AGENDA

1960 Elgin Street
Oroville, CA 95966
530-533-2000
www.loapud.com

Board of Directors
Regular Meeting
August 10, 2021 – 2:00 PM

Materials related to an item on the open meeting agenda that are provided to the Board of Directors, including those provided to the Board after distribution of the agenda packet, are available on the District website.

During this difficult time, we invite you to join today's scheduled meeting via Zoom by using your phone or computer to attend this meeting. Please call our District office at **(530)533-2000** for assistance in participating in the teleconference.

Dial in: 1-669-900-9128
Meeting ID: 820 3895 0065
Passcode: 928987

To ensure that our meetings are as orderly as possible, and to enable public participation at the proper times during the meeting, we are asking that everyone take a moment to ensure your line stays muted until public comment is invited. When it comes time for public comment, we will leave enough time for participants to unmute and speak to the entire group and our Board. Because attendees cannot see each other's mute status, we will simply need to be patient as we wait in between comments, and do our best not to speak over each other. Please state your name for the record before sharing comments. We are committed to keeping the public engaged throughout this crisis and appreciate your help in making that happen.

1. **SALUTE TO THE FLAG OF THE UNITED STATES OF AMERICA**

2. **MOMENT OF SILENCE**

3. **ROLL CALL AND ACKNOWLEDGEMENT OF VISITORS**
   Individuals will be provided the opportunity to address the Board regarding matters NOT scheduled on the agenda. No action will be taken by the Board on these matters; however, the Board may ask questions for clarification and refer to staff or other resources for information and request staff reports at a subsequent meeting. Comments on items scheduled on the agenda may be made as they are considered by the Board.

4. **CONSENT AGENDA**
   All items listed under the Consent Agenda are considered routine and will be enacted by one motion unless an item is removed. Consent Agenda items will be read by title only. There will be no separate discussion of these items unless members of the Board or person in the audience request a specific item to be removed from the Consent Agenda to the Regular Agenda for separate discussion, prior to the time the Board votes on the motion to adopt the Consent Agenda. If any item(s) is removed from the Consent Agenda, the item(s) will be considered immediately following action on the Consent Agenda.

4.1 BOARD MEETING MINUTES: REGULAR MEETING JULY 13, 2021
SPECIAL MEETING JULY 22, 2021
4.2 FINANCIAL REPORT MONTH ENDING: JULY 31, 2021
4.3 PAYMENT OF CLAIMS MONTH ENDING: JULY 31, 2021

5. **ITEMS REMOVED FROM THE CONSENT AGENDA (IF ANY)**

6. **DESIGNATION OF HIRING COMMITTEE AS DISTRICT LABOR NEGOTIATOR REGARDING THE UNREPRESENTED POSITION OF GENERAL MANAGER**

The Board will review and consider designating the Hiring Committee as District Labor Negotiator regarding the unrepresented position of General Manager

Discussion with Possible Action

7. **CLOSED SESSION – GOVERNMENT CODE §54957**

7.01 PUBLIC EMPLOYEE PERFORMANCE EVALUATION (Pursuant to Government Code Section 54957)

Title: General Manager

7.02 EMPLOYMENT INTERVIEW (Pursuant to Government Code Section 54957)

Title: General Manager

7.03 EMPLOYMENT INTERVIEW (Pursuant to Government Code Section 54957)

Title: General Manager

7.04 EMPLOYMENT INTERVIEW (Pursuant to Government Code Section 54957)

Title: General Manager

7.05 CONFERENCE WITH DISTRICT LABOR NEGOTIATOR REGARDING THE UNREPRESENTED POSITION OF GENERAL MANAGER (Pursuant to Government Code Section 54957.6)

8. **APPROVAL OF "RESOLUTION NO. 05-2021 KYLE ROBERSON APN 079-090-030 ACCEPTANCE OF SEWERAGE FACILITIES"**

The Board will review and consider accepting "Resolution No. 05-2021 Kyle Roberson APN 079-090-030 Acceptance of Sewerage Facilities".

Discussion with Possible Action

9. **REVIEW OF THE 2021 SEWER SYSTEM MASTER PLAN**

The Board will review the 2021 Sewer System Master Plan as prepared by Sauers Engineering.

10. **REVIEW OF THE 2021 SEWER SYSTEM MANAGEMENT PLAN**

The Board will review the 2021 Sewer System Management Plan as prepared by Sauers Engineering.

REPORTS AND CONSULTATIONS

11. **SC-OR COMMISSIONER'S REPORT**

12. **BCSDA REPRESENTATIVES AND LAFCO REPORT**

13. **BOARD MEMBERS' MANAGER, AND STAFF COMMENTS**

- **FIELD OPERATIONS REPORT**
- **PERSONNEL COMMITTEE REPORT**

14. **ADJOURNMENT**

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 1 – Salute To The Flag Of The United States

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 2 – Moment Of Silence

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 3 – Roll Call And Acknowledgment Of Visitors

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 4 – Consent Agenda

Item No. 4.1 **Board Meeting Minutes** - Minutes from the July 13, 2021 regular board meeting, and July 22, 2021 special meeting are included for the Board's review and approval.

Attachment Included

Item No. 4.2 **Financial Report** - Profit and Loss report through July 31, 2021 is ready for review, comment, and approval.

Attachment Included

Item No. 4.3 **Payment of Claims** - The pending July 31, 2021 Claims and Warrants are attached for review and Board approval for payment.

