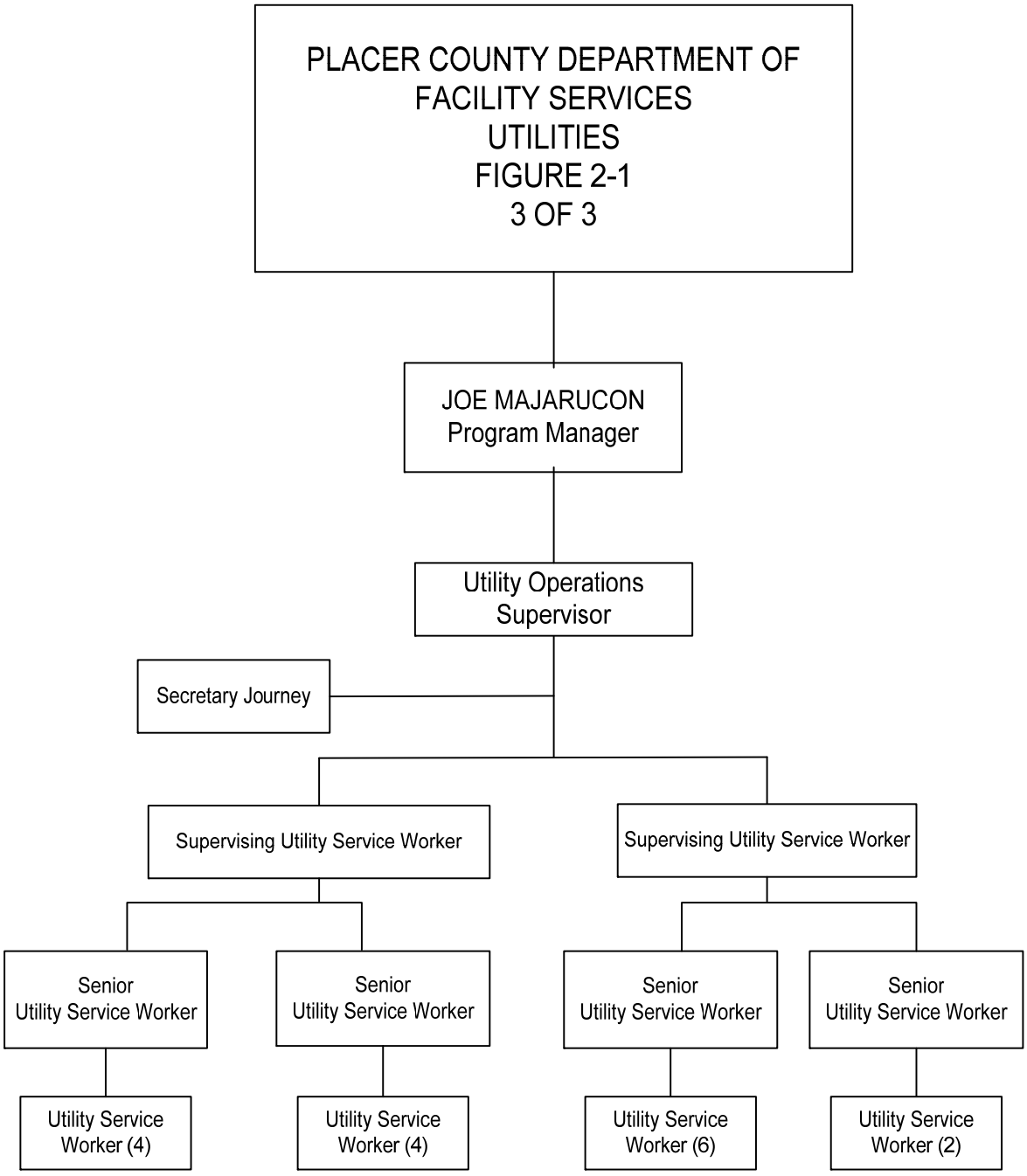
PLACER COUNTY DEPARTMENT OF FACILITY SERVICES
ENVIRONMENTAL ENGINEERING AND UTILITIES
ORGANIZATIONAL CHART
FIGURE 2-1
1 OF 3



Note: There are other Divisions of this Department that are not shown for clarity

PLACER COUNTY DEPARTMENT OF
FACILITY SERVICES
ENVIRONMENTAL ENGINEERING
FIGURE 2-1
2 OF 3




PLACER COUNTY DEPARTMENT OF
FACILITY SERVICES
UTILITIES
FIGURE 2-1
3 OF 3
JOE MAJARUCON
Program Manager
Utility Operations
Supervisor
Secretary Journey
Supervising Utility Service Worker
Supervising Utility Service Worker
Senior
Utility Service Worker
Senior
Utility Service Worker
Senior
Utility Service Worker
Senior
Utility Service Worker
Utility Service
Worker (4)
Utility Service
Worker (4)
Utility Service
Worker (6)
Utility Service
Worker (2)

The names and telephone numbers of the management and supervisory personnel responsible for implementing specific measures in this Sewer System Master Plan are shown in the following table. The phone numbers are not included in the above organization chart to ease updating them as personnel changes are made in the future.

Table 2-1, Responsible Persons

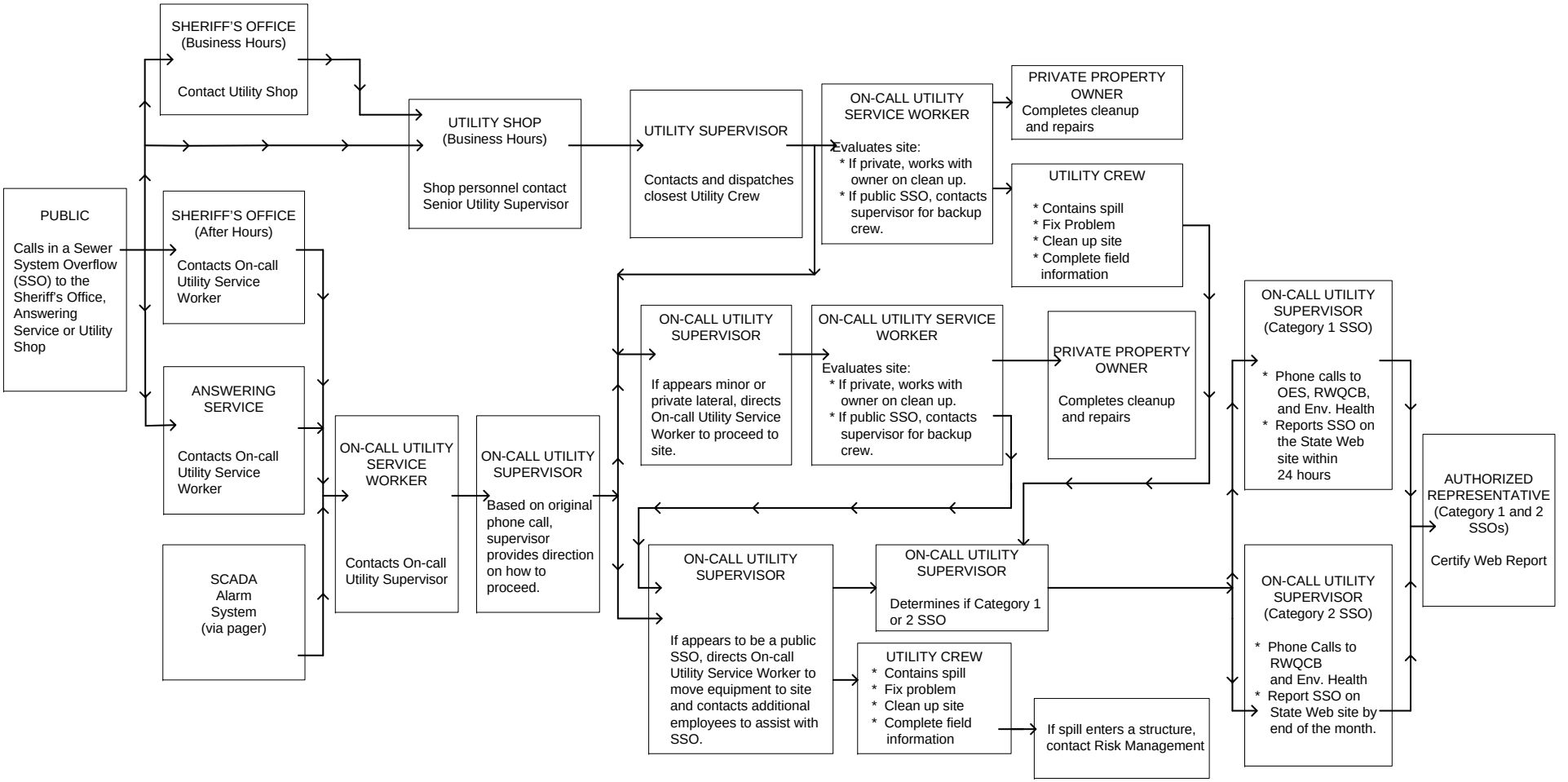
Title	Name	Phone Number
Director of Facility Services	James Durfee	530-886-4948
Assistant Director of Facility Services	Mary Dietrich	530-886-4957
Deputy Director of Facility Services (Utilities and Environmental Engineering)	Will Dickinson	530-886-4980
Program Manager (Utilities)	Joe Majarucon	530-886-1107
Program Manager (Environmental Engineering)	Bill Zimmerman	530-886-4986
Utility Operations Supervisor	Dan Montgomery	530-889-6833
Senior Civil Engineer	Dave Atkinson	530-886-4968

2.4 Chain of Communication for SSOs

When a Sewer System Overflow (SSO) occurs in one of the ten Placer County maintained sewage collection systems, it is usually reported by the public. The call normally goes to the Sheriff's Office or occasionally directly to the Utility Shop. The call sets off a chain of actions resulting in the SSO being contained, repaired and cleaned, and the SSO reported to the appropriate authorities, as prescribed by the GWDR, local regulations and County protocol.

