



Anatomy of a Sewer System Management Plan (SSMP)

July 24, 2008
SSMP Training
Art O'Brien
Wastewater Utility Manager



Acknowledgements

- City of Roseville
 - Mark Cossairt: WWC Superintendent
 - Chris Bracco: WWC Supervisor
- Patrick Hassey

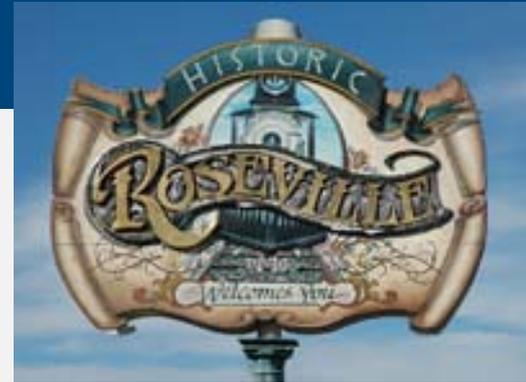
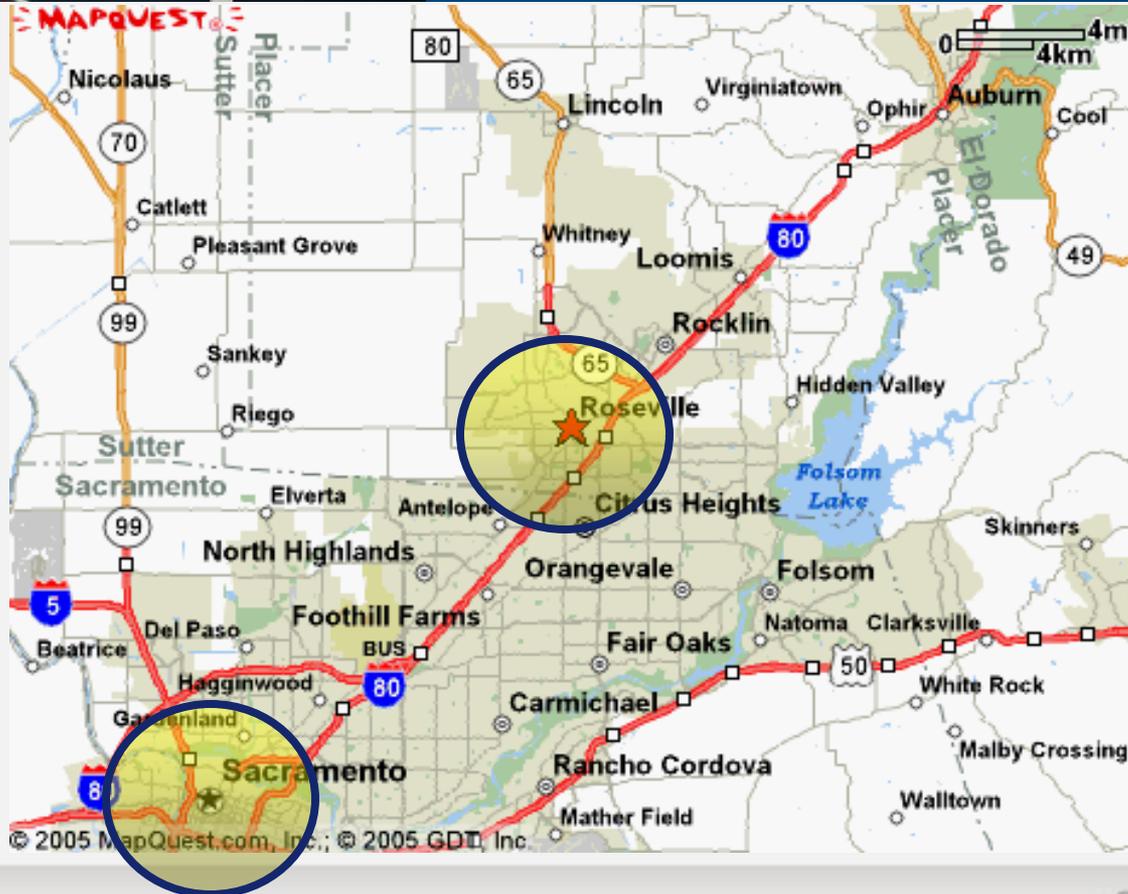
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Outline

