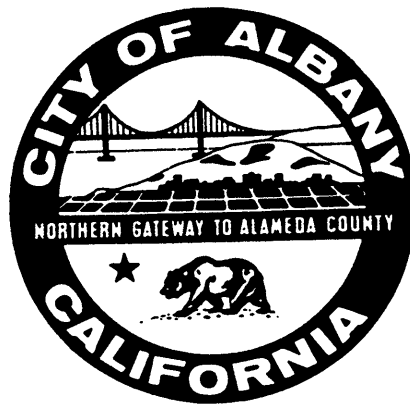


City of Albany

SEWER SYSTEM MANAGEMENT PLAN



Community Development Department
Public Works Division
548 Cleveland Avenue
Albany, CA 94706

August 31, 2008

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INTRODUCTION

The City of Albany (City) is situated in northern Alameda County between the East Bay Hills and the San Francisco Bay along Interstate 80, and is the northern gateway to Alameda County. The City is bounded on the north by the Cities of Richmond and El Cerrito (Contra Costa County) and on the east and south by the City of Berkeley (Alameda County). The City owns and maintains 35 miles of sewer pipelines. These pipelines discharge to a trunk sewer (the “North Interceptor”) that runs along the east shore of the San Francisco Bay. The trunk sewer is owned, operated and maintained by East Bay Municipal Utility District, Special District 1 (EBMUD).

The City’s 35-mile collection system serves a population of approximately 17,000 residents and covers an area of approximately 1.5 square miles. The wastewater collected from the City’s service area is treated by EBMUD’s wastewater treatment facilities in the city of Oakland. The collection system was originally constructed in the early 20th century with cross connections to storm drain systems that provided for overflows to storm drain systems through cross connection structures; untreated sewage also flowed from the sewer collection system and discharged to streams, creeks and the Bay during storm events.

In recent years, concern about sanitary sewer overflows (SSOs) has become a critical water quality issue in the Bay Area. The San Francisco Bay Regional Water Quality Control Board (Regional Board) has initiated a regulatory program to reduce SSOs from sewers in the Bay Area. The program regulates a group of seven East Bay communities that flow to EBMUD’s treatment plant. Besides Albany, these communities include Stege Sanitary District and the Cities of Alameda, Berkeley, Emeryville, Oakland, and Piedmont.

In order to address Inflow and Infiltration (I/I) problems, on February 13, 1979, these East Bay Communities and EBMUD entered into a JPA, under which EBMUD serves as administrative lead agency in conducting the East Bay I/I Study. The JPA was amended on January 17, 1986 to designate EBMUD as the lead agency during the initial five-year implementation phase of the East Bay I/I Study recommendations. The amended JPA also delegated authority to EBMUD to apply for and administer grant funds, to award contracts for mutually agreed upon wet weather programs, and to perform other related tasks. A Technical Advisory Board (TAB), which is composed of one voting representative from each of the East Bay Communities, EBMUD, one staff member of the State Water Resources Control Board and the U.S. EPA, directs the programs developed under the JPA.

The East Bay Communities and EBMUD initiated a 6-year East Bay I/I Study in 1980. The I/I Study outlined recommendations for a 20-year sewer improvement program called I/I Correction Program (I/ICP) and specified schedules for completing the I/ICP, which are called Compliance Plans, for each East Bay Communities member. The East Bay Communities and EBMUD started implementing the I/ICP in 1987. Since then, the City has eliminated all cross connections between sewer and storm drain systems, and all known overflow points identified as high threats to public health, from the East Bay Communities’ sewage collection system and from the design storm established in the City’s permit.

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The design goal of East Bay I/ICP is to eliminate overflows from the East Bay Communities' collection systems and EBMUD's interceptor, unless the rainfall exceeds a 5-year design storm event. Overflows may continue to occur for events less than the 5-year design storm, until the Discharger completes its I/ICP. However, the occurrence of overflows will decrease as more I/ICP projects are completed. The 5-year design storm event is a storm event that meets the following criteria: a 6-hour duration, and a maximum 1-hour rainfall intensity of a storm with return period of five (5) years. The storm is assumed to occur during saturated soil conditions, and to coincide with the peak 3-hour ultimate Base Wastewater Flow (BWF) condition. BWF consists of domestic wastewater flow from residential, commercial, and institutional sources plus industrial wastewater. BWF specifically excludes infiltration and inflow (I/I) from groundwater or storm water. Due to these conservative assumptions, the Wet Weather Facilities Pre-design Report concluded that the estimated peak flow produced by the event has a return period of 10 to 15 years.

The City started implementing its ICP in 1987. Since 1987, the City has spent approximately \$8 million dollars in sewer construction projects, plus an estimated additional \$2 million dollars on engineering and administration of the sewer construction program. As part of I/ICP, the Discharger has replaced 10 miles of sewer, or 28 percent of its total collection system, under the program. As a result of the rehabilitation program, the City has experienced only one reportable major raw sewage overflow caused by I/I in the past three years. The cause of this overflow was removed with the construction of the Buchanan Street Relief Sewer in 2006.

In 1993, the City adopted an ordinance for Upper Lateral Correction Program. Under the program, all property owners are required to test their upper laterals for compliance with City standards upon sale or construction of improvements in excess of five (5) percent of the value of the improvements on the property. If a test fails, the owner is required to rehabilitate or replace the upper lateral to City standards. Since implementation of the program, I/I has been eliminated from approximately 20 percent of upper lateral sewers in the City's service area.

The I/ICP dated October 1993 identified five (5) overflow locations as high threats to public health within Discharger's service area. The City has eliminated all five high threat overflow locations since 1994. No cross connections between sewer systems and storm drain systems were identified in the 1993 Compliance Plan.

The requirements to provide sanitary sewer collection system capacity, along with the prohibition on SSOs and discharges to waters of the State, are contained in the City's NPDES discharge permit, which has been issued by the State Regional Water Quality Control Board (Regional Board). These requirements are also consistent with the Regional Board's SSO Resolution No. 2003-R2-0095, which was developed collaboratively with the Bay Area Clean Water Agencies (BACWA).

Since 2004, BACWA has been working with the Regional Board to develop a Sewer System Management Plan Development Guide for sewer collection agencies to use in developing and implementing a SSMP. On July 7, 2005 the Regional Water Board issued New Requirements

for Preparing Sewer Management System Plans to all sewer collection agencies of the Bay Area within its jurisdiction. The Regional Water Board requires development and implementation of a SSMP within three years. The City's SSMP has been prepared and is being implemented pursuant to Regional Board Requirements and in accordance with the SSMP Development Guide. The City's SSMP, of necessity, must be considered a work in progress. It will be reviewed and revised on an ongoing basis, as necessary, to reflect changes in City staffing, administration and in the sanitary sewer collection system.

PHASE 1

OVERVIEW

Phase 1 of the City's SSMP was developed in August of 2006 and consists of four elements: Goals, Organization, Emergency Response and Fats, Oils and Grease Prevention. It has since been revised to reflect changes in public works staffing and progress achieved under the various elements.