The Chain of Communication and formal procedures used in reporting SSOs in Placer County maintained sewage collection systems are shown in Figure 2-2. Figure 2-2 also shows other sources of reported SSOs and the County Supervisory Control and Data Acquisition (SCADA) alarm system installed at most County sewage pump stations. When stations go into alarm, the SCADA system automatically alerts the on-call Utility Service Worker of a potential problem.

FIGURE 2-2
PLACER COUNTY DEPARTMENT OF FACILITY SERVICES
SEWER SYSTEM OVERFLOW REPORTING
CHAIN OF COMMUNICATIONS



VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

3 LEGAL AUTHORITY

3.1 Introduction

Of the ten wastewater collection systems owned and maintained by Placer County (see Table i-i), five have their own wastewater treatment systems and do not rely on other agencies for wastewater treatment. The remaining five sewer systems are satellite collection systems that connect to wastewater treatment plants owned and operated by other public agencies. This makes the legal authority for all ten sewer systems and their two satellite systems somewhat complicated. A breakdown is shown in each of the system specific binders.

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

4 OPERATIONS AND MAINTENANCE PROGRAM

4.0 Operations and Maintenance Program

4.1.0 Collection System Mapping

4.1.1 Introduction

Placer County, through a computer based Geographic Information System (GIS), has maps of each of the ten County Maintained Sewer Systems covered by this SSMP. The maps show all gravity sewers, manholes, pump stations, force mains, valves, and low pressure sewers the County maintains. There are no combined sewer systems in Placer County (storm and sewage combined), therefore there are no storm water collections systems shown on the sewer maps.

GIS provides a complete and up to date map of all County property lines and roadways. Overlaid on that map is a second map indicating sewage facilities and District boundaries for each of the ten Districts. The map accurately depicts the sewer system in each District and is contained in a computerized database which can be printed in any size and scale.

Generally, two types of maps are printed for each District. Large, 1"=400' scale wall maps are printed and are available at the CDRA front counter, in the Environmental Engineering Office and at the Utility Shop. The maps provide a global view of each District and its sewer system. Individual 11" X 17" maps (also at 1"=400') are also produced for each District. The maps individually cover a grid pattern across each District and the ledger size maps are contained in map books carried in each Utility vehicle and on many office desks. Each grid pattern is labeled alphabetically horizontally and numerically vertically (i.e. C8), which becomes the page number and the first part of manhole numbers assigned to each manhole maintained by the County (i.e. MH C8-24). Samples of each District's maps are contained in Volumes 3-11, in the appropriate volume for each District.

4.2.0 Preventive Operation and Maintenance

4.2.1 Introduction

There are three basic parts of a sewer system: sewer pipelines, manholes and pump stations. Both manholes and pump stations can overflow and need a regular preventative maintenance program performed. Generally, manholes require maintenance only when they deteriorate and need rehabilitation or replacement (see Section 4.3, Condition Assessment). A summary of the current Preventative Operation and Maintenance Programs for the ten Placer County maintained sewer Districts are summarized below:

4.2.2 Sewer Pipeline Preventative Operation and Maintenance

Placer County maintains 278 total miles of sewer pipeline in ten sewer systems. Regular preventative maintenance of the sewer pipeline consists of the following.

- Gravity sewer cleaning using high pressure sewer cleaning equipment including root cutting.
- In the case of a pressurized sewer, the forcing of a pipe "pig" through the sewer pipe to clean its inside wall.
- In areas of excessive root intrusion into the sewer pipe, the use of chemical root control to kill roots blocking sewer flow.

4.2.2.1 Gravity Pipeline Cleaning

About 95% of the above sewer mileage consists of gravity sewers, where wastewater flows by gravity down the pipe from manhole to manhole. Cleaning the gravity pipe is what prevents a buildup of roots, debris and grease from blocking the sewer and causing a SSO. The cleaning is typically done with a sewer cleaning truck which uses high pressure water sent through a hose that is pushed up the sewer line. A nozzle at the end of the hose scours the inside of the sewer pipe washing debris and grease down to the lower manhole where it is vacuumed into the truck for disposal at a landfill. In the case of roots, a rotating cutter can be attached to the nozzle that will cut away the roots intruding into the pipe through a joint or crack.

All gravity sewers need cleaning on a regular basis to reduce SSOs. The frequency of that cleaning is based on the age and condition of the sewer pipe. If the condition of the pipe requires cleaning more frequently than once a year, it is considered a "hot spot" and can be cleaned as frequently as once a month. Non-hot spots, again depending on their age and condition, may be cleaned from yearly to once every six years.

All gravity sewers maintained by Placer County have been mapped. The sewers have been designated as either hot spots or requiring a one to six year cleaning frequency. This information is kept on a set of maps used by the maintenance crews to determine when and where the high pressure sewer cleaning is needed. All 6" to 12" diameter sewers are cleaned at least once every six years and larger pipes every eight years.

4.2.2.2 Pressurized Sewer Cleaning

There are three types of pressurized sewers: force mains conveying the wastewater from a sewage pump station to a gravity sewer at the top of a hill, low pressure sewers and solids handling sewers. Low pressure sewers are sewage collection systems where each connection (home) has a septic tank to remove solids from their sewage. Once the solids are removed, a pump conveys the remaining wastewater into a pressurized sewer maintained by the sewer District. Pressurized sewers generally do not cause SSOs; however, material may accumulate on the inside wall of the pipe reducing their efficiency. In order to maintain efficiency, cleaning is performed by forcing a "Pipe Pig" through the pipe. A "Pipe Pig" is a shaped piece of foam rubber that scrubs the inside of the pipe removing any buildup and forcing it through the pipe by water pressure.

Pressurized sewers are "pigged" once every five years.

4.2.2.3 Root Treatment

When an excessive amount of roots are found entering a gravity sewer pipe through a condition assessment (see Section 4.3.0 below), the roots can be chemically treated so they die back from the sewer pipe. A herbicide foam is flushed down the sewer pipe, attaches to the roots, and is absorbed into them. Within a few weeks, they die back from the sewer joint or crack, eliminating growth for two or more years. When used properly, the herbicide will not harm the plant (usually trees) or the wastewater treatment plant. The procedure is generally performed every two years. Placer County has an "as needed" program of root treatment in all sewer Districts.

4.2.3 Sewage Pump Station Preventative Maintenance

Sewage pump stations are facilities that pump wastewater from a low spot up to a gravity sewer at the top of the next hill. They generally consist of the following:

- A wet well is an underground vertical pit that sewage from a gravity sewer flows into.
- Pumps lift the sewage from the wet well through a force main pipe to discharge into a manhole on an uphill gravity sewer.
- Level controls (floats) in the wet well that sense the level of the sewage in a wet well and turn the pumps on and off.
- An electric (sometimes electronic) control panel runs the level controls, pumps and any other electrical items at the station.
- Alarm systems radio transmit any detected alarms to a base station.
- Building house the electrical control panels and possibly chemicals used in the wastewater.
- Chemical feed equipment (optional) that disperses chemicals or enzymes into the sewage in the wet well to control odors and grease buildup.

- Emergency generators supply power to the pump station in case of a power failure.
- Underground storage tanks provide wastewater storage in case of a power failure or operation and maintenance problem.
- Fencing secures the pump station from vandalism and unauthorized personnel.

Sewage pump stations are not manned continuously. They are fully automated and only need to be checked when regular preventative maintenance is performed. At the present time (spring 2009, Placer County maintains 42 sewage pump stations in all but two of the ten sewer systems. Depending on their age and condition, they are checked by maintenance workers as frequently as three times per week and not less than once a week. Table 4-1 shows a list of daily station schedules as of 7/13/2009.