Attachment Included

UNADOPTED
LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
BOARD OF DIRECTORS REGULAR MEETING
JULY 13, 2021

CALL TO ORDER

President Sharman called the meeting to order at 2:00 P.M. Directors present were Fairbanks, Marciniak, Mastelotto and Salvucci. District Engineer Knibb, General Manager (GM) McCutcheon, and Clerk of the Board Hamblin represented the District.

SALUTE TO THE FLAG

Director Salvucci led the meeting with the salute to the flag.

MOMENT OF SILENCE

President Sharman asked the Board to observe a moment of silence.

CONSENT AGENDA

The Board reviewed the minutes of the Regular Board Meeting of June 8, 2021, the Financial Reports and the Claims List for month ending June 30, 2021. After discussion, it was moved by Director Fairbanks and seconded by Director Marciniak that the items on the consent agenda be approved as presented. The motion passed with the following roll call vote:

Ayes: Directors Fairbanks, Marciniak, Mastelotto, Salvucci and Sharman.

UPDATE ON THE DISTRICT'S RESPONSE TO THE COVID19 PANDEMIC

GM McCutcheon updated the Board on the District's current status of the COVID19 pandemic. Director Mastelotto stated that she was in favor of leaving the office lobby closed due to a projected surge in positive cases of the COVID19 virus. After discussion it was concluded that the office lobby should remain closed until further notice.

APPOINTMENT OF TWO DIRECTORS TO SERVE ON THE GENERAL MANAGER HIRING COMMITTEE

GM McCutcheon requested that President Sharman appoint two Directors to serve on an Ad Hoc committee to lead the search for the position of General Manager. After discussion, President Sharman appointed Director Marciniak and Director Mastelotto along with GM McCutcheon to serve on the General Manager Hiring Committee.

APPROVAL OF BOARD POLICY NO. 2130 – "PAY PERIODS"

After discussion, it was moved by President Fairbanks and seconded by Director Marciniak to waive the requirement to review the requested amendment at a prior Board Meeting and approve the amended Board Policy No. 2130 – "Pay Periods" The motion passed with the following roll call vote:

Ayes: Directors Fairbanks, Marciniak, Mastelotto, Salvucci and Sharman.

SC-OR COMMISSIONERS' REPORT

Director Mastelotto stated that she scheduled a tour of the SC-OR Facility for Thursday July 15, 2021 at 11:15 A.M. and invited any interested parties to attend.

BCSDA REPRESENTATIVES AND LAFCo REPORT

No report given.

REVIEW OF THE QUARTERLY INVESTMENT SUMMARY AND CASH FLOW ANALYSIS

GM McCutcheon presented the Quarterly Investment Summary and Cash Flow Analysis and updated the Board on the new accounting system. GM McCutcheon requested the Board's input on determining what reports from our new accounting system the Board feels would be beneficial for the quarterly review.

BOARD MEMBERS', MANAGER AND STAFF COMMENTS

The Personnel Committee stated that they met in June and have begun the review of the current Board Policy – Series 2000.

GM McCutcheon presented a note the District received from a customer regarding a "job well done" by our field crew.

ADJOURNMENT

There being no further business to come before the Board the meeting was adjourned at 2:40 P.M.

Respectfully submitted,

Kelly Hamblin,
Clerk of the Board

UNADOPTED
LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
JULY 22, 2021

CALL TO ORDER

President Sharman called the meeting to order at 3:00 P.M. Directors present were Fairbanks, Marciniak, Mastelotto and Salvucci. District Engineer Knibb and General Manager (GM) McCutcheon represented the District. Guests Mike Nelson of LACO, Shawn Rosner and Jeff Glatz of W & R Wedgewood attended via Zoom.

SALUTE TO THE FLAG

Director Mastelotto led the meeting with the salute to the flag.

MOMENT OF SILENCE

President Sharman asked the Board to observe a moment of silence.

APPROVAL OF IMPROVEMENT PLANS FOR THE OPHIR LINCOLN LIFT STATION AND FORCE MAIN AND CONSIDER THE EXECUTION OF THE DEVELOPMENT AGREEMENT AND THE REIMBURSEMENT AGREEMENT FOR OPHIR LINCOLN FORCE MAIN AND LIFT STATION

After discussion it was moved by Director Fairbanks and seconded by Director Mastelotto to Approve and Authorize the District Engineer and the General Manager to Sign as 'Approved for Construction' the Improvement Plans for Ophir Lincoln Lift Station and Force Main and Authorize the President of the Board of Directors of Lake Oroville Area Public Utility District to Execute the Development Agreement and Reimbursement Agreement for Ophir Lincoln Force Main and Lift Station. The motion passed with the following roll call vote:

Ayes: Directors Fairbanks, Marciniak, Mastelotto, Salvucci and Sharman.

ADJOURNMENT

There being no further business to come before the Board the meeting was adjourned at 3:26 P.M.

Respectfully submitted,

Scott McCutcheon
General Manager, LOAPUD

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
Income Statement
For the Accounting Period: 7 / 21