ELEMENT 1 – GOALS

The Goals of the City's SSMP are the following:

1. To continue to properly manage, operate, and maintain all parts of the wastewater collection system
2. To provide adequate capacity to convey peak flows
3. To minimize the frequency of SSOs
4. To mitigate the impact of SSOs

ELEMENT 2 – ORGANIZATION

2-1 Organization Chart

The City's Organization Chart and roles for staff for the SSMP are shown and explained on Figure 1.

2-2 Definitions

Definitions of the members in the Organization chart are as follows:

CITY COUNCIL—The CITY COUNCIL (COUNCIL) establishes policy.

CITY ADMINISTRATOR – The City Administrator implements policy, plans strategy, leads staff, allocates resources, delegates responsibility and authorizes outside contractors to perform services.

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COMMUNITY DEVELOPMENT DIRECTOR – The Community Development Director coordinates the City’s SSMP effort and serves as public information officer. She (he) coordinates and provides staff and resources necessary for the Public Works Community Development Director to perform her (his) duties. The Community Development Director makes periodic reports to the City Administrator on the SSMP.

PUBLIC WORKS MANAGER- The Public Works Manager manages capital improvements, oversees the Capital Improvement Program and oversees the Maintenance Supervisor, operations and maintenance activities. He (she) provides relevant information to agency management, prepares and implements contingency plans, leads emergency Sanitary Sewer Overflow (SSO) responses, investigates and reports SSOs and trains field crews.

CITY ENGINEER – The City Engineer assists the Public Works Community Development Director with the development and the implementation of the Capital Improvement Program. With assistance from consulting engineers as necessary, the City Engineer prepares wastewater collection system planning documents, documents new and rehabilitated assets and coordinates development and implementation of the SSMP. The City Engineer also ensures that new and rehabilitated assets meet agency standards.

PROJECT MANAGER – The Project Manager assists the City Engineer with the preparation of sewer program construction documents and oversees all public sewer construction activities. She (he) provides assistance to the Public Works Manager as needed for all applicable permits, laws and regulations, and provides support to all parts of operations. The Associate Civil Engineer also administers the Fats, Oils and Greases (FOG) Control Program.

PUBLIC WORKS INSPECTOR – The Public Works Inspector inspects private (upper lateral) replacement projects, maintenance projects and public sewer construction projects. The Public Works Inspector also works with field crews to handle emergencies when contractors are involved and provides reports to the Associate Civil Engineer. He (she) hires private contractors to make repairs to the sewer system and administers these contracts.

MAINTENANCE SUPERVISOR- The Maintenance Supervisor oversees and coordinates the efforts of the Public Works Inspector on maintenance projects and conducts day-to-day review of private sewer construction activities. He (she) responds to all sewer calls and coordinates the efforts of the maintenance crew. He (she) reports directly to the Public Works Manager and supervises day-to-day maintenance activities.

MAINTENANCE CREW – The Maintenance Crew maintains the sewer system assets and responds to emergency call outs at the direction of the Public Works Maintenance Supervisor.

PUBLIC WORKS OFFICE ASSISTANT– The Public Works Office Assistant directly assists the Public Works Manager and Public Works Maintenance Supervisor with the day-to-day efforts of the maintenance crew, and receives and responds to calls from the public.

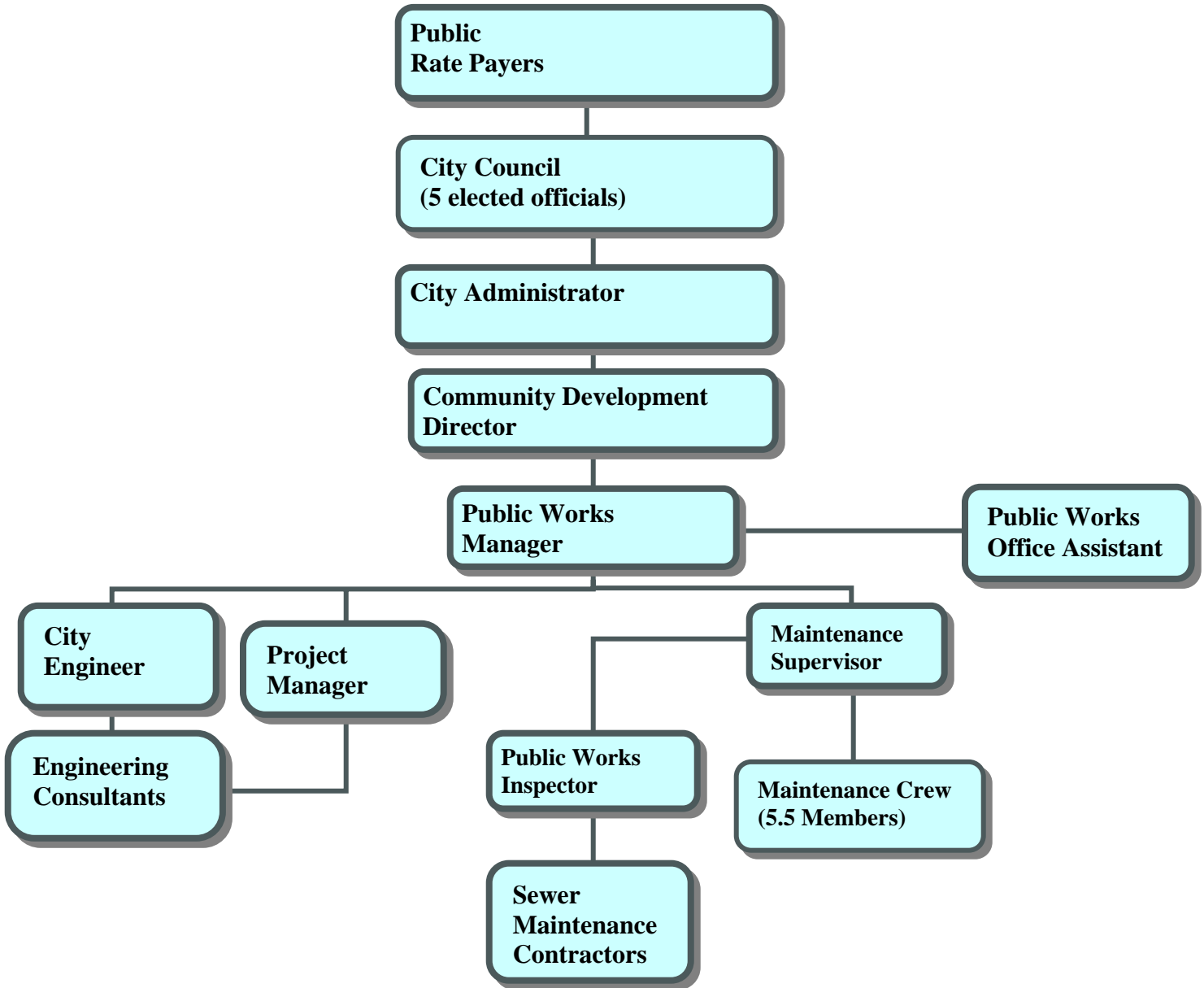


Figure 1-Organization Chart
City of Albany SSMP

ELEMENT 3 –SSO EMERGENCY RESPONSE PLAN (SSO ERP)

3-1 Procedures

The City has developed a response plan as a stand-alone document entitled “SANITARY SEWER OVERFLOW EMERGENCY RESPONSE PLAN.” The plan contains procedures for the following:

- SSO notification
- Responding to SSOs
- Reporting SSOs electronically
- Impact mitigation including steps to contain wastewater, prevent overflows from reaching surface waters, and to minimize or correct an adverse impacts from SSOs

Equipment necessary for emergency response is stored at the wastewater treatment plant. Field Crew vehicles contain copies of the response plan for their reference and use. A complete copy of the plan is also on file at the City Maintenance Center. The response plan is a living document and is updated as necessary to reflect any changes in staffing or notification requirements, including contact numbers.