Regular Preventative Maintenance:

- Pumping down and washing down the wet well to remove buildup of grease and grit.
- Checking that the chemical feed system is functioning and or needs additional chemicals or enzymes.
- Recordation of pump hours to check for abnormal pump use which can signify a mechanical problem.
- Cleaning the floats and probes.
- Listening for abnormal sounds that may signify problems.
- Cleaning the building and removing garbage from the site.

Once a month, the stations are visited for more extensive preventative maintenance including:

- Exercising the generator (if any) under a full electrical load for a period of time.
- Checking fluid levels in the generator.

Table 4-1

UTILITIES DIVISION
PUMP STATION MAINTENANCE SCHEDULE
Revised 7/13/09

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
OLYMPIC VILLAGE	PLACER CORP	OLYMPIC VILLAGE	PLACER CORP	SADDLEBACK
BELL ROAD	ULTRA POWER	BELL ROAD	ULTRA POWER	AIRPORT
JOEGER ROAD	WRLF	JOEGER ROAD	WRLF	APPLEGATE
UNION HALL	DRY CREEK	SADDLEBACK	DRY CREEK	RUSSELL ROAD
CANAL STREET	PETITE CREEK	GOLF COURSE	PETITE CREEK	HIDDEN GLEN
AUBURN RAVINE	CAVITT STALLMAN	AIRPORT	CAVITT STALLMAN	AUBURN RAVINE
ALPINE	LAWRENCE	JAIL	LAWRENCE	ALPINE
EDGEWOOD	OLIVE GROVE	SYLVAN GLEN	OLIVE GROVE	EDGEWOOD
KEMPER	WINTERHAWK	HIDDEN GLEN	WINTERHAWK	GOLF COURSE
KEMPER OAKS	WEDGEWOOD	AUBURN RAVINE	WEDGEWOOD	TIERRA HEIGHTS
JAIL	COUNTRY WOODS	EDGEWOOD	COUNTRY WOODS	SLYVAN GLEN
ATWOOD III	MINER'S CROSSING	KEMPER OAKS	MINER'S CROSSING	JAIL
VINEYARD	MAGELLAN	KEMPER	MAGELLAN	VINEYARD
SHELTER	HORSESHOE BAR	RUSSELL ROAD	HORSESHOE BAR	
BOWMAN SCHOOL	SHERIDAN	TIERRA HEIGHTS	SHERIDAN	

Once every six months, additional components of the pump station are checked as follows:

- All pump starters are disassembled, cleaned and replaced as needed.
- All controls are checked for functionality.
- Electric readings are taken on the float controls and are replaced as necessary.
- The pumps are pulled, the oil level is checked (oil is sealed in them), and the pumps are reinstalled and ran. After they are ran, County staff listens for unusual noises coming from those pumps.

.

Once a year, pumps are pulled and the following maintenance is performed:

- The pumps are dissembled and the motor is checked for wear and tear.
- The bowls and impellers are checked for wear and replaced if necessary.
- If the pumps are grinders, their blades are checked for wear and spacing.

4.2.4 Maintenance Documentation

Maintenance performed on gravity sewers and pressure sewers is documented in the computerized maintenance management system, detailed in Section 4.3.3. The computer software program contains all Placer County maintained sewers. When a sewer is cleaned, the work activity is entered into the program to create a record. That record can be used as a justification to make changes to the preventative maintenance program as needed.

Records of maintenance on pump stations are kept in binders and folders at the Utilities Shop. The records not only show what maintenance has been performed, but also provide workers with information for ordering parts and equipment for the stations. Records also show maintenance of odor control equipment and logs of customer complaints and their resolution.

4.3.0 Rehabilitation and Replacement Plan

4.3.1 Introduction

This section of the State WDR requires a sewer system to develop a rehabilitation and replacement plan that contains the following:

- A condition assessment of the existing sewer system.
- A prioritization of the deficiencies found in the condition assessment.
- The development of both short and long term rehabilitation actions to address the deficiencies found.
- A time schedule for the rehabilitation actions.

The items noted above are detailed in the following sections.

4.3.2 Condition Assessments

There are three basic parts of a sanitary sewer system: pipelines, manholes and sewage pump stations. New sewers, manholes and pump stations generally are in good condition and, therefore, pipes do not plug (causing overflows), manholes do not leak groundwater and pump stations do not fail and overflow. As they age, pipelines can get roots growing into them (looking for water), the pipes can crack or break, and they can develop leaks where groundwater enters the pipe causing excessive Infiltration and Inflow (I/I). As manholes age, they can start leaking groundwater through their walls, they can allow surface water to enter through the lid during rainstorms and the concrete can deteriorate from a reaction to sewer gasses. Sewer pump stations are mechanical and have a certain life to them. At different times during that life, various parts will need rehabilitation and/or replacement.

A condition assessment is a review of the three basic parts of a sewer system to determine their condition. This review is performed by an inspection of each part. Sewer pipelines are first inspected by closed circuit television. A camera is run through the entire length of the sewer allowing the operator to view (and record on tape) the condition of the inside of the sewer pipe. Roots, grease buildup, structural defects and I/I can be easily seen and recorded. Sewer pipelines are also inspected by “Smoke Testing”. In an effort to find sources of inflow (surface water entering the sewer system), non-toxic smoke is forced into the sewer system with blowers. The smoke moves up the pipes and sewer services to structures and eventually comes out through building plumbing roof vents. When smoke surfaces at other locations than roof vents, like illegal drains connected to the sewer, open cleanouts and cracks in the sewer pipe, the locations are noted and corrected. Manholes are inspected at the same time they are opened to place the TV camera into the sewer pipe, enabling their conditions to be noted and recorded. Pump stations are somewhat different. They are normally visited once or twice a week while normal preventative maintenance is performed (see Section 4b.3). As deteriorated conditions are noted, they are placed on a rehabilitation program for pump stations.

4.3.3 Prioritization of Deficiencies

A condition assessment of a sewer pipeline or manhole produces information regarding the deficiencies of those facilities. To prioritize the deficiencies, Placer County uses a computer program called a SSMP. Each manhole in a sewer system is given an identification number (see Mapping, Section 4a) and entered into the SSMP database. Each portion of the sewer pipe between two manholes is identified by its upstream and downstream manhole numbers. As information is entered from TV logs of sewer pipelines, the SSMP software uses uniform condition ratings to determine the severity of the deficiency or deficiencies. The software then prioritizes the deficiencies using national standards. National standards are also used when manholes are inspected for deficiencies. The information is also loaded into the SSMP software. For pipelines and manholes, the result is a ranking based on the deficiencies found.

As noted above, pump stations have many parts such as pumps, motors, floats, controllers, alarms, and structures and each has a different life span. Each individual pump station, therefore, has its own list of regular maintenance and periodic rehabilitation and/or replacement to keep it operating at all times.

4.3.4 Short and Long Term Rehabilitation Actions

Once deficiencies are found, short and long term rehabilitation measures can be scheduled. Those measures can be, but are not limited to the following:

4.3.4.1 Pipelines

- Joint sealing all or part of the sewer joints
- Slip lining the sewer pipe
- Use of a root cutter and/or chemical root killer, if roots are present
- Spot repair of the sewer at locations where there are structural deficiencies
- Replacement with new sewer pipe.

4.3.4.2 Manholes

- Lining the inside of the manholes to seal I/I and/or stop deterioration
- Raising the manhole lid to prevent inflow
- Replacing the manhole

4.3.4.3 Pump Stations

- Replacement of various components of the pump station
- Replacement of parts of the pump station structure
- Complete replacement of the entire pump station

4.3.5 Time Schedule

Once a condition assessment of all or a portion of a sewer system has been completed, found deficiencies prioritized, and short and long term rehabilitation and replacement measures determined, a time schedule for such work can be developed. Each of the ten Placer County operated sewer Districts is different and, therefore, the work and the time schedule will be different. Accordingly, each District's individual SSMPs (Volumes 3-12) will indicate how the work is to be performed and the schedule for completion.

4.4.0 Training

4.4.1 Introduction

Training of employees and contractors is an important aspect of a Sewer System Master Plan (SSMP). Without proper training, maintenance and construction of the sewer system may be performed in an inefficient or an unsafe manner that could result in a disabling or life threatening injury. Placer County is fully staffed for most sewer maintenance work and only contracts out maintenance and construction work (on an individual project basis) that cannot be done by staff or to augment the staff during heavy work loads.