Combined Funds

Account	Object	Description	Current Year Current Month	Current Year Current YTD	Budget	Variance	%
Revenue							
	41100	Sewer Service Charge			1,592,439.00	-1,592,439.00	
	41150	Pumping Charge			127,322.00	-127,322.00	
	41200	Kelly Ridge Pumping Chg (Taxes)	3,044.25	3,044.25	45,000.00	-41,955.75	7
		Total Revenue	**3,044.25**	**3,044.25**	**1,764,761.00**	**-1,761,716.75**	
Expenses							
51000		Administration					
	60100	Salaries & Wages	18,194.22	18,194.22	249,062.00	230,867.78	7
	60200	Sick Time Buy Back			3,000.00	3,000.00	
	62100	Health Insurance	4,902.58	4,902.58	72,279.00	67,376.42	7
	62150	HSA PAYABLE	833.32	833.32		-833.32	
	62200	Dental Insurance	302.16	302.16	3,802.00	3,499.84	8
	62250	Life Insurance	32.86	32.86	462.00	429.14	7
	62300	Vision Insurance	253.00	253.00	3,003.00	2,750.00	8
	62400	Deferred Comp 457	363.88	363.88	4,981.00	4,617.12	7
	62450	CALPERS Contribution	14,003.68	14,003.68	84,575.00	70,571.32	17
	62500	Workers Comp Ins.	289.44	289.44	4,572.00	4,282.56	6
	62550	Payroll Taxes/Ins.	1,377.43	1,377.43	20,864.00	19,486.57	7
	65100	Office Utilities	-481.51	-481.51		481.51	
	66150	Office Equipment	344.31	344.31		-344.31	
		Total Account	**40,415.37**	**40,415.37**	**446,600.00**	**406,184.63**	**9**
51100		Director					
	60100	Salaries & Wages	2,000.00	2,000.00	24,000.00	22,000.00	8
	62300	Vision Insurance			5,000.00	5,000.00	
	62550	Payroll Taxes/Ins.	185.00	185.00	1,836.00	1,651.00	10
		Total Account	**2,185.00**	**2,185.00**	**30,836.00**	**28,651.00**	**7**
57000		General Operating					
	64100	Engineering Services	11,947.50	11,947.50	60,000.00	48,052.50	20
	64150	Legal Services	352.00	352.00	36,000.00	35,648.00	1
	64200	Accounting/Audit Services			20,400.00	20,400.00	
	64250	Insurance	3,705.58	3,705.58	44,600.00	40,894.42	8
	64300	Software Maintenance & Tech Support	3,749.95	3,749.95	44,400.00	40,650.05	8
	65100	Office Utilities	1,555.51	1,555.51	19,465.00	17,909.49	8
	65150	Shop/Yard Utilities	23.03	23.03	10,380.00	10,356.97	
	66100	Office Supplies			18,000.00	18,000.00	
	66150	Office Equipment	176.06	176.06	33,000.00	32,823.94	1
	66200	Building & Yard Repairs / Maintenance			13,000.00	13,000.00	
	66250	Small Tools & Consumables	18.38	18.38	22,700.00	22,681.62	
	66350	Outside services	605.78	605.78	12,000.00	11,394.22	5
	67100	Education & Training			12,000.00	12,000.00	
	67150	Membership/Subscriptions	1,120.34	1,120.34	9,900.00	8,779.66	11

Combined Funds

Account	Object	Description	Current Year Current Month	Current Year Current YTD	Budget	Variance	%
	67200	Permits & Licenses	362.60	362.60	14,150.00	13,787.40	3
	67250	Travel, Meals & Entertainment			3,000.00	3,000.00	
	67300	Elections			5,000.00	5,000.00	
	67350	Bank Fees			10,800.00	10,800.00	
	67400	Safety Training			12,000.00	12,000.00	
	67450	Environmental			3,050.00	3,050.00	
	67500	Permits	7.50	7.50		-7.50	
	67550	LAFCo Operating Fees	1,488.32	1,488.32	2,400.00	911.68	62
		Total Account	**25,112.55**	**25,112.55**	**406,245.00**	**381,132.45**	**6**
58000		Field					
	60100	Salaries & Wages	23,406.28	23,406.28	353,683.00	330,276.72	7
	60200	Sick Time Buy Back			3,000.00	3,000.00	
	61150	Standby Wages	475.00	475.00	6,525.00	6,050.00	7
	61200	Regular Overtime Wages			17,887.00	17,887.00	
	61250	Call-Out Overtime Wages			7,680.00	7,680.00	
	62100	Health Insurance	1,656.95	1,656.95	76,101.00	74,444.05	2
	62150	HSA PAYABLE	624.99	624.99	12,500.00	11,875.01	5
	62200	Dental Insurance	140.82	140.82	8,332.00	8,191.18	2
	62250	Life Insurance	27.08	27.08	901.00	873.92	3
	62300	Vision Insurance	1,153.71	1,153.71	6,006.00	4,852.29	19
	62400	Deferred Comp 457	477.63	477.63	7,573.00	7,095.37	6
	62450	CALPERS Contribution	1,570.72	1,570.72	125,669.00	124,098.28	1
	62500	Workers Comp Ins.	2,341.89	2,341.89	37,210.00	34,868.11	6
	62550	Payroll Taxes/Ins.	1,929.01	1,929.01	35,507.00	33,577.99	5
	63500	Boots and Uniforms			5,700.00	5,700.00	
	64300	Software Maintenance & Tech Support	3,980.00	3,980.00		-3,980.00	
	65175	PUMP STATION UTILITIES	615.06	615.06	69,340.00	68,724.94	1
	66200	Building & Yard Repairs / Maintenance	55.16	55.16		-55.16	
	66300	Safety Supplies			6,000.00	6,000.00	
	66350	Outside services	491.35	491.35		-491.35	
	67200	Permits & Licenses	3,206.00	3,206.00		-3,206.00	
	68100	Routine Operations & Maintenance - Sewer System	1,929.51	1,929.51	9,000.00	7,070.49	21
	68125	REPAIRS AND MAINTENANCE ON PUMP STATIONS	58.44	58.44	69,415.00	69,356.56	
	69100	Diesel Fuel			22,680.00	22,680.00	
	69150	Gasoline			15,120.00	15,120.00	
	69200	Oils & Grease			1,800.00	1,800.00	
	69250	Heavy Equipment Repairs & Maintenance			13,000.00	13,000.00	
	69300	Auto Repairs & Maintenance	387.49	387.49	12,900.00	12,512.51	3
		Total Account	**44,527.09**	**44,527.09**	**923,529.00**	**879,001.91**	**5**
		Total Expenses	**112,240.01**	**112,240.01**	**1,807,210.00**	**1,694,969.99**	**6**
		Net Income from Operations	-109,195.76	-109,195.76			