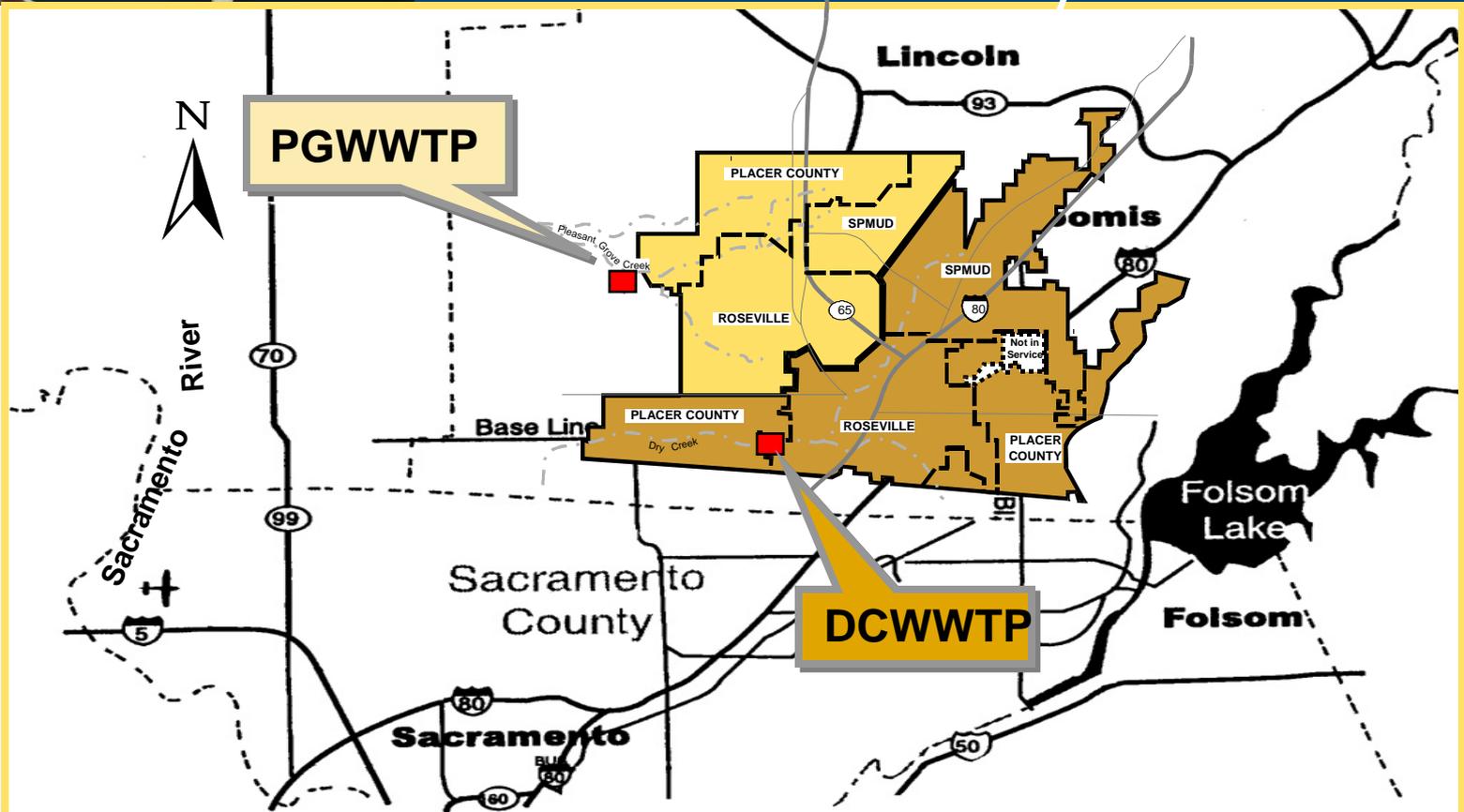
- Background
- Regulatory Review
- Two Step Approach
- SSMP Components
- Summary and Conclusions

Where's Roseville?