The County Training Program is outlined on Figure 4d-1. It consists of three parts:

- Contractor required training
- Employee initiative training
- County provided training

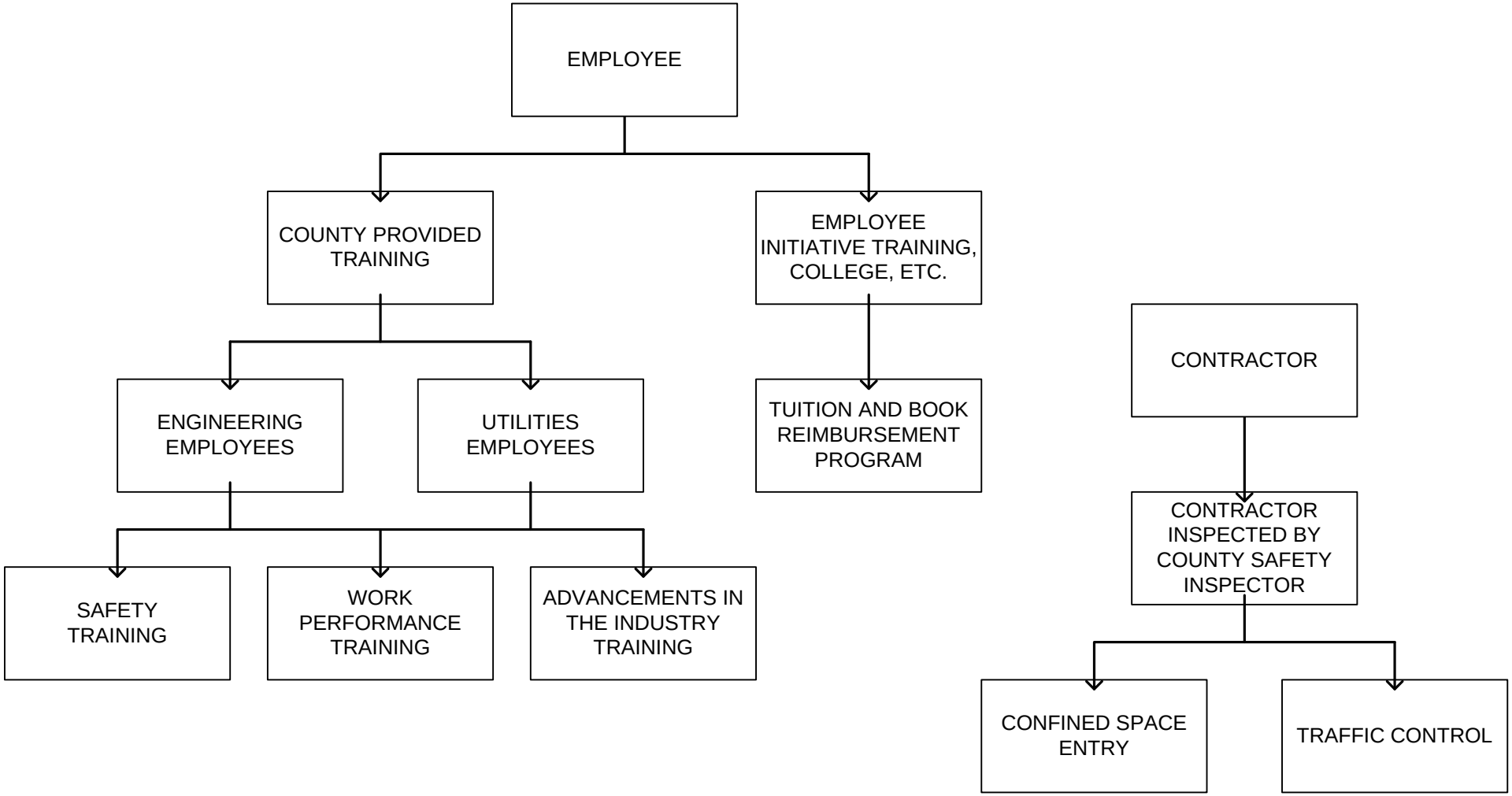
4.4.2 Contractor Required Training

Some examples of County maintained sewer systems work contracted out are:

- Manhole coating
- Root treatment/control
- Sewer TV work (to augment County TV work)
- Hydro cleaning (to augment County cleaning work)
- Rehabilitation of existing sewers

Through the bidding and qualifications process, when a contractor is hired to perform maintenance on a sewer system, it is required that they are qualified to do the work and have provided certain training to their employees. A County inspector is assigned to insure work is properly completed. With regards to safety training, however, a County Safety Inspector is also assigned to the project. That person meets with the contractor to review his safety procedures, especially those for confined space entry and traffic control. If the contractor and his employees are not fully trained in these procedures, they are not allowed to proceed with the work until trained.

Figure 4d-1
Placer County Department of Facility Services
Environmental Engineering & Utilities
Employee Training Program



4.4.3 Employee Initiative Training

Placer County encourages all of its employees to pursue career advancement training. This often involves college classes for an associate, bachelor or an advanced degree. By taking college classes and obtaining a degree, it allows employees to apply and be eligible for of a broader range of County positions. To help with the cost of college classes, the County has a Tuition and Book Reimbursement Program. Employees can be reimbursed for the cost of tuition and books with approval from department head and, upon completion with a passing grade, of approved college courses.

4.4.4 County Provided Training

Most Utilities employees begin work at Placer County as a maintenance worker, which is an entry level position requiring no prior experience with sewer maintenance. They usually have minimal safety training and often need training to perform their job duties. Staff assigned to the Environmental Engineering Division are either graduate engineers or experienced technicians that have the skills to do their job. Accordingly, training opportunities provided by the County for those employees vary.

Training for both categories of employees can be grouped into three categories:

- Safety Training
- Work Performance Training
- Advancements in the Wastewater Industry Training

These classes are provided to employees through all day, partial day and 30 minute tailgate classes on a regular basis throughout the year. Tailgate sessions are held once a week.

4.4.4.1 Safety Training

Safety training is especially important for Utility employees. On a daily basis, they operate potentially dangerous equipment, work around hazardous materials and there is a potential for serious accidents. Engineering employees have less exposure to such hazards and, therefore, require less safety training, with First Aid, CPR, Confined Space Entry and Traffic Control classes usually being sufficient. A partial list of safety classes made available to both Utility and Engineering employees are listed below:

Safety Classes

- Lock/Out – Tag/Out
- 5 Minute Escape Bottle Safety
- Flagger Awareness Safety
- Hand Grinder Safety
- Hearing Awareness/Protection
- Traffic Control Awareness
- Fit Testing
- Pesticide Safety

- Back Safety
- TMX 412 Awareness Safety
- 301 Form IIPP
- Head Protection
- DPR/Defibrillator
- Fire Extinguisher Safety
- Arc Flash Awareness
- Confined Space Permit Safety
- Fork Lift Safety
- Air Systems Safety
- Heat Extreme, Exhaustion, Cramps, Stroke Awareness
- Meth. Lab Dangers
- Sunscreen/Skin Cancers
- Eye Protection
- Lyme Disease Awareness
- Rail Road Safety
- Asbestos Awareness
- Fall Protection Safety
- Compressed Gasses
- Trenching/Shoring Safety
- Welding Safety
- West Nile Virus Awareness
- Accident Forms Awareness
- Machine Guarding
- Full Face/Half Face
- Cartridge Selection
- 30 Minute Bottles Grade "D" Air
- Chain Saw Safety
- Class A Driving

4.4.4.2 Work Performance Training

As noted above, most Utility employees come to work for the County with little training. Placer County provides a number of in-house training classes. These types of classes are also provided by wastewater industry organizations like the Water Environment Federation, the California Water Environment Association, the Central Valley Clean Water Association and others. Outside classes can be in the form of multiple day conferences where attendees rotate through a series of classes they choose, partial day seminars and even benchmarking and luncheon sessions. They all can provide an employee with training on how to perform their job in a better and more efficient way. Engineering staff also participates in such classes, usually those provided by industry organizations. Funding is provided in the Engineering and Utility budgets to pay for such training when appropriate.

A partial list of in-house work performance classes made available to both Utility and Engineering employees are listed below:

Work Performance Classes

- Back Hoe Training
- Kubota Training
- CCTV Van Training
- Pipe Locating with Locator Above Ground
- 5 Yard/10 Yard Dump Truck Training
- District Map Training
- Pipe Awareness OD/ID
- Vactor Training with High Pressure Gun
- Traffic Control Day and Night
- Public Awareness
- Point Repair
- Slip Lining
- Welding Training

- Kubota Training
- NASSCO Training
- PACP Training
- MACP Training
- Pumper Truck Training
- Manhole I/I repair training – Confined Space
- Nozzle Selection/Line Blockage Procedures
- Manhole U/S and D/S
- Inside Manhole Drop/Outside Drop
- Smoke Testing Training
- Pump/Motor Trouble Shooting (Pump Station)
- Electrical Sub-Panel Training (Pump Station) High Voltage
- STEP Tank Training, Electrical, Pump and Motor
- Boom Truck Training
- Pumper Truck Training
- ARV/AVRV Training
- Pesticide Application Training
- Fire Suppression Training

4.4.4.3 Advancements in the Wastewater Industry Training

Over the last 100 years, the wastewater industry in the United States has substantially grown, requiring the industry to continuously develop new technology to cope with the growing volume of wastewater to be treated. Due to these changes, there is a need for County employees to keep up with advancements, not only in the technology to treat the wastewater, but in technology and equipment to move wastewater to the treatment plant and how to maintain equipment. This type of training is generally provided by the industry organizations noted above in their conferences, seminars and training sessions. Funding is provided in the Engineering and Utility budgets to pay for training when appropriate.