3-2 Description of Plan Elements

Further information on each element of the plan is shown below:

- Notification - The element includes information on how the City may be notified of an SSO through a complaint or a report from outside or within the City, and also the internal City chain of communication leading up to the response to the overflow. Internal communication responsibilities during and after the overflow are also included.
- Response - The plan for responding to SSOs describes the staff and expected response time for SSOs, and details associated with mobilizing for the response.
- Reporting - The plan includes the procedure for evaluating whether an overflow event triggers 24-hour reporting (such as in the case of an SSO that is 1,000 gallons or more.) The plan also specifies the individuals who are expected to do the reporting and identifies the external agencies that receive the reports.
- Impact Mitigation - The plan includes steps to contain wastewater, prevent overflows from reaching surface waters, and to minimize or correct an adverse impact from SSOs.

ELEMENT 4 - FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

4-1 Purpose

The purpose of the City's FOG Control Program is to eliminate or minimize the discharge of fats, oils and greases to the sewer system, in order to prevent the formation of blockages in the main sewer lines, which may cause sanitary sewer overflows. The City's FOG Control Program consists of a source control program and a sewer preventive maintenance program.

4-2 Restaurants and Other Food Handling Facilities

The City participates in a regional FOG Control Program that is administered by EBMUD under the Technical Advisory Board to the East Bay I/I CP. The FOG policy has been implemented in accordance with Title 40, Code of Federal Regulations (40 CFR), Part 403, and pursuant to provisions for source control contained in EBMUD Ordinance No. 311. The FOG Control Program requires these facilities to comply with Ordinance No. 311, and to obtain a "Food Handling Facility Permit, and to comply with its Terms and Conditions. These terms and conditions are summarized below.

- Provide the EBMUD staff with access to the food handling facility for unannounced inspections
- Pay permit fees, monitoring and testing charges, and disposal charges
- Establishes maximum discharge limits for Oil and Grease and pH
- Prohibits the bypassing of grease removal devices
- Prescribes standards for operation and maintenance of grease interceptors
- Prohibits the use of grease traps for new food handling facilities
- Prescribes standards for maintenance of grease traps
- Sets forth requirements for grease device maintenance records
- Requires pollution prevention techniques to reduce grease and waste pollutants
- Identifies Best Management Practices (BMPs) for the design and sizing of grease interceptors
- Provide conditions and forms for waivers for grease interceptors
- Provide conditions and forms for conditional variance for grease interceptors

EBMUD's pre-treatment inspector and/or City staff inspect each facility once every two to five years, to ensure that these facilities are using best management practices (BMPs) for food handling facilities and are properly cleaning and maintaining their grease traps or interceptors. The inspector also conducts educational outreach to the restaurant Community Development Director about BMPs. If a code violation is found, a violation notice is issued to require corrective measure(s).

The FOG Control Program materials are available at the permit department in the Community Development Department. These include outreach materials related to restaurant BMPs. A list

of restaurants and other food handling facilities, a food service inspection checklist, and the current year work plan for restaurant inspections are maintained by EBMUD.

4-3 Residents

EBMUD and the City, through the EB I/I CP TAB, conducts educational outreach to City residents concerning proper handling and disposal of their kitchen food wastes using several methods: (1) the City newsletter, (2) the City website, www.albanyca.org, (3) door hangers displaying FOG messages such as “Grease Alert, “ and (4) outreach materials distributed through City or EBMUD mailings. A door hanger conveying a message to properly handle kitchen grease is left on the resident’s door handle after the City’s sewer crew responds to a sewer service call. The City’s SSO Response Plan contains instructions for door hangers and SSO response vehicles are equipped with supplies of door hangers.

PHASE 2

OVERVIEW

Phase 2 of the SSMP was developed in August of 2007. This phase describes the legal authority for the City to manage its collection system to prevent overflows, the measures and activities employed by City personnel to maintain its collection system and personnel, and the design and construction standards of the City.

ELEMENT 5 - LEGAL AUTHORITY

The City’s legal authority over the design, construction and use of sanitary sewers is contained in Chapter XV, “Sewers and Sanitation,” of the City of Albany Municipal Code (AMC). This Chapter of the AMC enables the City to control infiltration/inflow into the collection system and laterals, requires proper design and construction of new and rehabilitated sewers and connections, and requires proper installation, testing, and inspection of new and rehabilitated sewers. The City has the ability to ultimately disconnect a user if he (she) fails to comply with the established conditions of use. The Code regulates the design, construction, installation and use of public and private sanitary sewers, provides for permits and fees and establishes penalties for violations. It further sets forth rules, regulations, restrictions and requirements for dischargers to the City's wastewater collection treatment and disposal system and provides civil and criminal penalties for violations.

5-1 Infiltration/Inflow Control in Sewers and Laterals

For the purposes of the SSMP, “sewers” are publicly owned and maintained sewer mains. The “lower laterals” is that portion of the lateral that extends from main to the “two way cleanouts. The “upper laterals” is that portion of the lateral which is privately owned and maintained and

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extends from the two-way cleanout behind the curb to the building cleanout and overflow device. The City identifies and abates major infiltration/inflow (I/I) problems in the publicly owned and maintained portions of the sewer system through its 5 year capital improvement program (CIP). The 5 year CIP is updated bi-annually and is on file at various locations within the City. Since laterals can contribute as much as 70 percent of total infiltration into sewers, potentially using reserve capacity and causing or contributing to sanitary sewer overflows (SSOs), they are addressed as part of an overall SSMP to prevent SSOs.

The City's existing ordinance prohibits connections to the sanitary sewer that introduce infiltration and inflow (I/I) into the system. Section 15-11.1 of the AMC prohibits the connection of rainfall derived surface and groundwater to the sanitary sewer. Roof downspouts, foundation drains, and other sources of storm water inflow are not allowed to be connected to the sanitary sewer system. Similarly, this Section prohibits the connection of groundwater drainage or infiltration.