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
Income Statement
For the Accounting Period: 7 / 21

Combined Funds

Account Object	Description	Current Year Current Month	Current YTD	Budget	Variance	%
Other Revenue						
47150	Sewer Service Late Fees	-49.46	-49.46		-49.46	
47200	Interest	2,569.79	2,569.79	6,377.00	-3,807.21	40
47250	RD Surcharge			362,148.00	-362,148.00	
47350	Current Sec Taxes	7,340.11	7,340.11	280,000.00	-272,659.89	3
47400	Current Unsec Tax	55.14	55.14	12,000.00	-11,944.86	
47450	Prior Unsec Tax	11.26	11.26		11.26	
47500	Other Taxes	1,224.38	1,224.38	3,600.00	-2,375.62	34
49000	Other Income	45.00	45.00		45.00	
						2
	Total Other Revenue	**11,196.22**	**11,196.22**	**664,125.00**	**-652,928.78**	**2**
Other Expenses						
81000	Capital Outlay					
81110	Equipment Purchase			345,055.00	345,055.00	
81200	District Projects-CIP			457,780.00	457,780.00	
	Total Account			**802,835.00**	**802,835.00**	
85000	Debt Service					
85200	Loan Principal	62,000.00	62,000.00	62,000.00		100
85250	Loan Interest Expense	51,425.00	51,425.00	101,533.00	50,108.00	51
	Total Account	**113,425.00**	**113,425.00**	**163,533.00**	**50,108.00**	**69**
87000	Other Expense					
74400	Depreciation			564,000.00	564,000.00	
	Total Account			**564,000.00**	**564,000.00**	
	Total Other Expenses	**113,425.00**	**113,425.00**	**1,530,368.00**	**1,416,943.00**	**7**
	Net Income	-211,424.54	-211,424.54			

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
Operating Cash Report
For the Accounting Period: 7/21

Fund/Account	Beginning Balance	Received	Transfers In	Disbursed	Transfers Out	Ending Balance
53 Sewer						
10001 Five Star Bank - General Acct.	44,048.39	685,271.86	481.51	413.74	122,799.95	606,588.07
10021 Five Star USDA	180,062.52	5.66	0.00	0.00	113,425.00	66,643.18
10031 Five Star Money Market	981,253.53	229.00	0.00	0.00	0.00	981,482.53
Total Fund	**1,205,364.44**	**685,506.52**	**481.51**	**413.74**	**236,224.95**	**1,654,713.78**
71 Payroll Clearing						
10001 Five Star Bank - General Acct.	3,471.33	61.92	58,673.88	60,898.19	0.00	1,308.94
73 Claims Clearing						
10001 Five Star Bank - General Acct.	352,757.54	0.00	184,447.73	492,141.00	0.00	45,064.27
Totals	**1,561,593.31**	**685,568.44**	**243,603.12**	**553,452.93**	**236,224.95**	**1,701,086.99**

*** Transfers In and Transfers Out columns should match, with the following exceptions:
1) Cancelled electronic checks increase the Transfers In column. Disbursed column will be overstated by the same amount and will not balance to the Redeemed Checks List.
2) Payroll Journal Vouchers including local deductions with receipt accounting will reduce the Transfers Out column by the total amount of these checks.

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
Combined Check Register
For checks between: 07/01/21 - 07/31/21