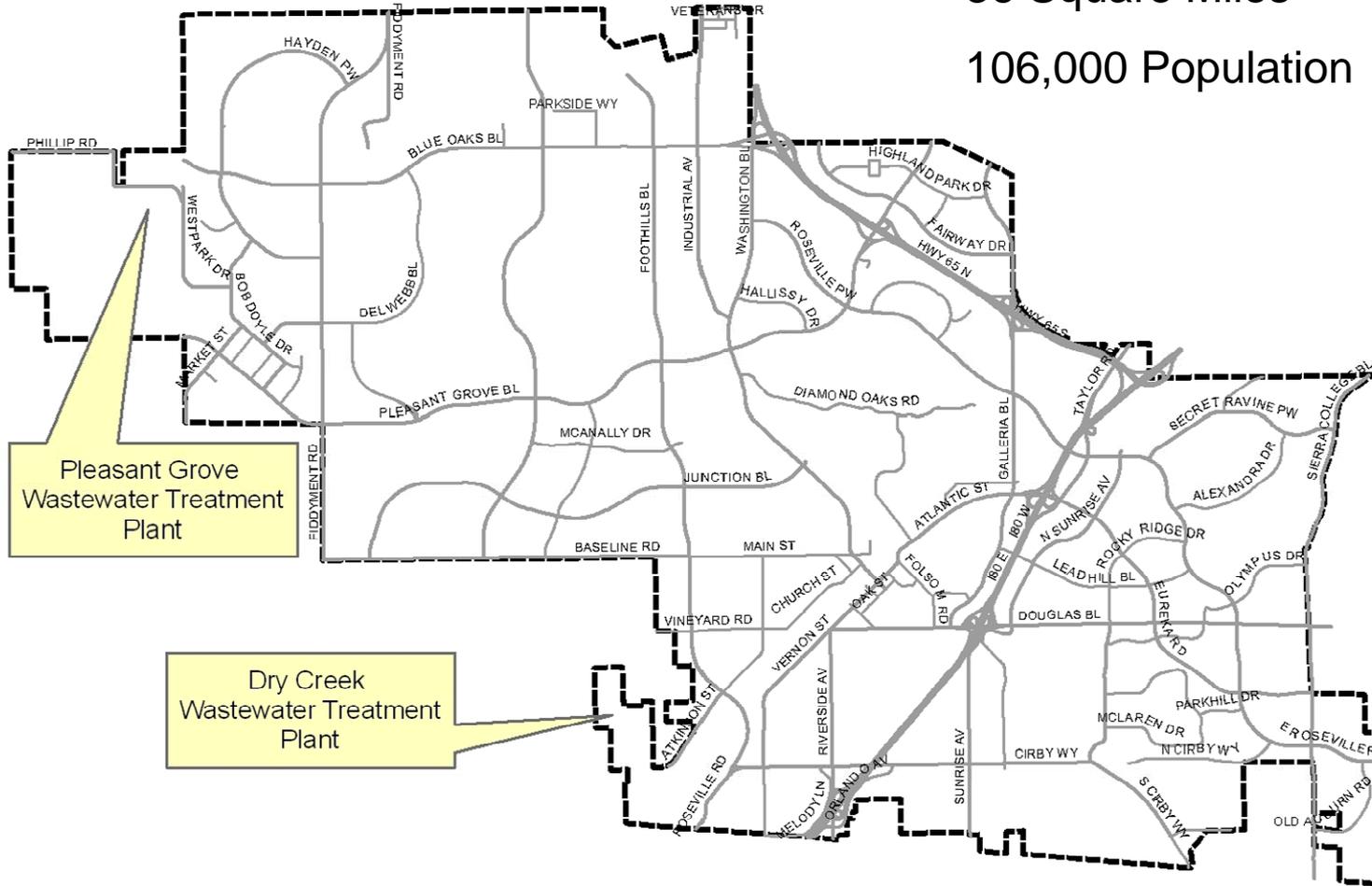
Regional Wastewater Treatment System



City of Roseville Service Area

36 Square Miles

106,000 Population





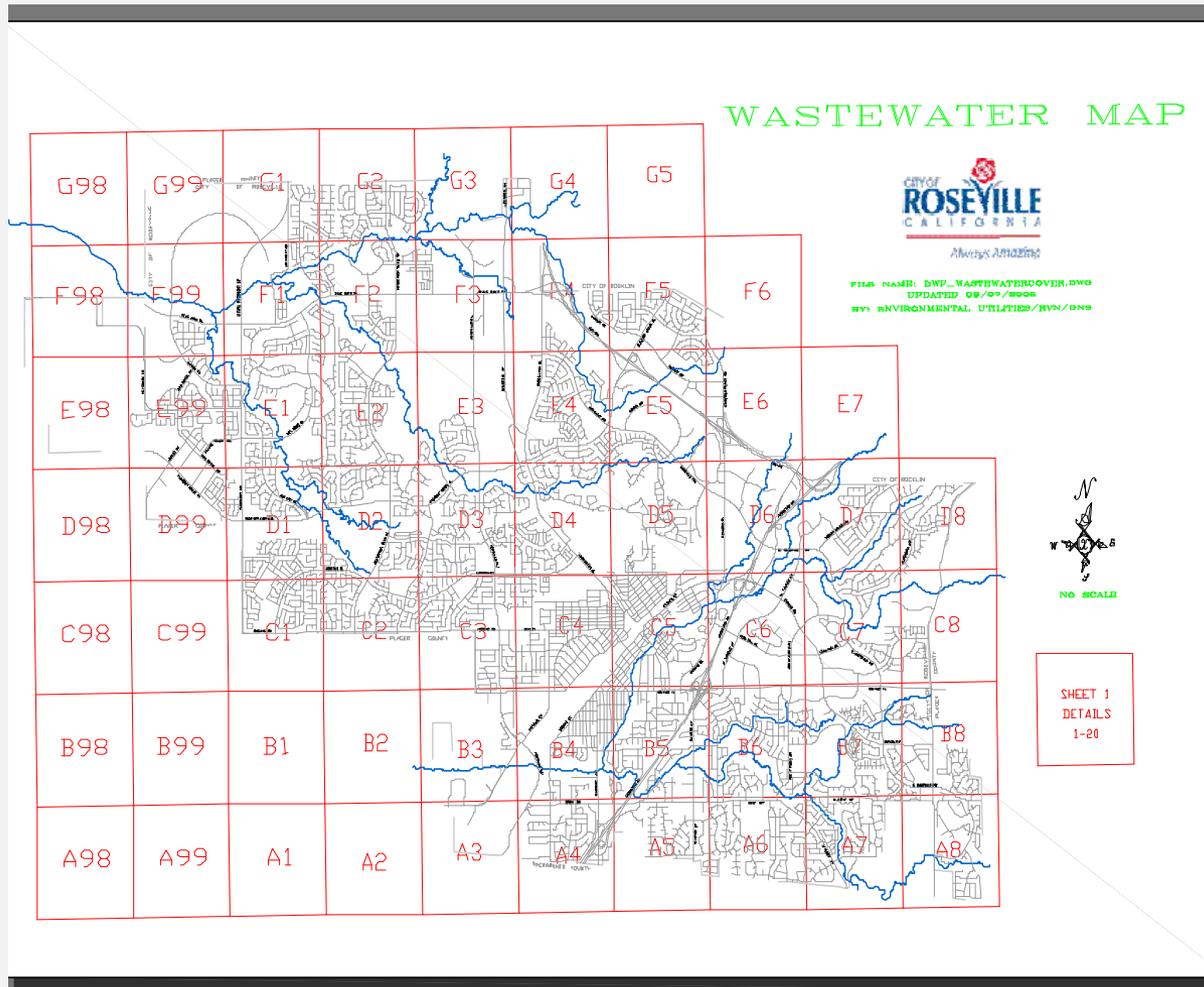
Roseville



- Railroad settlement in 1874
- Incorporated City in 1909
- 71,000 workforce
- 5700 businesses
- Medium Sized City
- Current rates: \$26.50/month



Wastewater Map





WWC System

- 800 miles of pipe
- 4 to 72 inches in diameter
- 10,000 manholes
- 14 neighborhood lift stations



Regulatory Review: Remember CMOM?

- Capacity, Management, Operations & Maintenance
- EPA Conceptualized in 2001
- Better manage, operate, and maintain collection systems
- Investigate capacity constrained areas of the collection system
- Respond to sanitary sewer overflow (SSO) events



Regulatory Review: Remember CMOM?