While connecting I/I sources to the sewer is clearly prohibited, finding and abating accidental I/I sources is not referenced in the existing ordinances. The existing AMC provides the City legal authority to evaluate, inspect, maintain, replace, and/or compel a private landowner to repair a defective sewer lateral. The City of Albany was one of the first agencies in northern California to adopt such a program.

5-2 Proper Design and Construction of New and Rehabilitated Sewers and Connections

The proper design and construction of new and rehabilitated sewer mains, laterals and connections is regulated under AMC Section 14-2, "Use of Right-of-Way", Section 15-1.14, "Permit Applications", and Chapter 22, Section 22-9, "Improvements". Permits are required for all sewer lateral construction work. Licensed contractors in accordance with the Uniform Plumbing Code and the City's standard specifications and detailed drawings must conduct work within the public right-of-way. The City Engineer has authority to review and approve plans and specifications for upper laterals (building sewers on private property) and lower laterals (lateral sewers on public property), to ensure adherence to the City's standard specifications and ordinances. Installation of cleanouts and backwater overflow devices is required for all new construction. Minimum size and slope of side sewers (laterals) are specified, and guidelines for private pumps are provided to the owner/developer whenever sewer lateral flow is below the elevation of the sewer main.

5-3 Installation Testing and Inspection

Prior to acceptance by the City of newly constructed mainlines, and prior to issuance of certificates of occupancy for new laterals, the City requires lines to be flushed, tested for excessive deflection, video inspected and pressure tested for leaks. The City's Public Works Inspector, or a consultant retained to provide inspection services, observes the deflection tests and air or water pressure tests and reviews the video inspections. Pipe lines that do not pass the pressure tests, and those with excessive deflections, sags or offset joints, sections of pipelines or

manholes that do not pass these inspections, are rejected and are required to be removed or replaced.

5-4 Upper Lateral Compliance Program

To continue to be successful in controlling and reducing I/I, the City maintains fair and consistent policies and procedures for the testing, repair, and replacement of all defective sewer laterals. Under the AMC, the City exercises its legal authority to enter upon private property for inspecting, testing and repair of the sewer laterals.

Section 15-1.22 of the AMC requires that upon sale of a property, or upon application for a building permit for construction that exceeds five percent (5%) of the existing value of the structure(s), the property owner shall obtain a notice of compliance from the Department of Public Works prior to final building inspection. The compliance inspections authorized in the AMC are conducted with Closed-Circuit Television (CCTV) or similar technology.

Section 15-1.22 further provides that building sewers must be maintained to meet minimum requirements, including that they shall be:

- Kept free from roots, grease deposits and other solids
- All joints shall be tight and all pipes shall be sound to prevent exfiltration by waste or infiltration by ground water.
- The upper lateral shall be free of any structural defects, cracks, breaks or missing portions and the grade shall be uniform without sags or offsets.
- The upper lateral shall have a two-way cleanout located at the property line or at the sewer main easement.
- The upper sanitary lateral shall be free from breaks, openings, and rat holes.

The City issues certificates of Compliance when a lateral complies with City Standard Specifications, as determined upon completion of a successful test. The City maintains records of all certificates issued, including dates of issuance. Certificates are valid for twenty years or until subsequent testing is performed and a new Certificate issued, whichever comes first. Certificates currently are not recorded with the Alameda County Recorder's Office, but consideration is being given to adding this to the program. Any sewer lateral that does not comply with City Standards and requires work to bring it into compliance is given a Deficiency Report. The upper lateral must be replaced within specified time limits. A Certificate of Compliance is issued after a sewer lateral has been satisfactorily repaired and/or replaced.

The City may be authorized, at any given time, to evaluate the level of infiltration and inflow from properties. If it is determined that excessive infiltration and inflow exists, all sewer laterals within the property will be inspected and possibly tested. For example, in 2006 smoke testing was performed and a report prepared for a significant portion of the Town that is tributary to a mainline SSO in Buchanan Street. The cause of the SSO was determined and the problem eliminated.

Provisions for appeal of decisions made by the City Community Development Director are provided in the Ordinance. Appeals must be in writing and state the basis and reason(s) for the appeal.

The AMC provides the procedure the City follows when a landowner fails to comply. Most importantly, the City Community Development Director or her representative (under Section 15-1.24, “Right of Entry” and under Section 15-1.25, “Emergency Work by the City”), has authorization to proceed with all necessary work to bring the lateral into compliance with City Standards by entering onto private property and recovering the City’s costs from the property owner.

ELEMENT 6 – MEASURES AND ACTIVITIES

Measures and activities as defined in the RWQCB SSMP requirements are identical to the Operation and Maintenance Program as described in the SWRCB WDR. This element of the SSMP is broken down into the seven components: Collection System Map, Geographic Information System, Resources and Budget, Prioritized Preventive Maintenance, Scheduled Inspections and Condition Assessment, Contingency Equipment and Replacement Inventories and Training.

6-1 Collection System Map

Digital maps of the City’s sewer system were first prepared in 1997. These are updated periodically. An overview of the system, including the Compliance Plan Projects completed and planned, appears as Figure 2.

6-2 Geographic Information System

In the spring of 2008, the City began to integrate its digital mapping with a database that has been compiled in connection with the City’s I/I Correction Program. The data from the City’s mainline sewer compliance plan and its Upper Lateral Compliance Program is being entered into a Geographical Information System with Municipal Systems (Munsys), OASIS, Oracle and ESRI software.

6-3 Resources and Budget

Many of the SSMP requirements will be in addition to currently funded sewer maintenance activities and capital improvement program projects. The City’s aging infrastructure will continue to fail over time and pre-emptive rehabilitation will be necessary in order to prevent future SSOs. Establishing a priority system and funding option is a primary objective and function of the SSMP.