Claims

Check #	Check Type	Vendor/Employee/Payee Number/Name		Check Amount	Period	Date Issued		Notes	
-99886	Clm E	30	CA PUBLIC EMPLOYERS' RETIREMENT S	12262.67	7/21	07/16/21	CL	1408	12262.67
-99885	Clm E	30	CA PUBLIC EMPLOYERS' RETIREMENT S	108.75	7/21	07/16/21	CL	1409	108.75
-99882*	Clm E	59	HSA BANK	2291.63	7/21	07/01/21	CL	1410	2291.63
-89904*	Pay P	12	DAN W SANDERS	566.41	6/21	07/01/21			
-89899*	Pay P	2	ROBERT L BRODERSON	1847.61	7/21	07/15/21			
-89898	Pay P	18	JOSHUA FREEMAN	1141.16	7/21	07/15/21			
-89897	Pay P	4	KELLY J HAMBLIN	1348.52	7/21	07/15/21			
-89896	Pay P	10	SCOTT A MCCUTCHEON	2293.98	7/21	07/15/21			
-89895	Pay P	15	SHAWN PETERSON	1295.35	7/21	07/15/21			
-89894	Pay P	11	ANNELYN A RACKLEY	481.18	7/21	07/15/21			
-89893	Pay P	14	LEVI M TOMLINSON	2015.60	7/21	07/15/21			
-89892	Pay P	19	VINCENT M VICTORINO	721.01	7/21	07/15/21			
-89891	Pay P	CALPERS 457	CAL 457	1330.08	7/21	07/16/21			
-89890	Pay P	PERS CLASS	CAL PERS CLASSIC	760.29	7/21	07/16/21			
-89889	Pay P	PEPRA	CAL PERS PEPRA	1919.18	7/21	07/16/21			
-89888	Pay P	CA TRAIN (ETT)	EDD	817.43	7/21	07/16/21			
-89887	Pay P	FIT	EFTPS	4283.36	7/21	07/16/21			
-89886	Pay P	HEALTH INS	LAKE OROVILLE AREA PUD	3556.29	7/21	07/16/21			
-89885	Pay P	AD&D	LOPUD	287.46	7/21	07/16/21			
-89884	Pay P	2	ROBERT L BRODERSON	1453.62	7/21	07/30/21			
-89883	Pay P	18	JOSHUA FREEMAN	1164.14	7/21	07/30/21			
-89882	Pay P	4	KELLY J HAMBLIN	1399.97	7/21	07/30/21			
-89881	Pay P	16	ROBERT MARCINIAK	364.60	7/21	07/30/21			
-89880	Pay P	9	ANGELA D MASTELOTTO	364.60	7/21	07/30/21			
-89879	Pay P	10	SCOTT A MCCUTCHEON	2347.70	7/21	07/30/21			
-89878	Pay P	15	SHAWN PETERSON	1522.30	7/21	07/30/21			
-89877	Pay P	11	ANNELYN A RACKLEY	422.83	7/21	07/30/21			
-89876	Pay P	19	VINCENT M VICTORINO	2088.62	7/21	07/30/21			
-89875	Pay P	CALPERS 457	CAL 457	1513.83	7/21	07/30/21			
-89874	Pay P	PERS CLASS	CAL PERS CLASSIC	1079.06	7/21	07/30/21			
-89873	Pay P	PEPRA	CAL PERS PEPRA	1894.05	7/21	07/30/21			
-89872	Pay P	CA TRAIN (ETT)	EDD	1210.98	7/21	07/30/21			
-89871	Pay P	FIT	EFTPS	5856.26	7/21	07/30/21			
-89870	Pay P	HEALTH INS	LAKE OROVILLE AREA PUD	3318.96	7/21	07/30/21			
-89869	Pay P	AD&D	LOPUD	215.46	7/21	07/30/21			
22450*	Clm SC	14	BETTER DEAL EXCHANGE	55.16	7/21	07/19/21	CL	1414	55.16
22451	Clm SC	28	BUTTE COUNTY TREASURER	1488.32	7/21	07/19/21	CL	1419	1488.32
22452	Clm SC	38	COMCAST	358.03	7/21	07/19/21	CL	1421	358.03
22453	Clm SC	152	E & M INC.	3795.00	7/21	07/19/21	CL	1387	3795.00
22454	Clm SC	79	MIRY'S CLEANING SERVICES	260.00	7/21	07/19/21	CL	1418	260.00
22455	Clm SC	88	OROVILLE CABLE & EQUIPMENT	333.41	7/21	07/19/21	CL	1413	333.41
22456	Clm SC	999998	SCOTT A MCCUTCHEON	253.00	7/21	07/19/21	CL	1416	253.00
22457	Clm SC	119	STREAMLINE	200.00	7/21	07/19/21	CL	1420	200.00
22458	Clm SC	130	TITUS INDUSTRIAL GROUP INC.	1929.51	7/21	07/19/21	CL	1415	1929.51
22459	Clm SC	141	VISTA NET, INC.	185.00	7/21	07/19/21	CL	1417	185.00
22460	Clm SC	999998	LEVI M TOMLINSON	684.75	7/21	07/20/21	CL	1446	684.75
22461	Clm SC	7	ALHAMBRA	66.35	7/21	07/23/21	CL	1433	66.35
22462	Clm SC	11	ANSWERLINE COMMUNICATIONS	279.75	7/21	07/23/21	CL	1424	279.75

Check Types: MC=Manual Claim, SC=System Claim, V=Void (never in system), E=ACH
P=Payroll, C=Cancelled (cancelled in system), R=Reissued, D=Deleted (deleted in system)

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
Combined Check Register
For checks between: 07/01/21 - 07/31/21

Claims

Check #	Check Type	Vendor/Employee/Payee Number/Name	Check Amount	Period	Date Issued		Notes	
22463	Clm SC	12 AT & T/SBC	0.00	7/21	07/23/21	CL	1444	0.00
22464	Clm SC	14 BETTER DEAL EXCHANGE	18.38	7/21	07/23/21	CL	1427	18.38
22465	Clm SC	17 BLUE SHIELD OF CA	6568.72	7/21	07/23/21	CL	1443	6568.72
22466	Clm SC	18 BUTTE CO AIR QUALITY	362.60	7/21	07/23/21	CL	1437	362.60
22467	Clm SC	32 CA WATER SERVICE	23.03	7/21	07/23/21	CL	1442	23.03
22468	Clm SC	60 HUMANA	453.71	7/21	07/23/21	CL	1426	453.71
22469	Clm SC	78 MINASIAN LAW FIRM	10656.00	7/21	07/23/21	CL	1434	1536.00
						CL	1435	9120.00
22470	Clm SC	93 PACIFIC GAS & ELECTRIC	5147.59	7/21	07/23/21	CL	1430	5147.59
22471	Clm SC	109 SAUERS ENGINEERING INC	11947.50	7/21	07/23/21	CL	1431	7740.00
						CL	1432	4207.50
22472	Clm SC	115 SOUTH FEATHER WATER	74.76	7/21	07/23/21	CL	1439	24.42
						CL	1440	16.26
						CL	1441	34.08
22473	Clm SC	139 VERIZON WIRELESS	350.73	7/21	07/23/21	CL	1445	350.73
22475*	Clm SC	24 BUTTE COUNTY PUBLIC HEALTH DEPT	3206.00	7/21	07/30/21	CL	1452	393.00
						CL	1453	393.00
						CL	1454	393.00
						CL	1455	393.00
						CL	1456	848.00
						CL	1457	393.00
						CL	1460	393.00
22476	Clm SC	64 JIMMY'S TROPHIES	66.03	7/21	07/30/21	CL	1458	66.03
22477	Clm SC	95 PARAMEX	75.00	7/21	07/30/21	CL	1449	75.00
22478	Clm SC	115 SOUTH FEATHER WATER	25.68	7/21	07/30/21	CL	1450	25.68
22479	Clm SC	136 USA NORTH 811	1120.34	7/21	07/30/21	CL	1448	1120.34
22480	Clm SC	139 VERIZON WIRELESS	400.25	7/21	07/30/21	CL	1451	400.25
22481	Clm SC	145 XEROX CORPORATION	176.06	7/21	07/30/21	CL	1447	176.06
22482	Clm SC	999998 ROBERT L BRODERSON	468.96	7/21	07/30/21	CL	1468	468.96
88039*	Pay P	5 DARIN K KAHALEKULU	1685.14	7/21	07/15/21			
88042*	Pay P	14 LEVI M TOMLINSON	3702.00	7/21	07/23/21			
88043	Pay P	6 DEE G FAIRBANKS	364.60	7/21	07/30/21			
88044	Pay P	5 DARIN K KAHALEKULU	1733.67	7/21	07/30/21			
88045	Pay P	17 RICHARD SALVUCCI	364.60	7/21	07/30/21			
88046	Pay P	13 WILLIAM P SHARMAN	364.60	7/21	07/30/21			