CMOM Program Components

- Identify program goals.
- Identify administrative and maintenance functions.
- Identify reporting requirements for SSOs.
- Identify legal authorities.
- Meet the performance standards.
- Provide design and performance provisions.
- Monitor program implementation.
- Measure program effectiveness.



Regulatory Review: Enter-Waste Discharge Requirements

WDR Order No 2006-0003 issued in May 2006 from the State Water Resources Control Board:

- Provides enhances protection for public health and recreational waters.
- Requires more rigorous sanitary sewer overflow (SSO) reporting.
- Requires development of a Sewer System Management Plan (SSMP).
- Sets compliance schedules.
- Inform, Educate, Communicate and Keep Public Updated



Sewer System Management Plan (SSMP) Objectives

- Reduce number and quantity of SSOs
- Comply with notification and reporting requirements
- Ensure proper funding and management of sewer systems
- Available to the public
- Approved by Governing Board at a public meeting



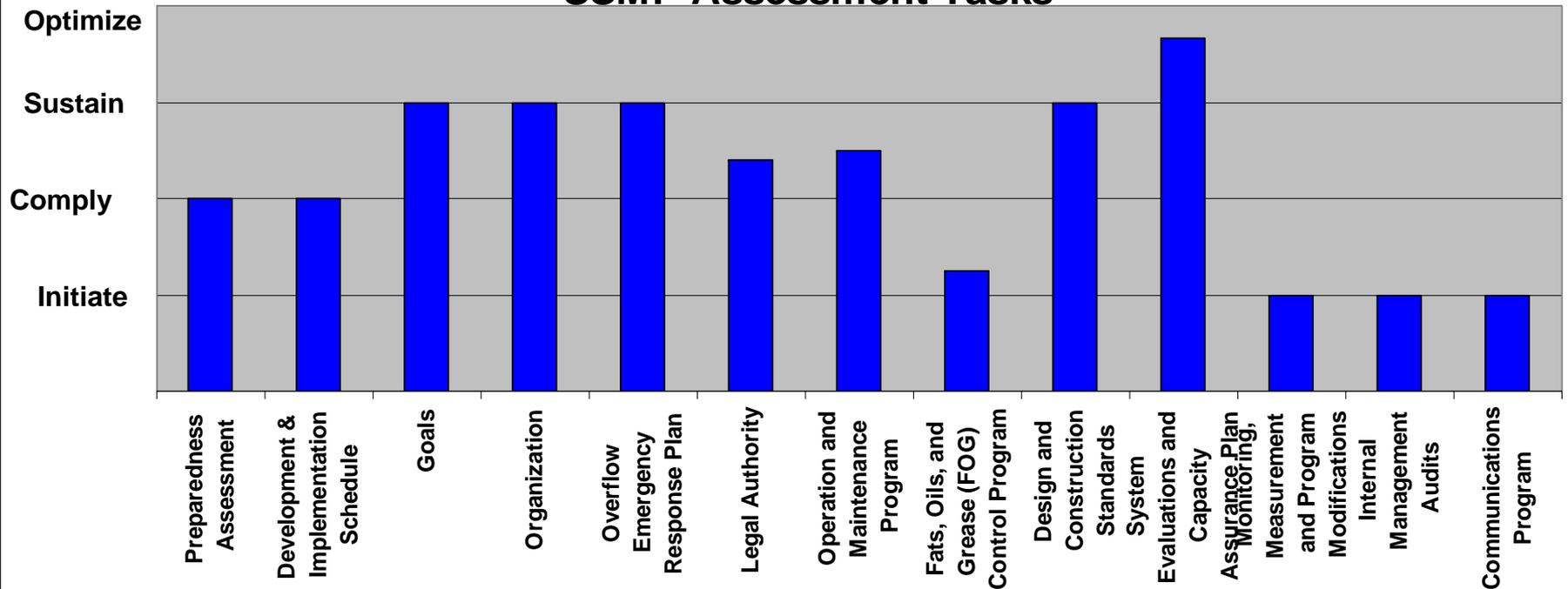
Two Step Approach

- **Initial Assessment**
 - December 2005
- **SSMP Development**
 - June 2006 to June 2007