4.4.4 Training Records

Training session records are kept for each training session and are placed in each employee personnel file, managed by the Department of Facility Services.

4.4.5 Safety Coordinator

Coordinating and providing the Placer County Safety Training Program is almost a full time job. The County has assigned a senior Utility service worker to manage this job. This person coordinates all in-house training and teaches many of the classes.

4.5.0 Contingency Equipment and Replacement Inventories

4.5.1 Introduction

This section requires that Placer County have sufficient parts and equipment to maintain its sewer infrastructure in inventory. The parts and equipment can be categorized as follows:

- Parts needed for sewer pipe maintenance and repair.
- Parts needed for sewer pump station maintenance and repair.
- Equipment needed to maintain both sewer lines and sewage pump stations.

Placer County sewer maintenance personnel operate out of the Dewitt Corporate Yard located in North Auburn, as well as a small facility in Granite Bay, located at an abandoned wastewater treatment plant. The Auburn corporation yard has a building that houses offices, a locker room, a maintenance shop and space for parts storage. There is also two fenced yards for parking rolling stock. Most rolling stock maintenance is performed by the Department of Public Works, Fleet Maintenance Division in their nearby vehicle maintenance facility.

4.5.2 Pipe Maintenance Parts

Pipe maintenance parts consist primarily of a supply of pipe in various sizes and types and a supply of couplers and clamps to connect them together. For repairing damaged forcemain (pressure pipes), wrap around pipe clamps are also needed. A sufficient inventory of pipe, clamps and couplers are kept at the Dewitt Corporate Yard for emergency use. When a scheduled pipe repair is contemplated requiring large amounts of pipe or clamps, materials are purchased and delivered prior to the beginning of the project.

4.5.3 Pump Station Maintenance Parts

Sewage pump station maintenance parts consist of parts to repair the majority of mechanical parts in the station. They can be, but are not limited to:

- Spare pumps and motors
- Floats and switches
- Electric controls
- Alarms and SCADA parts

A sufficient inventory of pump station parts are kept at the Dewitt Corporation Yard or at the individual pump stations for emergency use. When a scheduled pump station repair is proposed, materials are purchased and delivered prior to the beginning of the project beginning.

It should be noted that all sewage pump stations operated by Placer County have two design features that promote ease of maintenance. Stations are designed to maintain operation with one of their pumps out of service. They also have 12 to 24 hours of overflow storage and/or an automatic standby generator on site.

4.5.4 Maintenance Equipment

Placer County has an extensive list of sewer maintenance equipment in inventory for repairing sewer pipes and sewage pump stations. Some of the equipment includes:

- High Pressure Sewer Cleaners
- A Roding Machine
- Backhoes
- Dump Trucks
- Maintenance Trucks
- Generators
- Trailers
- Sewer TV Equipment

If additional equipment is needed, it can be rented locally. Furthermore, Placer County has a mutual aid agreement with two neighboring agencies; the South Placer Municipal Utility District and the City of Roseville. The agreement includes an equipment list from each agency that can be dispersed to the above listed agencies in case of an emergency. Regular meetings are held with these agencies annually, at a minimum.

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

5 DESIGN AND PERFORMANCE PROVISIONS

5.0 Design and Performance Provisions

5.0.1 Standards for Installation, Rehabilitation and Repair

5.0.2 Standards for Inspection and Testing of New, Rehabilitated and Repaired Facilities

5.1 Introduction

When new sewers and sewage pump stations are constructed in the ten Placer County maintained sewage collection systems, they are designed, constructed, tested and inspected in accordance with published standards. Generally, new sewer construction is completed by land development and the consulting engineer (hired by the development) designs the sewers in accordance with the Placer County Land Development Manual. The contractors, hired by the development, construct and test sewer facilities in accordance with the Placer County General Specifications. During construction, inspection of the contractor's work is performed by employees of the Placer County Community Development Resources Agency. Sewer rehabilitation and repair projects are normally designed by the engineering staff from the Department of Facility Services, Environmental Engineering Division, using industry standards developed for specific projects.

5.2 Placer County Land Development Manual

The Placer County Land Development Manual is a large document containing rules, regulations and design standards for designing all facets of land development in Placer County. It contains sections on, but not limited to, land divisions, street improvements, grading, soil systems, plan preparation, inspection, storm drainage and water systems. Section 6 contains sewerage design criteria, a copy of which is contained in Appendix "I". A full copy of the Land Development Manual can be purchased at the front counter of the Placer County Community Development Resources Agency (CDRA).

Section 6 is used by engineers when planning and designing public sewer systems to be added to those already maintained by Placer County. Pre-design reports and

improvement plans are then submitted to CDRA, where County staff provide plan checking and approval before construction.

5.3 Placer County General Specifications

The Placer County General Specifications provide construction and testing standards for many facilities constructed for the County including grading, bases, pavements, structures, drainage facilities and traffic control. It is a printed document containing 120 pages of text and 82 plates or drawings showing construction details of many different roadway and utility facilities. Section 71 contains construction standards for sewers, a copy of which is contained in Appendix "J", along with the appropriate sewer drawings. A full copy of the General Specifications can be purchased at the front counter of CDRA.

Section 71 is used by the contractors hired to construct new sewerage facilities shown on approved sewer plans. It contains information on allowable pipe types, excavation and backfill, pipe installation, boring and jacking, service sewers, manholes and other structures. It also contains testing standards and procedures for gravity sewers, pressure sewers and manholes.

5.4 Community Development Resources Agency (CDRA)

CDRA is a Placer County department made up of the land development sections that were previously Departments of Public Works, Planning, Building and Environmental Health. This department was created in 2006 to facilitate land development in the County. The department provides staff for two facets of sewer construction in the County.

First, CDRA has a team of Civil Engineers who provide plan checking and approval of all construction plans for land development including new sewer construction. Second, CDRA has a team of inspectors who provide construction inspection of all facets of subdivision and roadway construction in the County including sewers. Also, during the busy season, these are often augmented with additional inspectors hired through a consulting engineering company.

5.5 Sewage Pump Station Design and Construction

Due to the varied terrain, sewage pump stations are often needed in foothill areas. The Placer County Department of Facility Services, Environmental Engineering, has developed a detailed standard pump station design to be used by all design engineers where pump stations are needed. It is provided on three, 24" X 36" design sheets, a reduced (11" x 17") copy is contained in Appendix "I". This standard design is provided to the design engineer to include in the improvement plans for the development project to provide uniformity for maintenance.

5.6 Rehabilitation and Repair Standards

Often when existing sewers are in need of rehabilitation or repair, specialized construction methods are used rather than new sewer standards. When that type of construction is needed, engineers in Environmental Engineering develop project specific design and construction standards with the project being send out to bid. Specifications for projects like pipe lining and pipe bursting are drawn from published industry standards and are incorporated into the projects.

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

6 OVERFLOW EMERGENCY RESPONSE PLAN

6.0 GWDR Requirements

6.1 Introduction

Figure 2-2 shows the Chain of Communication within Placer County when a Sewer System Overflow (SSO) occurs and is called into County officials. When that call comes in, it initiates the County's **Overflow Emergency Response Plan (OERP)**. The plan is a written document outlining the steps to be taken by Utilities Division employees as they respond to the potential overflow. The document is bound and is carried in all Utility vehicles. All Utility employees have been trained on the plan. Not only does the document outline the procedures that employees must follow in the event of a SSO, it contains copies of the following documents and information:

- A copy of the GWDR Monitoring and Reporting Program.
- Tables and pictures to assist in the estimation of spill volume.
- The current on-call list for service workers.
- A list containing the names and phone numbers of Utility personnel.
- A list of emergency phone numbers such as State and County agencies, USA, Union Pacific Railroad, etc.
- Placer County Building Maintenance and Solid Waste on-call personnel.
- A list of gate codes into closed subdivisions.
- PG&E meter account numbers for all pump stations.
- A Reporting Form.

Copies of the SSO Reporting Form are contained in each printed OERP available to on-call personnel when responding to a reported SSO. All qualified on-call SSO Placer County personnel were trained in January 2008. As additional personnel are added to the on-call list, they will be trained in SSO Response Procedures.