Grand Total # of Checks: 73 Total: 124789.17 Total Claims 65692.67 Total Payroll 59096.50

Check Types: MC=Manual Claim, SC=System Claim, V=Void (never in system), E=ACH
P=Payroll, C=Cancelled (cancelled in system), R=Reissued, D=Deleted (deleted in system)

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 5 – Items Removed From Consent Agenda

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 6 – Designation of Hiring Committee as District Labor Negotiator Regarding the Unrepresented Position of General Manager

With the search for the new General Manager underway, the Board is requested to consider designating the Hiring Committee as the District Labor Negotiator. Once the labor negotiator has been designated, the Board can meet in closed session to provide direction to the negotiator regarding the terms and conditions of employment they are willing to offer. The negotiator will then relay the offers to the candidate outside of closed session. The position/employee with whom the board is negotiating cannot be present during that closed session discussion.

Recommended Action: Designate the Hiring Committee as District Labor Negotiator Regarding the Unrepresented Position of General Manager

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 7 – Closed Session-Government Code Section 54957 and 54957.6

7.01 PUBLIC EMPLOYEE PERFORMANCE EVALUATION (Pursuant to Government Code Section 54957)

Title: General Manager

7.02 EMPLOYMENT INTERVIEW (Pursuant to Government Code Section 54957)

Title: General Manager

7.03 EMPLOYMENT INTERVIEW (Pursuant to Government Code Section 54957)

Title: General Manager

7.04 EMPLOYMENT INTERVIEW (Pursuant to Government Code Section 54957)

Title: General Manager

7.05 CONFERENCE WITH DISTRICT LABOR NEGOTIATOR REGARDING THE UNREPRESENTED POSITION OF GENERAL MANAGER (Pursuant to Government Code Section 54957.6)

Recommended Action: None

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 8 - Approval of Resolution No. 05-2021 Kyle Roberson APN 079-090-030 Acceptance of Sewerage Facilities

In 1990 application was made to the District for a mainline extension for a proposed development. A development agreement was executed, and installation of the sewer facilities began. Due to unforeseen events, the project was never completed through to acceptance, the subdivision map was never recorded, and the facilities were never conveyed to the District. The project has changed hands since then, and in 2020, the current owner began to plan to build a single family home on the property, using Better Builders as the contractor of choice.
The owner has requested that the District accept a portion of the already installed mainline in order to serve the proposed residence, and possibly, future residences. A new easement has been prepared and accepted by the District, the existing line has been inspected by District staff, and any recommended upgrades or modifications to the line have been performed.

By action through resolution the Lake Oroville Area Public Utility District Board of Directors can accept the sewer system into the District's system, which will enable connections to be made.

Attachment Included

Recommended Action: Adopt Resolution No. 05-2021 Kyle Roberson APN 079-090-030 Acceptance of Sewerage Facilities

Finish Resolution with Roll Call

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

August 21, 2020

John Starr
Better Builders Construction

Re: APN: 079-090-030, 230 LOMA VISTA DR, OROVILLE CA 95966

Mr. Starr,

The District has received your request to provide an updated summary in regards to the above referenced parcel and sewer availability.
Be advised that Board action will be required in order to serve this parcel. Connection can be made under the following scenarios:

SCENARIO 1- RESIDENTIAL CONNECTION WITHIN 15' PUE

1. Verification, Inspection, and Acceptance of existing 6" pipe and PUE:
    a. A dedicated PUE as described in Exhibit A exists in order to serve the referenced parcel with utilities from the north (Crane Avenue).
    b. An existing 6" pipeline, previously installed for sanitary sewer purposes within this PUE, will need to be accepted by the District. This will require inspection by District Staff before it can be presented to the District Board of Directors for acceptance. The inspection shall be either a formal inspection as outlined in the District Rules and Regulations, or a modified inspection to determine the viability of the service line within this easement. The District, in its sole discretion, will make this determination.
    c. After the inspection is completed to the satisfaction of the District, the pipeline will be presented to the Board of Directors for acceptance of that portion of pipeline within the easement by resolution.
2. Connection to accepted mainline within the limits of the 15' PUE:
    a. After acceptance of the mainline as described in Item 1 above, connection can be made per Exhibit B made per District Improvement Standards and Rules and Regulations:
        i. Connection must be made entirely within the PUE.
    b. Existing pipeline (not inspected or accepted) must be abandoned in place per Exhibit B.
    c. Only a single residential connection will be allowed under this scenario.