Initial Assessment



SSMP Assessment Tasks





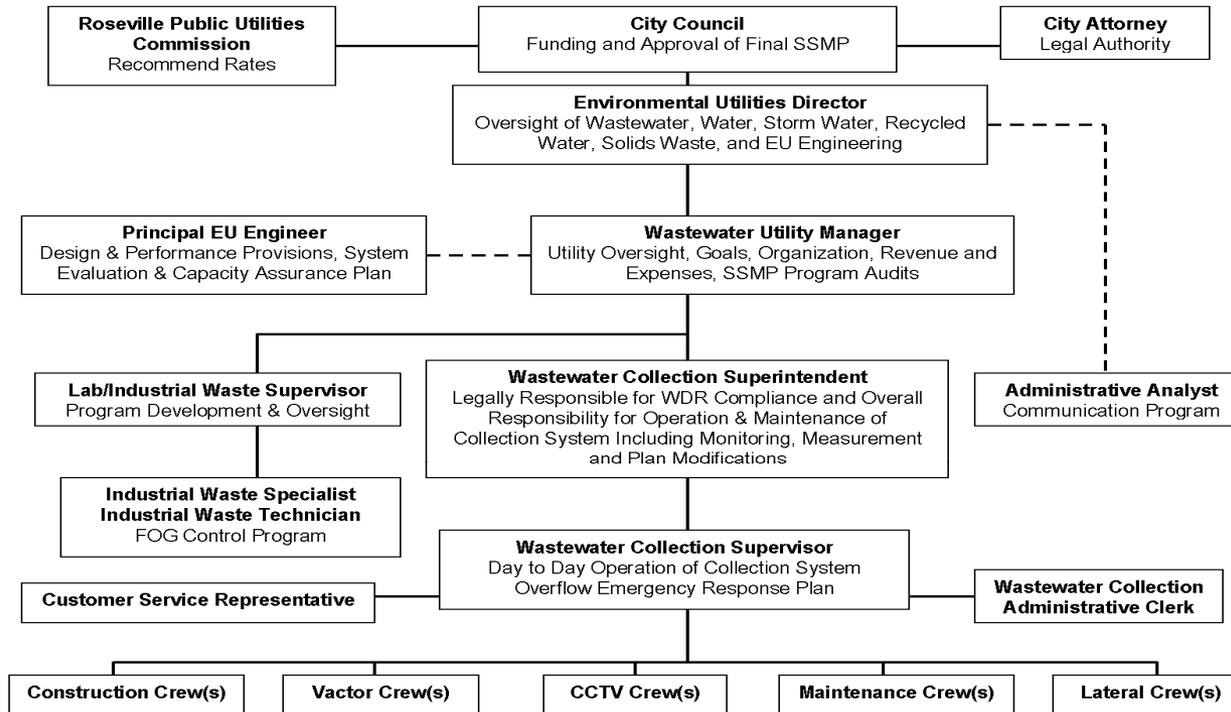
Key Components of SSMP

- Organizational Structure
- Legal Authority
- O&M Program
- Design and Construction standards
- Emergency Response
- Fat, Oils and Grease (FOG) control
- Capacity Assurance
- Performance Measures
- Self Audit Program
- Communication Program



Organizational Structure

City of Roseville





Legal Authority

- Industrial Pretreatment Program
- Roseville Municipal Code
- Regional Operations Agreement

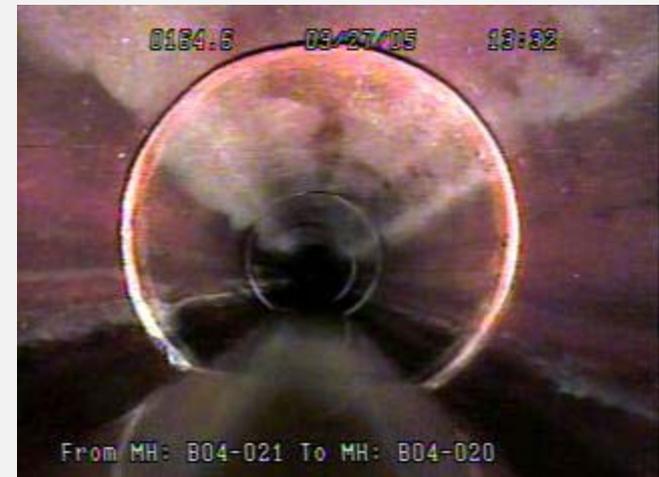


O&M Program



Clean 300 miles per year
Clean about 1700 feet/day

Inspect 75 miles per year





Design and Construction Standards



Emergency Response



Contact & Notify



Contain



Clean Up

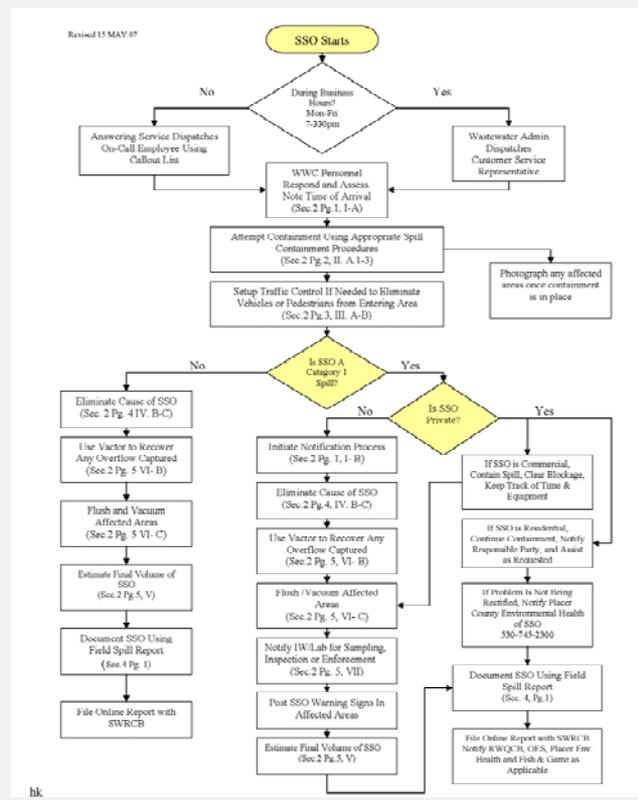


Calculate & Notify





Emergency Response



hk



FOG Control Program

- Most of FOG issues in City come from Food Service Establishments (FSEs)
- Working on an outreach program to FSEs
- Significant code changes needed
- Permit and fee for each FSE
- Enforcement Authority: noncompliance notices and fines
- Residence outreach has begun with support from Solid Waste Utility



System Evaluation and Capacity Assurance Plan

- Evaluate conditions contributing or causing SSO
- Prepare CIP to correct hydraulic deficiencies