A copy of the OERP is contained in Appendix K. The remainder of this chapter outlines how the OERP meets the six State requirements noted above.

6.2 Overflow Emergency Response Plan

Requirement 6 of the GWDR requires that the OERP, at the minimum cover a number of procedures and programs listed in the table contained in Section 6.0. A copy of the OERP is contained in Appendix K and the following table outlines where each of the six requirements is located in the plan:

Table 6.1 OERP Procedures and Programs Locations

Requirements	OERP Page
6.a Proper notification to responders and agencies	1
6.b Appropriate response	1-8
6.c Prompt notification to regulatory agencies	8
6.d Staff training	6.1 above
6.e Emergency operations	1-8
6.f Containment and cleanup	5&8

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

7 FATS, OILS AND GREASE (FOG) CONTROL PROGRAM

7.0 Fats, Oils and Grease (FOG) Control Program

7.1 Introduction

Fats, Oils and Grease (FOG) in sewer pipes are the cause of most Sewer System Overflows (SSOs) in smaller diameter pipes. All three form solids as they cool in the sewer, mix with other solids, and then stick to the sewer pipe. The solid FOG then starts to build up until finally it completely plugs the sewer causing a backup which overflows. The FOG buildup may be at a joint in the pipe, at a broken section of pipe or at roots intruding into the pipe. Although broken pipe and roots can cause blockages of their own, by controlling the amount of FOG that gets into a sewer system, the frequency of SSOs can be reduced.

As described in the Introduction to Volume 1, Placer County operates ten separate public maintained sewage collection systems. This section of the Sewer System Master Plan (SSMP) requires each of the ten to develop a FOG control program based on their individual needs. Therefore, in order to meet the requirements shown in the box above, this section of Volume 1, "All Districts SSMP", will describe the following:

- The existing FOG control program now in place serving the ten Districts.
- The existing FOG disposal facilities available for FOG haulers in Placer County.
- The existing and proposed legal authority for the FOG control program, and
- A proposed FOG Public Education and FOG Control Program.

In individual District Sewer System Master Plans (Volumes 3-12); each sewer system will be reviewed to identify portions, of their sewer systems (if any) that are subject to FOG related SSOs. Source control and public education measures will be developed for each.

7.2 Existing FOG Control Program

A Senior Utility Service Worker on the maintenance crew is currently assigned as a part time manager/inspector for the existing FOG Control Program. That person oversees the record keeping and inspection of approximately 139 (Spring 2009) restaurants and other

FOG producing commercial facilities. The existing program for those facilities can be summarized as follows:

- The County Inspector has met with the owner/manager of each restaurant to help develop an in-house program for management of their grease interceptors and traps.
- Their programs include regular cleaning of the interceptors and traps. When cleaning is completed, the owner/manager faxes a copy of the invoice from their private hauler to the County.
- The invoice indicates when the tank was cleaned, the volume removed, the amount charged and the hauler's name.
- The frequency of tank cleaning is left up to the owner/manager; however, if the invoices fail to come in on a regular basis, the County inspector will make another visit to the establishment.
- The County inspector makes regular visits to each establishment based on their past performance. Some establishments may be visited only once a year and others may need quarterly inspections until their facility develops a regular program.
- The County inspector maintains a file for each establishment which includes a roadmap showing the site, a map or description of the location of the grease interceptor or tank, a description of the establishment, its grease control program and any photos taken.
- When the County inspector makes an on-site inspection, the interceptor or tank is inspected and needed maintenance is requested.

Due to the lack of legal authority (see Section 7.4), FOG producing commercial establishments are not issued any form of a FOG Control Permit. Currently, (Spring 2009), no FOG education program is available for residential or commercial establishments in the ten Districts covered by this SSMP.

7.3 Existing FOG Disposal Locations

All FOG that accumulates in grease traps and grease interceptors is pumped out and hauled by private haulers hired by the owners of the commercial establishments. The haulers have two locations that they can legally dispose of the grease. For haulers that are based inside Placer County, a private company approved by the County, operates a septage and grease disposal facility. The company is called EnviroTech and is located on Athens Avenue, in the Sunset Industrial Area west of Lincoln. That facility dewaters the septage and grease, disposes of the water into a public sewer and hauls the dewatered solids to a landfill. Haulers pay by the gallon to dump at that facility. A second company is located in Sacramento County and will accept waste from Placer County.

A number of chain restaurants have grease haulers under contract that operate from outside Placer County. Those haulers either dispose of their loads at EnviroTech or they haul it outside of the County to other disposal facilities.

7.4 Legal Authority

At the present time (Spring 2009, the portions of the Placer County Code addressing FOG control in the County maintained sewer systems are as follows:

Section 13.12.140 Wastes requiring prior approval and control

A. *Grease, oil, and sand interceptors shall be provided when, in the opinion of the engineer, they are necessary for the proper handling of any waste containing fat, grease or oil in excessive amounts, or any sand or other harmful ingredients. Interceptors shall be of a type and capacity approved by the engineer and shall be located so as to be readily accessible for inspection and cleaning. They shall be of substantial construction, made of impervious materials, capable of withstanding abrupt and extreme changes in temperature, and equipped with an easily removable cover which when bolted in place shall be watertight and gas tight. Grease, oil, and sand interceptors shall be maintained in continuously efficient operation at all times by the owner at owner's expense.*

Section 13.12.190 Violations and penalties

C. *Any person willfully violating any of the foregoing provisions of this article, or any amendments thereto, or who shall continue the violation beyond the time specified in the notice to correct such violation, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not more than one thousand dollars ($1,000.00), or by imprisonment for not more than ninety (90) days, or by both such fines and imprisonment.*

Section 13.14.050 General discharge prohibitions (from Industrial Pre-treatment Section

B. 2. *Solid or viscous substances which may cause obstruction to the flow in a sewer or other interference with the operation of the POTW such as, but not limited to: grease, garbage, (except properly shredded garbage), animal guts or tissues ….*

Placer County is in the process of developing a comprehensive Fats, Oils and Grease Ordinance replacing the existing ordinance sections noted above. The ordinance will include at least the following sections:

- Definitions
- Grease Control Requirements
- Prohibitions
- Grease Interceptor Requirements
- Grease Trap Requirements
- Maintenance Requirements
- Record Keeping Requirements
- Right of Entry
- Permitting and Inspection
- Variances
- Grease Hauler Requirements

A draft of the ordinance has been prepared and is expected to go through the public hearing process before being presented to the Board of Supervisors in 2009/10. If and when it is approved, this section of the SSMP will be re-written.

7.5 Grease Interceptor and Trap Design and Installation Standards

Requirement 7.0 (d.) of the State General Waste Discharge Requirements for Sanitary Sewer Systems (see shadow box at beginning of this section) requires Placer County to develop requirements for design, installation, maintenance, Best Management Practices record keeping and reporting of grease interceptors and traps. The majority of the requirements will be covered in the proposed new FOG ordinance noted in the previous sub-section. However, the County Code is not the proper location for design and installation standards, which will include detailed drawings and standards that can change occasionally to fit changing conditions. It is proposed the new ordinance will refer these standards to a separate Grease Interceptor and Trap Design and Installation Standards document that will be developed by the Department of Facility Services and approved by the Director of the Department. Such standards will most likely be a stand alone document available upon request or contained in the Placer County Land Development Manual shown in Volume 2, Appendix "I". This document should be developed and approved at the same time as the proposed ordinance noted above.

7.6 FOG Source Control and Public Education Outreach Program

As noted in the "Introduction" to this Volume 1, Placer County operates ten separate public maintained sewer systems within the County. Each system has different establishments that may contribute to FOG and will require differing needs for various FOG source control programs that could be developed to serve them. The sewer systems will also have differing needs for a public education outreach program. There are four different FOG source control programs that could be used in each District. They are summarized as follows:

Program A

This is "a do nothing" program to be used in a District with a small amount of sewer pipe, small number of residential connections, or possibly an industrial facility that does not produce FOG.

Program B

This program would be implemented for a District that is one hundred percent residential with no restaurants or other FOG producing commercial establishments connected to it. The program would primarily be a residential homeowner education program to teach "what not to put down sewer pipe". Section 11 of this SSMP, discusses a proposed public Communication Program where a newsletter would be developed for each of the ten sewer Districts. Since Placer County does not mail out monthly user fee billing and, therefore, does not have an easy means of distributing a newsletter, it is proposed to mail

a newsletters directly to property owners as needed. The newsletter, which will also be used to inform the public about the development of this SSMP, can also be used to present articles about FOG and how the public can help control FOG to protect the sewer system and the environment.

Program C

Program C would include newsletter articles noted in Program B plus include an intense public education program at specific residential locations where FOG problems regularly occur. Such a program, usually in multi-family areas, might include detailed door hangers, recommendations to throw cans of grease in the garbage, etc., which will help owners to control FOG getting into the sewer. This type of program would be more beneficial in reaching renters than a mailed newsletter to the owners.