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
1960 Elgin Street • Oroville, CA 95966
(530) 533-2000 • FAX (530) 533-1750

SCENARIO 2- RESIDENTIAL CONNECTION OUTSIDE 15' PUE (VIA ADDITIONAL EASEMENT(s))

1. Completion of Scenario 1 items 1.a-c in this letter will need to be completed as part of this Scenario 2.
2. Offering, and Acceptance of additional easement(s):
    a. In order to connect additional residences services, or to effect an alternative single residential connection, an additional easement(s) may be offered to the District for acceptance.
3. Verification, Inspection, and Acceptance of existing pipeline and appurtenances:
    a. Once such an easement is accepted by the District, any existing pipeline and appurtenances within this easement that are intended for conveyance to the District will need to be verified, inspected, and accepted per Scenario 1.b-c in this letter.
    b. Any existing pipeline and appurtenances not intended for conveyance to the District will need to be abandoned in place or removed.
4. Connection to accepted pipeline within the limits of new easement:
    a. After acceptance of the existing facilities as described in Item 3 above, connection can be made per District Improvement Standards and Rules and Regulations.

Connection and capacity fees will be assessed upon application for a connection permit and will be due and payable per District Policy and current District Fee Schedule (attached).

Please call me if you have questions.

Best regards,

Lake Oroville Area Public Utility District

Scott McCutcheon
General Manager

OWNERS STATEMENT

WE, FRIEDA E. HART, ALSO KNOWN FRIEDA E. HART MARTIN, PER VESTING DEED #89-3311S, AS OWNER, AND MIDVALLEY TITLE AND ESCROW COMPANY, A CALIFORNIA CORPORATION AS TRUSTEE UNDER DEED OF TRUST DATED JUNE 26, 1989 AND RECORDED JUNE 30, 1989 UNDER BUTTE COUNTY RECORDER'S SERIAL NUMBER 89-24232, DO HEREBY CONSENT TO THE PREPARATION AND RECORDING OF THIS MAP, AND DO HEREBY CERTIFY THAT WE ARE THE ONLY PERSONS WHOSE CONSENT IS REQUIRED TO PASS CLEAR TITLE TO SAID LANDS. WE OFFER FOR DEDICATION AND DO DEDICATE FOR PUBLIC USE, FOR SPECIFIC PURPOSES, RIGHTS OF WAY AND EASEMENTS FOR WATER LINES, SEWER LINES, DRAINAGE PIPES AND DITCHES, GAS LINES, AND FOR UNDERGROUND WIRES FOR ELECTRIC AND TELEPHONE SERVICE TOGETHER WITH ANY AND ALL APPURTENANCES APPERTAINING THERETO, UNDER THOSE STRIPS OF LAND SHOWN ON SAID MAP AND DESIGNATED "PUBLIC UTILITIES EASEMENT - P.U.E.", THOSE PORTIONS OF HART DRIVE, CRANE AVENUE, HART LANE, AND HUNTER DRIVE, AND THE 1 FOOT NO ACCESS STRIPS, AS SHOWN WITHIN THE BOUNDARIES OF THIS SUBDIVISION MAP ARE HEREBY OFFERED FOR DEDICATION IN FEE SIMPLE. WE ALSO OFFER FOR DEDICATION AND DO HEREBY DEDICATE FOR PUBLIC USE, FOR SPECIFIC PURPOSES, RIGHTS OF WAY AND EASEMENT FOR WATER DRAINAGE PIPES AND DITCHES TOGETHER WITH ANY AND ALL APPURTENANCES APPERTAINING THERETO, UNDER OR OVER THOSE STRIPS OF LAND SHOWN ON SAID MAP AND DESIGNATED "DRAINAGE EASEMENT."

DANIEL F. HUNT, V.P.
DANIEL F. HUNT, VICE PRESIDENT
MID VALLEY TITLE CO.

Frieda E. Hart Martin
FRIEDA E. HART MARTIN

STATE OF CALIFORNIA
COUNTY OF BUTTE

ON FEB. 26, 1991, BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID STATE, PERSONALLY APPEARED FRIEDA E. HART MARTIN PERSONALLY KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUSCRIBED TO HEREON AND ACKNOWLEDGED TO ME THAT SHE EXECUTED THE SAME.
WITNESS MY HAND AND SEAL.

OFFICIAL SEAL
JESSIE HART
NOTARY PUBLIC - CALIFORNIA
COUNTY OF BUTTE
Comm. Exp. August 20, 1991

Jessie Hart
JESSIE HART

STATE OF CALIFORNIA
COUNTY OF BUTTE

ON THIS 26TH DAY OF FEBRUARY IN THE YEAR 1991 BEFORE ME, JESSIE HART A NOTARY PUBLIC, STATE OF CALIFORIA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED DANIEL F. HUNT, PERSONALLY KNOWN TO ME TO BE THE PERSON WHO EXECUTED THE WITHIN INSTRUMENT AS VICE PRESIDENT ON BEHALF OF MID VALLEY TITLE AND ESCROW COMPANY, THE CORPORATION HEREIN NAMED, AND ACKNOWLEDGED TO ME THAT SUCH CORPORATION EXECUTED THE WITHIN INSTRUMENT PURSUANT TO ITS BYLAWS.
IN WITNESS WHEREOF I HAVE HEREUNTO SET MY HAND AND AFFIXED MY OFFICIAL SEAL IN THE COUNTY OF BUTTE ON THE DATE SET FORTH ABOVE IN THIS CERTIFICATE.