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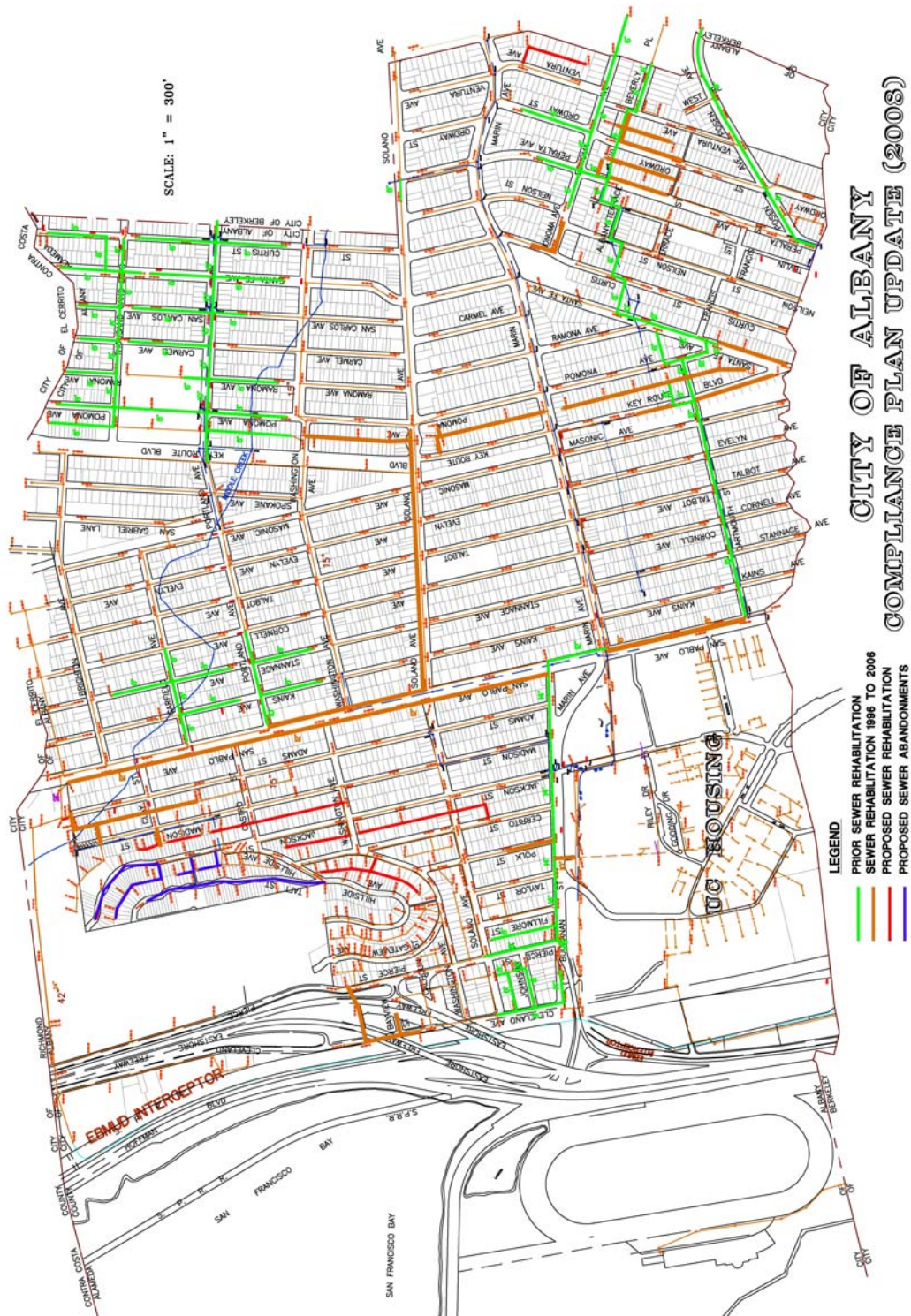


Figure 2- Compliance Plan Projects

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Sewer system maintenance and capital improvements are funded solely by the City's sewer service charge, which is collected on property tax bills. The City's sewer service charge has gradually been increased to provide for cost of living increases and in part to fund the SSMP as

described below. The sewer service charge rate for detached single-family residential dwelling units between FY 2002-03 and 2008-09 has been as follows:

FY	Monthly Rate
2002-03	\$19.78
2003-04	\$20.10
2004-05	\$20.46
2005-06	\$20.71
2006-07	\$21.12
2007-08	\$22.46
2008-09	\$23.84

Table 1-Sewer Service Charge, FY 2003-2009

The total cost to implement the City's SSMP is difficult at best to estimate. The State Water Resources Control Board (SWRCB) staff studied plans for 21 agencies, and thereafter concluded that \$6 per month (\$72 per year) per household was a manageable amount to charge in order to implement the program. Funding for some of the SSMP activities was included in its 2002-03 rate increase. This early funding was primarily directed towards developing the first four elements of the SSMP. The remaining elements include: incorporating the digital mapping and data base into a GIS; televising and cleaning sewer mains; performing a condition assessment and prioritizing the deficiencies; continuing efforts to implement the FOG control program; and preparing a capacity assessment and assurance plan required additional funding. While the SSMP is required to be fully implemented by August of 2008, it has been assumed that the execution of the elements will require a much longer period of time, perhaps as long as five years after the completion of the plan.

In July of 2002, the City Council, following a delay, noticed and conducted a public hearing, and elected to increase the sewer service charge by approximately 10% in 2002-03 and thereafter by the increase in the Consumer Price Index. The 2002 rate increase was proposed to finance the escalating costs of sewer construction and replacement. The annual adjustment by the CPI was approved and implemented by the 2002 Resolution and will be in effect until the year 2017, which marks the conclusion of the Sewer Compliance Program and the CDO. In June 2007, staff estimated that it would cost approximately \$180,000 per year to implement the cleaning and televising program and remaining elements that will be established by the WDR and SSMP. These costs will be incurred on a five-year cycle, and root control foaming will be on a three-year cycle for the 35 miles of sewer mains and 10 miles of lower laterals in the system. Additional costs as mentioned above will be required to develop a GIS and to commission a capacity assessment of the system by qualified consultants. Additional administrative costs will

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be incurred for FOG control, online reporting and miscellaneous program costs. The estimated annual costs (2007 dollars) over the next five years are shown in Table 2.

SSMP	Amount
Cleaning and Television Inspection	\$140,000
Condition Assessment	\$10,000
GIS Development	\$10,000
Capacity Assessment	\$10,000
FOG Prevention	\$5,000
Online Reporting and Misc. Program Costs	\$5,000
Total	\$180,000

Table 2 – Funded SSMP Program Elements, FY 2008-2012

The 2007-08 increase in rates estimated that \$24 per household per year was determined to be necessary to fund the new programs listed in Table 1. In order to keep pace with the annual escalation in the cost of living, it was recommended that the previously authorized CPI increase in each year be kept in place. Because the implementation of the program involves ramping-up of these activities, the increase was implemented over a 3-year period. In July of 2007, Resolution #07-37 further provided that the City continue to increase rates by the annual increase in the Consumer Price Index (CPI). By adopting Resolution No. 07-37, the City has met its commitment of obtaining resources to implement the remaining elements of the SSMP.

Neither these estimated costs outlined above nor the funded program include the added capital improvement projects that will be necessary to correct the deficiencies in the system that will be revealed by the SSMP improvement program. It is assumed that as the cleaning, televising and program development costs decrease, the annual revenue that was originally intended to support these activities will instead be used for sewer replacement.

6-4 Prioritized Preventative Maintenance

The goal of this measure is to develop a system for prioritizing maintenance, including identifying hot spots within the system and maintaining these on a more frequent basis. This proactive maintenance regimen will require increased maintenance. The cost of maintaining the City's aging sewer system continues to increase. These escalating costs are primarily due to "sewer emergencies" involving sewer backups in the residential and commercial areas. Such emergencies first result in an attempt by the maintenance crew to unclog the blockage using the City's Vactor truck. If this is unsuccessful, and the blockage is clearly in the City's main, it may then become necessary to repair or replace a section of sewer pipe utilizing professional sewer contractors. Overall, maintenance costs have increased over the past several years as the sewer system ages. The 2002 increase in the sewer service charge has enabled the City to just keep pace with increasing maintenance costs.