Program D

This program is basically the existing restaurant FOG education and source control program described in Section 7.2 above. In Districts that have FOG producing restaurants and other establishments may be issued FOG control permits and be required to construct and maintain grease traps and interceptors.

7.7 Proposed Programs

Since each of the ten County maintained public sewer systems have different grease contributing establishments, each will have to be analyzed to determine which of the four FOG source control programs noted above will fit their circumstances. This analysis will be done in the separate SSMPs (Volumes 3-12), developed for each District. Section 7.0 of each document should reference the requirements for each District.

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

8.0 System Evaluation and Capacity Assurance Plan

8.1 Introduction

As described in the introduction to Volume 1, Placer County operates ten separate public maintained sewage collection systems. This section of the Sewer System Master Plan (SSMP) requires that each of the ten systems be evaluated to determine if their sewer pipes have the capacity to carry expected sewage flows.

There are three basic types of Sewer System Overflows (SSOs): (1) grease, root and debris, (2) structural related and (3) capacity related. Grease, root and debris related SSOs are a function of the Operation and Maintenance Plan detailed in Section 4b. Structural related SSOs are normally found in a Condition Assessment and are repaired under Rehabilitation and Replacement Plan detailed in Section 4c. The subject of this section, Capacity related SSOs, have one or both of the following causes: First, at times more sewage connections are allowed to connect to a sewer system than it was designed to handle. This can cause SSOs during peak times of the day. Second, some collection systems have excessive Infiltration and Inflow (I/I) which, during heavy wet weather conditions, can cause overflows due to the sewer pipes not being large enough to handle increased flows. I/I is groundwater that enters the sewage system through broken sewer pipes (Infiltration) and Inflow is the surface water that enters the sewer through some inlet. Inflow sources can be illegal connections of roof and yard drains into the sewer, cleanouts without caps into which drainage enters or even storm drainage systems accidentally connected to the sewer system.

Therefore, this section will outline the following:

- Development of design criteria to be used in capacity assessments.
- Procedures for developing projected flows either through assumed or measured flow factors
- Hydraulic models and sewer system capacity assessments
- Suggested methods of enhancing sewer capacity, if needed

In individual District Sewer System Master Plans (Volumes 3-12), each sewer system will be reviewed as to the projected flows to be used, the appropriate capacity assessment

to be used, and suggested capacity enhancement methods to be used (if needed). A time schedule will be presented in each volume for the completion of work on the particular sewer system.

8.2 Design Criteria

The amount of wastewater that can flow down a certain size sewer pipe at a certain slope (steeper pipes can carry more flow) is the design criteria for that pipe. During a capacity assessment, the capacity of a given section of sewer pipe is compared to the expected wastewater flow to see if the pipe has capacity to accept projected flow without backing up and overflowing a manhole. Allowable design criteria for sewer pipes can be located in the Placer County Land Development Manual, Section 6, Sewage, contained in Volume 2, Appendix "I" of this SSMP and were developed from standard engineering hydraulic equations.

8.3 Projected Flow Rates and Peaking Factors

In order to calculate sewage flows for a hydraulic model capacity assessment (see Section 8.4 below), a projection of the peak wet weather sewage flow (PWWF) is needed. PWWF is the flow during the peak time of day and during extreme wet weather when I/I is high. This is calculated by counting the number of equivalent dwelling units (EDUs) connected to a certain portion of the sewer system, adding in their average dry weather flow and then multiplying by a peaking factor. That peaking factor can be either assumed or measured.

Assumed peaking factors can be found in the Placer County Land Development Manual, Section 6, contained in Appendix "I". The Average Dry Weather Flow, also found in the manual, is multiplied by the appropriate peaking factors to develop the projected Peak Wet Weather Flow.

Measured dry weather flows and peaking factors should be used on older sewer systems whenever possible. A measured peaking factor is developed through the placement of sewage flow meters in the sewer system and measuring both the sewer flow rates in dry conditions (summer and fall) and again during extreme wet weather conditions during the winter. A measured peaking factor can then be calculated by dividing the measured Peak Wet Weather Flow by the measured Average Dry Weather Flow.

Sewer construction standards became stricter in the 1980s. Newer systems tend to have less I/I in them than do older systems. However, even well constructed systems deteriorate over time and inflow sources are sometimes connected to them. Therefore, no sewer system is free of leaks and no matter how well built, should have a peaking factor for future I/I.

The capacities of sewage pump stations are evaluated in the same way.

Other methods may be used to project PWWF as deemed appropriate by the engineer conducting the analysis as long as the analysis accounts for all elements contributing to PWWF.

8.4 Hydraulic Models and Capacity Assessment Types

To evaluate the capacity of a given sewer system, a hydraulic model is needed. A hydraulic model is a calculation of the expected sewage flows in any given location of sewer system, based on assumed and/or measured design criteria (see Section 8.2 and 8.3 above). During a capacity assessment, calculated wastewater flows are compared to the capacity of existing sewer pipes to determine if they can transport wastewater flows without overflowing.

There are two types of hydraulic models, static and dynamic. In each, the number of equivalent dwelling units connected to and planned to be connected to a sewer system are counted. This is always performed based on the maximum density of the current General Plan for the area served so pipe sizes that are developed reflect future growth. Then design criteria are used to calculate the expected sewage flows from a given area of the sewer system. A static model is typically used on smaller sewer systems containing no larger than 15 inch pipes. Static models assume the calculated sewage flows happen throughout the sewer system at the same time. For larger sewer systems (18 inch and larger pipes) a dynamic model assumes that peak sewage flows are all generated at the same time but takes time for the sewage to flow through the pipes and reach the wastewater treatment plant. Therefore, sewage entering the sewer system at the lower end of the system (near the plant) has drained away before the sewage entering the upper portion of the sewer system has had a chance to flow down to the lower portion. Accordingly, the lower portion of the sewer system may not need as large of a sewer pipe as shown in a static model.

For the ten Placer County maintained sewer systems, four potential capacity assessment types could be used; two with static hydraulic models and two with dynamic models. They are summarized as follows:

CAPACITY ANALYSIS TYPES

Type A Capacity Assessment

- EDUs calculated from General Plans
- Assumed peaking factors used in flow projections
- Static Hydraulic Model

Type B Capacity Assessment

- EDUs calculated from General Plans

- Measured peaking factors used in flow projections for existing pipes
- Assumed peaking factors used in flow projections for future pipes
- Static Hydraulic Model

Type C Capacity Assessment

- EDUs calculated from General Plans
- Assumed peaking factors used in flow projections
- Dynamic Hydraulic Model

Type D Capacity Assessment

- EDUs calculated from General Plans
- Measured peaking factors used in flow projections for existing pipes
- Assumed peaking factors used in flow projections for future pipes
- Dynamic Hydraulic Model

It should be noted that a capacity assessment of a sewer system can be done at the same time as a condition assessment (see Section 4c of Volume 1). For larger sewer systems (where an engineering consultant is often hired to do the capacity work) the consultant can be used to perform more detailed condition assessment work.

8.5 Sewer Capacity Enhancement Methods

If the hydraulic analysis of a sewer District concludes that additional capacity is needed, the SSMP requires a Capital Improvement Plan be developed to enhance the District capacity. Potential capacity enhancement methods that could be used in that plan are, but not limited to, the following:

- Reduction of Infiltration and Inflow in sewer system to a level that can be transported by existing sewer system.
- Increasing the size of existing pipes or constructing new pipes to handle larger flows
- For sewage pump stations, increasing pumping capacity of the station.
- Providing storage facilities to store the wastewater until peak wet weather flows subside

8.6 Individual District Capacity Analysis

The ten public maintained sewer systems operated by Placer County are all different and complex. Therefore, the analyses of each District capacity are presented in their individual District Sewer System Master Plans, Volumes 3-12.

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

9 MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

9.0 Monitoring, Measurement, and Program Modifications

9.1 Introduction

The title of this chapter of the General Waste Discharge Requirement (GWDR) is Monitoring, Measurement and Program Modifications. This chapter is probably one of the most important parts of developing a Sewer System Master Plan (SSMP). Once all programs and projects listed in the previous chapters are implemented, these programs will need to be monitored and measured in some form to verify their effectiveness. This evaluation is done by collecting data on a yearly basis that will show how effective they are in reaching the goals of the SSMP, reducing Sewer System Overflows (SSOs) and protecting the environment.

Each of the ten (10) County maintained sewage collection systems covered by this SSMP will have different actions, activities and projects designed to accomplish the primary goals of the plan. Since the activities will not be the same, the monitoring and measurement of each District will not be the same. Accordingly, the recording and evaluation of monitoring and measurement of each of the ten sewer Districts will be presented in each binder and not in this general binder (see SSMP Introduction, Page Int-4). The individual documents should be referenced when individual monitoring, measurement and program modifications are reviewed for any of the Districts.