Condition
Assessment

Hydraulic
Modeling



System Evaluation

Capacity Assurance



Condition Assessment-Rehab and Replacement

- Late 1990's No policy, just arbitrary contribution
- Started Rehab Program in August, 2000
- Goals:
 - Meet unexpected financial needs from failures
 - Smooth rate impacts due to R&R needs
 - Develop an analytical tool to determine funding levels
 - Pre-Fund future R&R needs to minimize debt financing



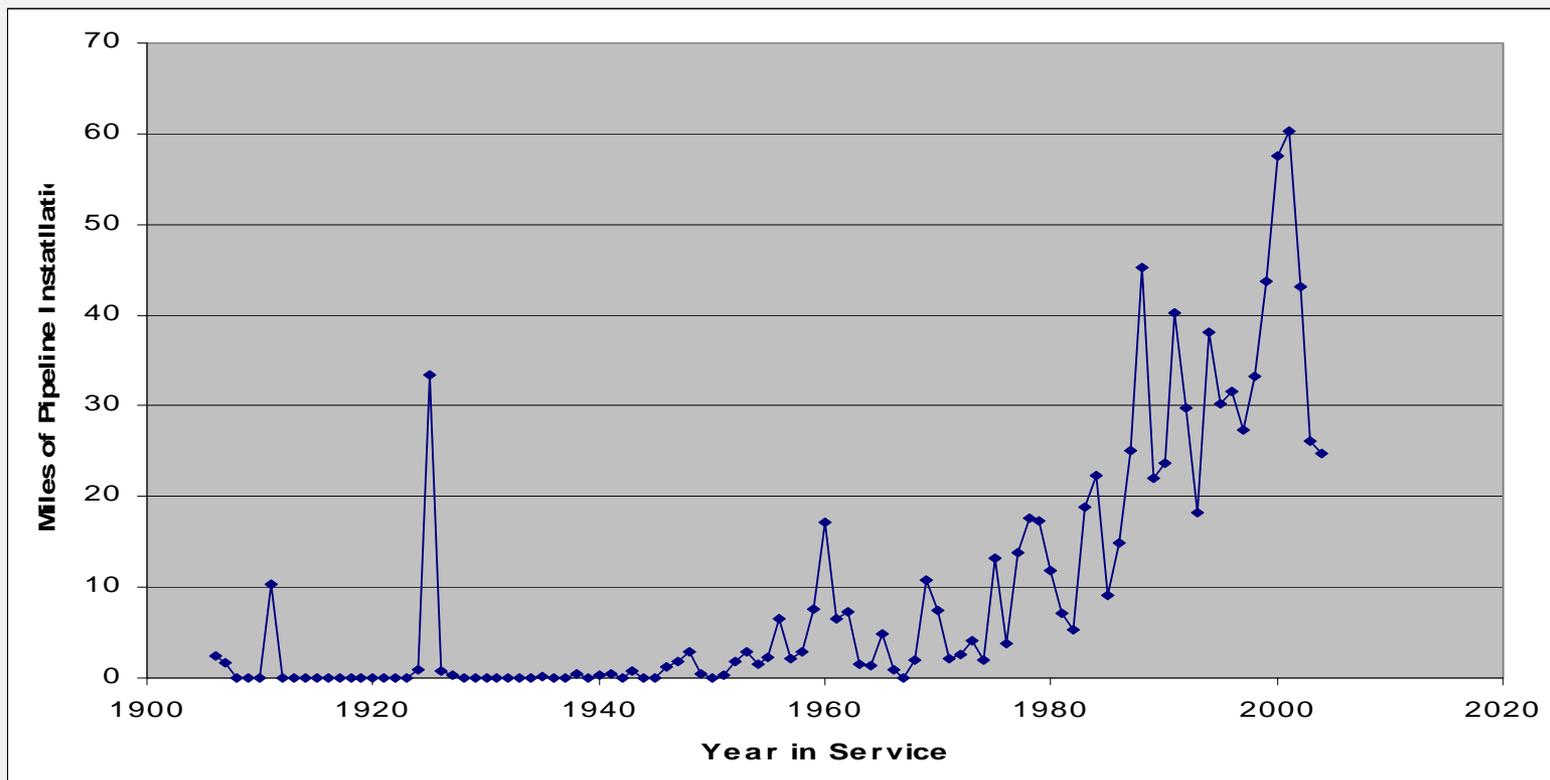
Condition Assessment-Rehab and Replacement

Five Key Goals

- Visual inspection methods using city staff
- Uniform criteria for rating condition
- Recommendations using latest technology
- Interface with CMMS database
- Benchmark / Legacy methodology for condition assessment and planning



Condition Assessment-Rehab and Replacement





Condition Assessment-Rehab and Replacement

Criticality	5	Green	Yellow	Orange	Red	Red
	4	Green	Yellow	Orange	Red	Red
	3	Blue	Green	Yellow	Orange	Red
	2	Blue	Green	Yellow	Orange	Red
	1	Blue	Blue	Green	Yellow	Red
		1	2	3	4	5
	Probability					

- Pre 1980 complete
- More than 174 miles
- Criticality Ranking
- Completed more than 60 Emergency repairs
- Currently in our first contract dig and replace