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The City has an extensive preventive maintenance program that has been designed based on its experience of SSOs and service calls, as well as knowledge of problem sewers that have a flat grade or sags in the line that cause accumulation of materials and grease.

The prioritized preventative maintenance program includes cleaning and inspecting on a five-year cycle and root control foaming on a three-year cycle, for the 35 miles of sewer mains and 10 miles of lower laterals in the system.

Based on past history of blockage and overflow frequency, the City has identified approximately 20 sewer priority locations within the City for preventive cleaning and maintenance. The City's sewer crews hydro-flush these priority locations on a prescribed preventative maintenance schedule. This schedule is maintained in the OASIS database.

Many of these sewer segments are flat or have sags and may accumulate grease from food service establishments (FSEs) or clusters of residences. Solids collect in some flat or sagging sewer segments and must be cleaned out periodically to prevent SSOs and backups into buildings. Some sites have root intrusion issues. The City maintains Microsoft Excel and OASIS databases for its preventive maintenance, enabling prioritization and tracking. The schedule of preventive maintenance is available for review at the City.

The City staff has experimented with techniques to reduce the amount of hydro-flushing maintenance in their system. The root foaming program implemented by the City was successful in reducing the amount of necessary sanitary sewer flushing at priority locations.

6-5 Scheduled Inspections and Condition Assessment

The goal of this activity is to obtain digital television images of the existing sewer pipes throughout the system and to prioritize the maintenance and repair activities accordingly. The City employed this type of program in 2003 on Albany Hill, San Pablo Avenue, and in the easement sewers between Key Route Blvd. and Pomona Ave. While effective in terms of eliminating SSOs, there was significant cost associated with this investigative work.

The SSMP includes TV inspections and condition assessment with an annual budget of \$140,000 per year. An age-dated map of the collection system is being developed as a part of the GIS project. A format is being developed for the televised inspections to be transferred into the GIS system to automate the condition assessment.

The goals of the TV inspection program are to inspect all new mainline construction and to televise at least 7 miles of its sewer system length every year. The annual inspections will initially focus on sewer service areas with older pipe. The City is in the process of mapping the age of the sewer system. This information will be used to prioritize inspections and to assess development of projects for inclusion in the capital improvement program.

6-6 Contingency Equipment and Replacement Inventories

The City maintains contingency equipment and replacement parts for its sewer system. The section includes a list of specific equipment kept ready at the maintenance yard for sewer system emergency conditions.

- Closed circuit television camera and support equipment
- 2 portable Wacker suction pumps, which operate at a peak of 430 gallons per minute (gpm) and 1 Flygt submersible pump, which operates at a peak of 1600 gpm. These pumps are large enough to be used for emergency pumping, for SSOs, and for pumping from manhole to manhole around blockages.
- Emergency generator and floodlights
- Suction and discharge hoses for all pumps
- One Vactor hydro-jet sewer cleaner
- Spare pipes of assorted sizes, materials, and repair couplings are kept at the City.

The City is considering membership in the California Water/Wastewater Agency Response Network (WARN). Through this Intrastate Mutual Aid and Assistance Program members coordinate response activities and share resources during emergencies. The WARN agreement sets forth the procedures and standards for the administration of the Intrastate Mutual Aid and Assistance Program.

6-7 Training

The City has developed and maintains a training program for its employees. All City emergency response personnel are members of the California Water Environment Association (CWEA) and attend conferences regularly. All response personnel are trained in emergency response, as outlined by the City Injury Illness Protection Plan (IIPP), which is on file at the City.

City staff attend other collections systems workshops, seminars, conferences, and safety training, sponsored by professional groups such as Bay Area Clean Water Agencies (BACWA), California Association of Sanitation Agencies (CASA), League of California Cities, National Safety Council, and Water Environment Federation Foundation (WEFF). The collection system staff holds periodic tailgate meetings to remind staff of standard procedures for maintenance activities and emergency response, especially following emergency response events. The City plans to expand its in-house training program for staff. The City has also established collection system mentoring, whereby experienced personnel are paired with entry level or less-experienced staff.

ELEMENT 7 – DESIGN AND CONSTRUCTION STANDARDS

7-1 Standard Specifications

In 1993, the City Council adopted the City of Albany Standard Specifications. These standard specifications include design and construction standards for installation of new sewer mains and

side sewers, including standards for inspection and testing. The City of Albany has “reader” friendly handouts regarding sewer construction details, which are available in the Community Development Department. The City’s Standard Specifications are also on file and available for review. The City plans to perform a review of its Standard Specifications in the next three years, FY 2009-2010, and following that intends to place the revised specifications on its website for public viewing and use.

7-2 Standard Detail Drawings

In July of 2000, the City Engineer issued Standard Detail drawings for sewer main and lateral construction. These standard details are based upon the plans that were generated for the I/I Compliance program during the previous 12 years and other standard details from surrounding communities. In addition to providing details for mainline construction, these details also provide for the construction of watertight upper laterals.

PHASE 3

OVERVIEW

Phase 3 of the SSMP was originally prepared in August of 2008, and includes the following: (a) a description of the capacity management program for the collection system; (b) a monitoring, measurement and program modifications; (c) the City's approach for conducting annual audits; and (d) a communications plan for community outreach.

The first three elements of Phase 3 have been prepared pursuant to Regional Water Board Requirements and in accordance with the SSMP Development Guide of 2005. The fourth element, Element 11, Communications Plan, complies with State Water Resources Control Board Order No. 2006-0003-DWQ.

ELEMENT 8 – CAPACITY MANAGEMENT

This element includes a description of the City’s capacity management program. The program consists of assessments of the collection system by the City, to assure adequate capacity, present and future.

8-1 Capacity Assessment

This element will ultimately involve hydraulic modeling that will enable City staff to evaluate the performance of the system under various rainfall events. Once the model has been developed, “bottlenecks” in the system can be identified and line sizes upgraded as necessary to correct the identified deficiency. In order for the modeling to be performed, the GIS identified under item 6 will be required to be implemented and the data secured and entered into the system.

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The City's collection system was generally designed with adequate capacity for existing and future developments and does not have a history of capacity-based sewer system overflows (SSOs). The system has been designed to handle peak wet weather flows. The City has already established a process to assess current and future capacity requirements for its collection system facilities.

The City is largely built out. Capacity issues are increasingly caused by aging infrastructure rather than growth. Collection system rehabilitation projects are funded by a combination of connection fees, property tax and sewer service charges. These combined revenues are tracked in a 5-year rolling Capital Improvement Plan (CIP).

The City periodically updates its Compliance Plan to assure adequate capacity. This is significant, as the downstream portions of the system must be able to accommodate the sum of the peak flows from existing and new development.

Because the collection system is largely built-out, condition assessments by smoke testing and I/I monitoring are probably more important than capacity assessment, because other issues besides pipe diameter reduce capacity. Other issues include sags, blockages, roots and offsets, all of which have the effect of reducing capacity. Therefore, the condition assessments dovetail with work to maintain and assure system hydraulic capacity.