9.2 Maintain Relevant Information (Requirement 9.0 a)

As each of the ten sewer Districts develops its own actions and programs to meet the goals of the SSMP, activities will be selected to be monitored and measured on a yearly basis that will be specific for each District's circumstances. The following is a sample of a number of activities that could be monitored and measured depending on the needs of each District.

Overflows

- Category 1 – Count
- Category 2 – Count
- Private Lateral Spills – Count

Televising of Sewers

- TV Work – Miles

Cleaning Sewer Lines

- Hydro-cleaning – Miles

Root Treatment

- Sewers Root Treated – Miles

Joint Test and Seal – Lineal Feet

Force Mains

- Pipe Pigging – Miles
- Air Relief Valve Maintenance - Count

Manholes

- Manhole Inspections – Count

Mapping

- New Sewer Lines entered into Mapping from As-builts – Miles
- Map Books updated

Septic Tank Effluent Pump Units (STEP Tanks)

- Total number of Tanks in Maintenance Program – Count
- Tanks pumped of Septage – Count
- Units repaired (tank-pump-controls) – Count
- Tank Replacements – Count

Sewer Pipe Rehabilitation

- Dig and Repair – Lineal Feet
- Pipe Lining – Lineal Feet
- Pipe Bursting – Lineal Feet

Pump Stations

- Pump Station Major Rehabilitation

Communication Program

- Web Site Hits
- Mailers

FOG Control Program

A spreadsheet for each District will be developed that will allow County Staff to easily keep track of the required data of each District. The collected data will be used to evaluate the progress of each District in its SSMP and will also be used to produce periodic audits as noted in Section 10, Audits.

9.3 Monitor the Effectiveness of the SSMP and the Success of the Preventative Maintenance Program (Requirement 9.0 b-c)

These requirements of the General Waste Discharge Requirements (GWDR) mandate Placer County to monitor the effectiveness of the SSMP and the success of the preventative maintenance program. Several years of data collected under the previous

section (for each District) will be needed before this requirement can be completed. It is expected that the appropriate sections of each District's SSMPs will be completed after the end of Fiscal Year 2008-09, allowing two full years of data to be used.

9.4 Update Program Elements (Requirement 9.0 d)

Based on data collected through Fiscal Year 2008-09, SSMP program elements can be updated based on their performance. This update should be completed in the first half of Fiscal Year 2010-11.

9.5 Identify and Illustrate SSO Trends (Requirement 9.0 e)

Placer County began reporting SSOs on the State Water Resources Control Board's web site based reporting system in September 2007. The information placed into that data base is extensive and adequately identifies and illustrates each SSO after September 2007. During the preparation of each of the ten District's SSMPs, SSO information was collected from 2004 to the present and is included in each of the District plans (See Section 9 in the individual SSMP Volumes 3-12).

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

10 SSMP PROGRAM AUDITS

10.0SSMP Program Audits

10.1 Introduction

The above requirement directs each of the ten Placer County maintained sewage collections and their Sewer System Master Plans (SSMP) be audited, or checked, at least every two years to determine the following:

- The effectiveness of each individual SSMP
- The district's compliance with that SSMP
- Any deficiencies needing correction in each SSMP.

Such audits will be completed within two years of the formal certification of each SSMP; additional audits will be completed at intervals no more than every two years after that.

SSMP Program Audits will derive their information from and complement the requirements of Section 9, Monitoring, Measurement, and Program Modifications. This section of the SSMP requires the following to be completed for each District:

- Maintain relevant information about SSMP activities
- Monitor and measure the effectiveness of each element of the SSMP
- Assess the success of the preventative maintenance program
- Update the SSMP based on the data collected
- Identify SSO trends

Section 10, SSMP Program Audits, are periodic written reports summarizing the data, trends and conclusions reached in Section 9. These reports are used by each District to modify the SSMP to more effectively maintain the sewer systems and reduce sewer system overflows.

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

11 COMMUNICATION PROGRAM

11.0Communication Program

11.1 Introduction

This requirement directs the ten Placer County maintained sewage collection systems to communicate on a regular basis with the public, their customers. The communication is to take place during both the development of the SSMP and the implementation of the SSMP (after the document is complete). Many public agencies communicate with their customers through newsletters mailed with sewer bills to each sewer connection. However, none of the ten Placer County Districts mail sewer user fee billing directly to their customers. Instead, they use the tax rolls to bill their customers (with the exception of Eastern Regional Landfill). As a result, Placer County has not developed any form of a sewer newsletter. Furthermore, the only data base of customer names and addresses available is obtained from the County Assessor, which lists the name of the parcel owners for land connected to the sewer systems. This information can be used in the form of electronic mailing labels, and has been used to mail notices of public hearings for proposed rate increases. The one exception to this is the Eastern Regional Landfill in which the land is owned by the County and sewer service is paid through the departments using the land.

11.2 Communication Program

The Communication Program for the ten Placer County maintained sewer systems will meet the following three requirements:

- Written and/or electronic copies of SSMP will be made available to public.
- The public will be informed of the SSMP and their locations for public access.
- The public will be requested to make comment on the documents. A forum will be held to receive the comments.

The following sections elaborate on the above three requirements.

11.3 Public Copies of the SSMPs

Copies of the twelve volumes of the Placer County Sewer System Master Plans will be made available to the public in two ways as follows:

Placer County Web Site

Copies of all twelve volumes of the SSMP will be provided, in PDF format, on the Placer County web site.

Placer County Libraries

There is one main County operated library located in Auburn and ten branch libraries located throughout Placer County (the City of Roseville has its own libraries). The libraries provide enough coverage so that copies of the SSMP will be placed at each library site to provide accessibility for customers. Not all libraries will have all twelve volumes since all volumes do not pertain to all Districts. The following chart shows the library distribution of the SSMP:

Table 11.1 SSMP Library Distribution

SSMP Volumes	Library Locations								
	Auburn Library	Colfax Library	Granite Bay Library	Lincoln Library	Loomis Library	Meadow Vista Library	Rocklin Library	Roseville Library	Tahoe City Library
Volume 1 All Districts	X	X	X	X	X	X	X	X	X
Volume 2 Appendices	X	X	X	X	X	X	X	X	X
Volume 3 SMD 1, North Auburn	X								
Volume 4 SMD 2, Granite Bay			X						
Volume 5, SMD 3, Horseshoe Bar/Folsom Lake			X		X				
Volume 6 CSA 28, Zone 2A3 Sunset								X	
Volume 7 CSA 28, Zone 6 Sheridan				X					
Volume 8 CSA 28, Zone 23 Blue Canyon		X							
Volume 9 CSA 28, Zone 24 Applegate		X	X			X			
Volume 10 CSA 28, Zone 55 Livoti								X	
Volume 11 CSA 28, Zone 173 Dry Creek								X	
Volume 12 Eastern Regional Landfill									X

11.4 Communication with the Public

Eastern Regional Landfill, one of the ten Placer County maintained sewer systems, is land owned by Placer County; therefore, the customer is the owner. For the other nine Districts, a newsletter will be developed and mailed to property owners. This first newsletter will be distributed after the draft SSMP are made available for review at the following locations:

- Placer County, Facility Services, Environmental Engineering
- Placer County Community Development Resource Agency

- County libraries
- Online at www.placer.ca.gov/sewer.

The public hearing to approve the SSMP will be held after the comment period for the SSMPs.

Subsequent newsletters are scheduled for distribution every six months to inform the public about sewer system projects and services.

11.5 Public Comments

The newsletter will ask the public to comment on the development, implementation and performance of the ten SSMP. An address, both fixed and electronic, will be provided for the public to make written comments. All comments will be summarized and presented to the Board of Supervisors when they are asked to approve the final SSMP (see Volume 1, Section 12).

VOLUME 1
PLACER COUNTY "ALL DISTRICTS"
SEWER SYSTEM MASTER PLAN

12 SSMP COMPLETION AND CERTIFICATION

12.0SSMP COMPLETION AND CERTIFICATION

12.1 Introduction

This section will require two actions by Placer County on the Sewer System Master Plans (SSMP) for the ten County maintained sewer Districts covered by the twelve volumes described in the introduction section. Those two actions are as follows:

- The governing board of the ten Districts, the Placer County Board of Supervisors, is required to approve the ten SSMPs at a public meeting.
- The authorized County representative must then certify in writing to the State Water Resources Control Board that the SSMPs and their implementation are in compliance with State requirements.

This is a final step in the SSMP process and cannot be completed until all of the sections of each SSMP are written. It is proposed that all ten completed SSMPs will be presented to the Board of Supervisors at one time and certified at the same time.