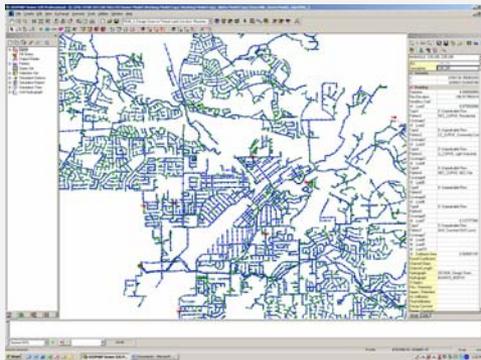
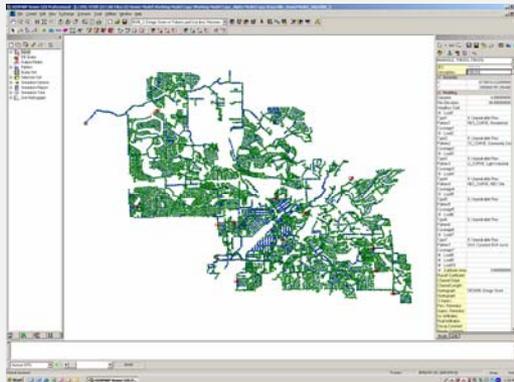




Condition Assessment- Lessons Learned

- Prepare Schedule – anticipate what will happen
- Devote time early
 - Inspection Software
 - Defect Coding Protocol
 - Training
- Engage the ownership of field staff
- Be flexible

Capacity Assurance



Capacity Modeling

- H2O SewerMap
- Semi-dynamic Model
- Modeled 6" to 78"



Performance Measures

City of Roseville						
Mark Cossairt						
1800 Booth Rd		Unit	Fiscal Year			
	Metric Description		05/06	06/07	07/08	08/09
						09/10
A 1	System length - Gravity/Force Mains/Service lines	miles/miles	744			
A 2	Service Area	Square miles	30	30		
A 3	Population	People	110,000	110000	108000	
A 3	# Maintenance Holes	MHs	9306	9854		
A 4	# Pumping Stations (PS)/Lift Stations	Stations	14	14		
A 5	8-inches > Sewers, 8 inch	Miles	354			
A 6	8-inches <Sewers < 15-inches	Miles	56			
A 7	15-inches <Sewers < 21-inches	Miles	28			
A 8	Sewers > 21-inches >42 inch	Miles	44			
A 9	Average (Mean) age of system	Years	26	26		
A 10	Number of permanent flow meters/monitors?	Meters	0	0		
A 11	Total number of locations metered annually?	Locations	0	0		
	Collection System Operations Budget					
B 1	Total annual operational O&M Budget	\$ Millions	2.9	2.9		
B 2	Sewer O&M budget as % of Annual	%	36	36		
B 3	Pump Plants O&M budget as % of Annual	%	3.4	3.4		
B 4	Total annual capital budget for sewers	\$ Millions	4	4		
B 5	% capital budget for Sewer Rehab	%	25	25		
B 6	% capital budget for Pumping Stations	%	3	3		
B 7	Sewer monthly fee for residential household	\$	23	23		



Performance Measures

C	1	Total miles cleaned per year	miles	252.33	218		
C	2	Total miles visually inspected /yr (not CCTV)	miles	0			
C	3	Total miles treated with chemicals for roots/year	miles	0.14 *			
C	4	Total miles of mechanical root control	miles	2.94 *			
C	5	Total miles CCTV inspected per year	miles	33.68 *			
C	6	Total number of sewer maintenance field staff	#	21			
C	7	Average high velocity cleaning per crew per day	feet	1670			
C	8	Average cost of sewer mechanical cleaning	\$/ft Loaded rate	1.47			
C	9	Average cost of chemical root treatment	\$/ft	1.94			
C	10	Average cost of CCTV	\$/ft	0.43			
C	11	Average cost for hot spot hydro cleaning	\$/ft	1.16			
D	1	Total number of spills per year (all spills)	Spills	74 *			
D	2	Total volume of spills per year (all spills)	Gallons	8996 *			
D	3	Total number of wet weather spills per year	Spills	4			
D	4	Total volume of wet weather spills per year	Gallons	2165			
D	5	% Spills caused by FOG and volume	%	75			
D	6	% Spills Caused by Roots and volume	%	24			
D	7	% Spills Caused by Vandalism and volume	%	1			
D	8	% Spills repeated within 2 years	%	0			
D	9	Customer service requests per year	Total # SR	910 *			
D	10	Total number of sewer caused odor complaints	Complaints	26			
D	11	Total # of Lift Station Failures / Yr (cause overflow)	Failures	0			
D	12	Total number of pipe failures / Yr (cause overflow)	Breaks	0			
D	13	Average response time	Minutes	20			
D	14	Number of claims per year, flooding	Claims	14 *			
D	15	Total cost of claims per year	Paid Out	7711.12 *			
D	16	Total work orders performed per year	Work Orders	9140 *			
D	17	% of work orders completed,emergency	% Emerg.	0.00			
D	18	Total miles repaired as emergency per year	miles	0			
D	19	Total miles rehabilitated or replaced per year	miles	0			
D	20	Total new miles constructed per year	miles	5.2 *			
D	21	Total new sewer laterals per year	miles	2.98 *			



Self Audit Program

- Update log
- Annual internal audit-formally



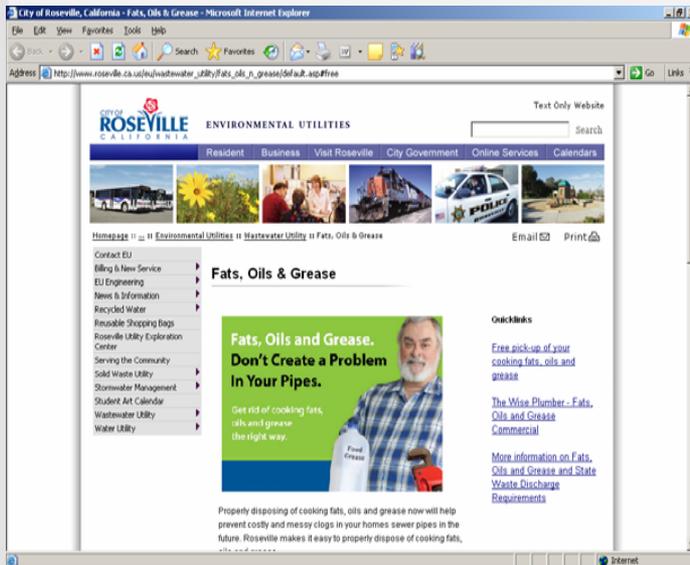
Environmental Utilities
Wastewater Collection