Although the City has experienced surcharges from time to time, they are not common due to successful planning for hydraulic capacity. The City's I/I control measures have reduced and will continue to reduce surcharging in the lower reaches of the collection system. For example, in 2004-05 surcharges at San Pablo Ave. and Dartmouth Ave. were eliminated by installing a larger diameter sewer in San Pablo Ave. In 2006-07 the Buchanan Street bypass project was constructed to eliminate surcharging at Polk St.

Through its condition assessment activities, the City has identified leaking manholes in areas subject to storm water inflow that may be contributing to surcharging and interfering with hydraulic capacity. The City will continue to identify such maintenance issues through its preventive maintenance and inspection activities, and will implement corrective action where warranted to minimize I/I effects on hydraulic capacity.

8-2 System Evaluation and Capacity Assurance Plan

One of the main reasons the City does not have hydraulic capacity problems is that it established a Compliance Plan for its collection system in 1987. The Compliance Plan identified and prioritized areas in the collection system where deficiencies existed and rehabilitation was necessary in order to restore capacity.

➤ History of the City's Sewer Compliance Program

In 1987 the State Regional Water Quality Control Board (SRWQCB) issued a Cease and Desist Order (CDO) to the Cities of Albany, Berkeley, Emeryville, Oakland, Piedmont, Alameda, EBMUD and to the Stege Sanitary District. Permission to continue to discharge treated

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wastewater to the San Francisco Bay was conditioned upon each City adopting a Sewer Compliance Plan, which is administered under the National Pollution Elimination System

(NPDES) Permit issued to each jurisdiction by the State. The City's NPDES permit requires the City to participate in a regionally administered Infiltration and Inflow Correction Program (I/ICP) that requires all sanitary sewer overflows for a 5 year storm or less to be eliminated, and that groundwater infiltration and inflow to the EBMUD trunk sewer and treatment facilities be reduced by approximately 25%. Compliance program projects are shown on Figure 2.

The City has been making steady progress under the program and since 1987 has replaced approximately 11 of the 35 miles of public sewer mains in the system. In addition, since 1993 the City has been proactive in implementing and enforcing a private sewer lateral rehabilitation program, which has been regionally acclaimed. Overall, the City has nearly achieved the I/I reduction goal imposed under the CDO. A list of projects completed and those scheduled to be undertaken is shown in Table 3.

➤ **Recent Capital Improvement Program Projects**

Under the City's Capital Improvement Program, several areas of the wastewater collection system have been rehabilitated or replaced. In 2003, the City conducted a major inventory of several troublesome lines in the City. This enabled City staff to establish a priority for the replacement of troublesome sewers over the next five years and to estimate the cost of these projects. Following the completion of the study, in the late fall of 2003, existing sewer bonds were refinanced and new revenue bonds were issued, which enabled the City to proceed with several new sewer construction projects. These projects included the replacement of the following sewers: sewers on San Pablo Avenue between the Berkeley City line and Brighton Avenue; sewers between Adams Street and Madison Avenue in the Creekside Park near the Orientation Center for the Blind; and easement sewers between Key Route Boulevard and Pomona Avenue, from Marin Avenue to Washington Avenue. Persistent ground water problems at Marin School and at Cleveland Avenue beneath Interstate 80 were eliminated, and a relief sewer was constructed between Buchanan Street and the trunk sewer at the entrance to Ocean View Park. The repair of the remaining sewers on the east side of Albany Hill, and the rerouting of a problem sewer north of Brighton, are scheduled to be completed under the current program.

The State Regional Water Quality Control Board approved the City's revised collection system Compliance Plan in 1998. A copy of the revised plan is available for review in the Public Works Division office. The approval of the revised plan in 1998 was conditioned upon the City performing flow monitoring, to verify that the City's overall I/I reduction goals were being met.

Focused studies of collection system capacity have been prepared in the intervening decade. These have included a major contract in 2003, which provided for televising the collection system on Albany Hill, on San Pablo Avenue, and in the easement sewers between Key Route Blvd and Pomona Avenue, and a smoke testing a major portion of the sewer system tributary to Buchanan Street in 2006.

**Sewer Construction Contracts
1996-2006**

Const. Compl.	Project Name	City Contract No.	File No.	Mainline Length (LF)	Lateral s (LF)	Relief Length (LF)	Rehab Length (LF)	Final Total Cost	Final Sewer Cost	Note
5/6/96	Cleveland Ave. Sewer Relocation	96-01	1995.008.03	439	0	-	439	\$39,511.35	\$39,511.35	
11/1/97	Sewer Rehabilitation Project	97-1	1995.008.43	4776	7350	-	4,776	\$1,038,807.25	\$939,160.59	
12/1/97	Sewer Relocation Project San Pablo Ave., Portland to Solano Ave.	97-19	1995.008.42	1269	531	-	1,269	\$290,908.99	\$290,908.99	
5/8/98	Buchanan St. Sewer Relocation	98-2	1995.008.72	150	100	-	150	\$57,526.75	\$57,526.75	
12/1/98	Solano Ave. Project	98-1	1995.008.61	664	400	-	664	\$2,051,000.00	\$401,322.47	1
10/15/03	Sewer Cleaning, Televising, and Smoke Testing	02-20	2001.026.01	0	0	-	-	\$53,588.50	\$53,588.50	
6/1/03	Solano Ave. SS & SD Improvements	02-21	1999.002.92	2063	1770	-	2,063	\$148,028.00	\$86,549.32	
10/10/05	San Pablo Ave. Sewer Replacement Project	04-04	2001.026.88	4776	1286	-	4,776	\$1,582,694.00	\$1,582,694.00	
5/16/05	Curtis, Sonoma, Gateview	04-12	2001.026.73	664	0	-	664	\$98,914.32	\$98,914.32	
7/15/06	Pierce St. Sewer Rehabilitation	06-04	2004.082.78	405	0	-	405	\$96,113.25	\$96,113.25	
10/1/06	2006 Sewer Project	04-11	2006.033.35	3277	12500	-	3,277	\$812,262.00	\$802,298.34	
12/31/06	Buchanan St. Relief Sewer	06-26	2006.033.34	362	0	362	-	\$136,805.24	\$136,188.39	
	TOTAL			18,845	23,937	362	18,483		\$4,584,776	

Notes:
1 Used Bid Price; Final Contract Amount Not Available

Table 3- Compliance Plan Projects

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These studies will continue to be performed and will focus on areas downstream of infill projects or on projects with extraordinary discharge capacity. In addition, ongoing capacity evaluations will be made for aging lines where capacity has been reduced by offset joints, root intrusion, structural failures, or increased coefficients of friction. These focused evaluations will concentrate on how much capacity-related capital improvement work is necessary during the 5-year Capital Improvement Program (CIP) cycle.

Since 1998, Compliance Plan rehabilitation and relief sewer projects reduced rainfall derived infiltration and inflow, thereby creating additional capacity in the system for sanitary sewage. Although some early grant funding was provided in the late 1980s, sewer service charge revenues largely funded these projects.

The City's Capacity Assurance Plan of the SSMP is a logical extension of the 1998 Compliance Plan. The CIP builds on the original Compliance Plan, which was capacity-based. It addresses addressing aging infrastructure issues in addition to hydraulic capacity.

Video inspection by closed circuit television (CCTV) is a significant tool in performing capacity assessment. This serves as a guide for the City to prioritize sewers for rehabilitation. The information will be assessed using the NASSCO Pipeline Assessment video inspection system, rating the condition of the collection system, prioritizing projects and ultimately for development of the City's CIP. The City is in the process of implementing its 5-year CIP, which meets the criteria for a System Capacity Assurance Plan. A summary of 5-year CIP projects, including a priority ranking, is included in Table 4.

ELEMENT 9 – MONITORING, MEASUREMENT & PROGRAM MODS

This section of the SSMP discusses how the City monitors implementation of the SSMP elements and measures the effectiveness of SSMP elements in reducing SSOs. Performance indicators have been selected to meet the SSMP goals of the City.

9-1 Performance Indicators

The City will use the following performance indicators to evaluate the effectiveness of its SSMP on an annual basis.

- Number of SSOs in the past 12 months (dry and wet weather)
- Volume distribution of SSOs (number <100 gallons, 100-999 gallons, 1000-9999 gallons, >10000 gallons)
- SSOs by cause (roots, grease, debris, pipe failure, pump station failure, capacity, other)
- Average response time for SSOs
- Number of SSO events per year that reach surface waters
- Pipe televising rate currently proposed for five miles/year
- Pipe replacement rate currently proposed for once per 70 years (one half mile per year)
- Pipe maintenance rate currently proposed for once per five years

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Collection System Project	Priority	Budget Year	Budget	Criteria for Inclusion (See Notes)	Complete
P46 Madison Adams Easement	1	2006-07	\$530,000	1	x
P47 Pomona Key Route Easement	2	2006-07	\$534,000	1	x
P52 Cleveland Ave. / I80	3	2006-07	\$137,000	1	x
P53 Polk Buchan Relief Sewer	4	2006-07	\$211,000	2	x
P49 East Albany Hill	5	2007-08	\$2,030,000	1, 2	
P58 Madison Polk Rehab	6	2008-09	\$241,000	1	
P48 North of Brighton Easement	7	2009-10	\$525,000	3	
P20 Masonic Marin to Washington	8	2010-11	\$500,000	1	
P20 West Side of Albany Hill	9	2011-12	\$500,000	1	
P20 Solano Ave. Masonic to Ventura	10	20112-13	\$500,000	1	

Notes:

1. Life Cycle or Anticipated Failure
2. SSO related / Mainline Overflow or Backup
3. Maintenance Issues
4. Future Growth Issues
5. Capacity Related

TABLE 4 – 5 YEAR CIP PROJECTS WITH PRIORITIZATION

As these annual self-evaluations occur, the City will review the performance indicators it has selected and add or subtract them based on the information reviewed and the available budget, as documented under Element 6.

9-2 System of Updating SSMP

The SSMP will be updated if significant program modifications are made. The City has assigned the Public Works Manager the responsibility of periodically reviewing and updating the SSMP to check effectiveness and timeliness. This check may include solicitation of peer review by other collection system agencies.

ELEMENT 10 – SSMP AUDITS

The City will conduct an annual audit of the SSMP and report it to the Regional Water Quality Control Board, as part of its annual report of sanitary sewer system overflows, submitting it each year by March 15.

The audit report will contain several elements. Implementation of the most recent version of the SSMP will be summarized. Information collected as part of Element 9 above will be used to prepare the annual audit. Performance indicators will be reviewed and analyzed to report on the City's success in meeting its numeric targets for SSMP implementation over the previous calendar year. Information on the effectiveness of the implementation will also be provided, to allow a critical review of the City's expenditures on system rehabilitation and improvement.

Long-term trends will become evident as the annual reports are compiled year after year. Overflows and their causes will be tracked and the trends of these events in specific areas of the City will be documented over time through the annual audit exercise.

The audit report will also include a description of the additions and improvements planned for the upcoming reporting year, with an estimated schedule of implementation. This audit report will be an expansion of the existing annual report to the Regional Water Quality Control Board pertaining to sanitary sewer overflows.

Key issues to be reviewed in the annual audit will include review of additions and improvements made in the previous year and whether targets were achieved. The City will review whether fiscal resources were spent according to goals set forth in the previous year's work plan. Televising of the system will be reported and evaluated as to whether the targeted amount of condition assessment (in miles) has been achieved.

ELEMENT 11 – COMMUNICATION PROGRAM

The City is known both locally and regionally for its upper lateral compliance program, which was one of the first to be implemented in northern California. The compliance program, and the SSMP in general, is anchored in the City's advanced network of community outreach. In order

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for the upper lateral program to succeed, extensive communication with residents, real estate and title company professionals, and sewer contractors is required. The City also provides outreach activities and events to schools, community groups, other public agencies, and to its ratepayers. In addition, City representatives actively participate in industry professional groups and associations that pursue statewide legislative action.

The City newsletter includes articles and messages to homeowners about sewage backup issues, overflows, fats, oils and greases (FOG) and prevention of SSOs, in addition to its regular discussions about pollution prevention. The EBMUD FOG program provides ongoing communications to FSEs regarding FOG. The City mailed a notice to all residents prior to raising sewer rates to fund the SSMP, as budgeted under Element 6: “Measures and Activities: Resources and Budget.”

The City’s website at www.albanyca.org provides the community with information regarding sewer improvement projects, educational materials, FOG and other issues. The website includes links to its Mission Statement, City Council and to its Newsletter.

The City also participates in the Technical Advisory Board (TAB) for the East Bay Infiltration/Inflow (I/I) Correction Program. The TAB provides assistance to EBMUD in sanitary sewer issues that are of a regional concern (e.g. FOG and SSOs caused by rainfall derived I/I).

The City hosts a booth annually at the Solano Stroll, the largest street fair in the East Bay. Information regarding FOG prevention, SSOs, upper lateral compliance, and preventing hazardous materials from entering the City’s sanitary system is distributed to the public. The City will continue to hold events to educate the public on the goals and implementation of its SSMP.

Prior to conducting rehabilitation projects in backyard easements, the City staff meets with property owners to inform them about the trenchless pipe installation methods and backwater overflow prevention devices.

The City has, and will continue, to develop information for dissemination to local plumbers and contractors, as a guide to proper installation of sewer laterals and to ensure that plumbing practices are not exacerbating blockage issues in sewer mains or contributing infiltration/inflow to the sewer system. Flyers are available at the City for review. The City maintains literature describing backwater overflow devices and backflow prevention devices in the Community Development office. Information on these devices is also available on the City’s website.

The City is pursuing participation in region-wide plumber outreach activities coordinated by BACWA.

City will attend the Sewer Smart Summit produced by the Association of Bay Area Governments (ABAG) and references this resource on the City website.