Revision Log

Date	Section	Comments	By
September 18 2007	Appendix A\Attachment C SSMP Implementation Schedu.xls	Updated certification dates	Mark Cossairt
September 18 2007	Appendix F\Appendix F-1\4 SSO Field Report.xls	Updated field reports	Mark Cossairt
March 17 2008	Appendix F\Appendix F-1\3 SSO Notification Guide .doc	Changed notification per new regs	Mark Cossairt
March 17 2008	Appendix F\Appendix F-1\2 SSO Emergency Response Procedures.doc	Changed notification per new regs	Mark Cossairt
March 17 2008	Appendix F\Appendix F-1\6 SSORP Acronyms Terms.doc	Changed definition of category 1 spill	Mark Cossairt



Communication Program



City's web page

EU Today-Bimonthly

**ENVIRONMENTAL UTILITIES
CITY OF ROSEVILLE**
August 2009

Today
WATER - WASTEWATER - RECYCLED WATER - STORMWATER - SOLID WASTE

Q Should I flush old medications down the toilet?
A No, please don't. There are new recommendations for properly disposing of medication to protect our waterways from pharmaceutical pollution.

Most of us were taught to get rid of expired or unused medications by flushing them down the toilet. In recent years, scientists have discovered that's a bad idea for the fish and wildlife that live in and depend on our nation's waterways. Conventional wastewater treatment plants are not capable of removing all traces of medications such as antibiotics, hormones and steroids. Some of these compounds are not completely removed at the wastewater treatment plant and could end up in the local waterways. There is increasing evidence that these compounds are negatively affecting the reproductive capabilities of some fish, amphibians and aquatic invertebrates.

To further safeguard our environment, please consider the following alternatives to flushing expired medications and over-the-counter drugs down the toilet:

1. Take prescription and over-the-counter drugs to the Western Placer Waste Management Authority's Permanent Household Hazardous Waste (HHW) Facility. The HHW facility is located at 3023 Fairmount Road, Roseville and is open Wednesday, Saturday and Sunday from 9 am - 4:00 pm. For more information, call 916-645-5230 ext. 4.
2. Ask your pharmacy about their policy on disposal. In Roseville, pharmacies in national chain stores such as Wal-Mart, Target, and Long's Drugs accept expired medications for disposal. The pharmacies have program in place for proper disposal and will accept medications from their own and other pharmacies. Costco also accepts expired medications from its members.
3. Seal medications tightly with their original childproof caps. Tape them securely, and place them in your trash. In homes with small children and pets, it's a better idea to use option one or two above.

It's a good idea to go through your medicine cabinets once a year to clean out all expired medications. Consider a yearly trip to the HHW Facility by cleaning out medications at the same time you clean out household hazardous waste such as old paint, chemicals and fertilizers.

Recycle!
Get online for the latest drop-off locations for green glass, cardboard, aluminum, newspapers, and hazardous waste.
www.roseville.ca.us/recycle

Utility Rate Adjustment Update
Over 37,000 notices were sent in late May to advise our customers of the July 09th public hearing at which the City Council considered the proposed water, wastewater, and solid waste rate adjustments. Customers should begin to see any adopted rate changes with their October bills. The higher water, wastewater treatment and solid waste collection rates were proposed to City Council to cover costs from rising oil prices, government-mandated programs, increased employee costs, and other recurring mandates. Even with the rate increases, Roseville services remain among the most affordable in the region.
Final rate changes approved by Roseville City Council can be found on our web site at www.roseville.ca.us.



SSMP Implementation Schedule

Action	Compliance Date	Status	Comments
Enrollment	11/2/2006	Complete	
Initiate Electronic Reporting	9/3/2007	Complete	
SSMP Development Plan and Schedule	8/1/2007	Complete	
Goals	11/1/2007	Complete	
Organization	11/1/2007	Complete	
Emergency Response Plan	11/1/2008	Complete	
Legal Authority	11/1/2008	Pending	FOG ordinance to council in September 2008



SSMP Implementation Schedule

Action	Compliance Date	Status	Comments
O&M Program	11/1/2008	Complete	
FOG Control Program	11/0/2008	In Progress	
Design & Construction standards	5/1/2009	Complete	
Capacity Assurance	5/1/2009	Complete	
Performance Measurements	5/1/2009	Complete	
Audits	5/1/2009	Pending	Incorporated near end of SSMP development



SSMP Implementation Schedule

Action	Compliance Date	Status	Comments
Communication Program	5/1/2009	In Progress	Several outreach steps completed
Final SSMP	5/1/2009	Pending	FOG control Program



Current SSO data

- 9 Reportable SSOs in CY 2007
- No Category 1
- 1 mainline and 8 lateral
 - 4-Roots
 - 2-FOG
 - 1-Structural
 - 2-Vandalism



Questions and Closing Remarks

- Thanks for listening and I hope we all get the “knack” for this!