OFFICIAL SEAL
JESSIE HART
NOTARY PUBLIC - CALIFORNIA
COUNTY OF BUTTE
Comm. Exp. August 20, 1991

Jessie Hart
JESSIE HART

CLERK OF THE BOARD OF SUPERVISORS STATEMENT

I DO HEREBY STATE THAT ON February 26, 1991 THE BUTTE COUNTY BOARD OF SUPERVISORS OFFICALLY APPROVED THE SUBDIVISION MAP OF COPLEY ACRES UNIT NUMBER 3, PHASE III, THOSE SPECIFIC RIGHTS OF WAY AND EASEMENTS FOR WATER LINES, SEWER LINES DRAINAGE PIPES AND DITCHES, GAS LINES AND FOR UNDERGROUND WIRES FOR ELECTRIC AND TELEPHONE SERVICE WITH ANY AND ALL APPERTENCES APPERTAINING THERETO UNDER THOSE STRIPS OF LAND SHOWN ON SAID MAP AND DESIGNATED AS "PUBLIC UTILITIES EASEMENT - P.U.E." AND "DRAINAGE EASEMENT" AND OFFERED FOR DEDICATION FOR SPECIFIC USE WERE ACCEPTED. THOSE PORTIONS OF HART DRIVE, HART LANE, CRANE AVENUE, AND HUNTER DRIVE AND THE 1 FOOT NO ACCESS STRIP AS SHOWN WITHIN THE BOUNDARIES OF THE ABOVE SAID SUBDIVISION MAP AND OFFERED FOR DEDICATION IN FEE SIMPLE WERE _____ ACCEPTED. PUBLIC ACCESS ACROSS THE 1 FOOT NO ACCESS STRIP ON HART DRIVE, AS SHOWN ON COPLEY ACRES UNIT 3, PHASE II (108M74), AND THE 1 FOOT NO ACCESS STRIPS ON CRANE AVENUE AND HUNTER DRIVE, AS SHOWN ON THE MAP OF COPLEY ACRES UNIT 3, PHASE I (100M95), AND THE 1 FOOT NO ACCESS STRIP ON HUNTER DRIVE, AS SHOWN ON THE MAP OF THE KYTE SUBDIVISION (112M85 & 86) WERE APPROVED.

WILLIAM H. RANDOLPH
CLERK OF THE BOARD OF SUPERVISORS
BY DEPUTY Frieda Martin

ENGINEER'S STATEMENT

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND WAS COMPILED FROM RECORD DATA AND IS BASED ON A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE SUBDIVISION MAP ACT AND LOCAL ORDINANCE AT THE REQUEST OF FRIEDA E. HART ON FEBRUARY 1, 1989. I HEREBY STATE THAT THIS SUBDIVISION MAP SUBSTANTIALLY CONFORMS TO THE APPROVED TENTATIVE MAP, AND THAT ALL MONUMENTS ARE OF THE CHARACTER AND OCCUPY THE POSITIONS INDICATED OR WILL BE SET WITHIN 90 DAYS OF THE APPROVAL OF THIS MAP AND WILL BE SUFFICIENT TO ALLOW THE SURVEY TO BE RETRACED.

Michael Mooney
MICHAEL MOONEY
CIVIL ENGINEER
RCE 20647
REGISTRATION EXPIRES
9-30-93

NOTE

THE FOLLOWING NOTE IS FOR INFORMATIONAL PURPOSES ONLY, DESCRIBING CONDITIONS IMPOSED AS OF THE DATE OF FILING AND IS NOT INTENDED TO AFFECT RECORD TITLE INTEREST.

NOTE: THERE IS A 20 FOOT BUILDING SETBACK FROM THE RIGHT OF WAY LINE OF ALL STREETS

COUNTY SURVEYOR'S STATEMENT

I HEREBY STATE THAT I HAVE EXAMINED THE FINAL MAP OF COPLEY ACRES UNIT 3 PHASE III, AND IT IS SUBSTANTIALLY THE SA AS APPEARED ON THE TENTATIVE MAP ON FI AND ANY APPROVED ALTERATIONS THEREOF, THAT ALL PROVISIONS OF THE SUBDIVISION MA ACT OF THE STATE OF CALIFORNIA, AND AN LOCAL ORDINANCE APPLICABLE AT THE TIME OF APPROVAL OF SAID TENTATIVE MAP HAVE BEEN COMPLIED WITH AND I AM SATISFIED THAT THE MAP IS TECHNICALLY CORRECT.

DATED 2/25/91

William Cheff
WILLIAM CHEFF RCE 14225
BUTTE COUNTY SURVEYOR
REGISTRATION EXPIRES 3-31-9

RECORDER'S CERTIFICATE

FILED THIS 28 DAY OF FEBRUARY, 1991, AT 8:01 A.M. IN BOOK 122 OF MAPS AT PAGE 27
AT THE REQUEST OF MIKE MOONEY
SERIAL # 91-7664
SUBD # 555

CANDACE J. GRUBBS
BUTTE COUNTY RECORDER
BY DEPUTY M. Warnke

REGISTERED PROFESSIONAL ENGINEER
MICHAEL MOONEY
20647
CIVIL
STATE OF CALIFORNIA

EXHIBIT A

PHASE III

COPLEY ACRES SUBDIVISION
UNIT NUMBER THREE
FOR
FRIEDA E. HART MARTIN

SHEET 1 OF 2

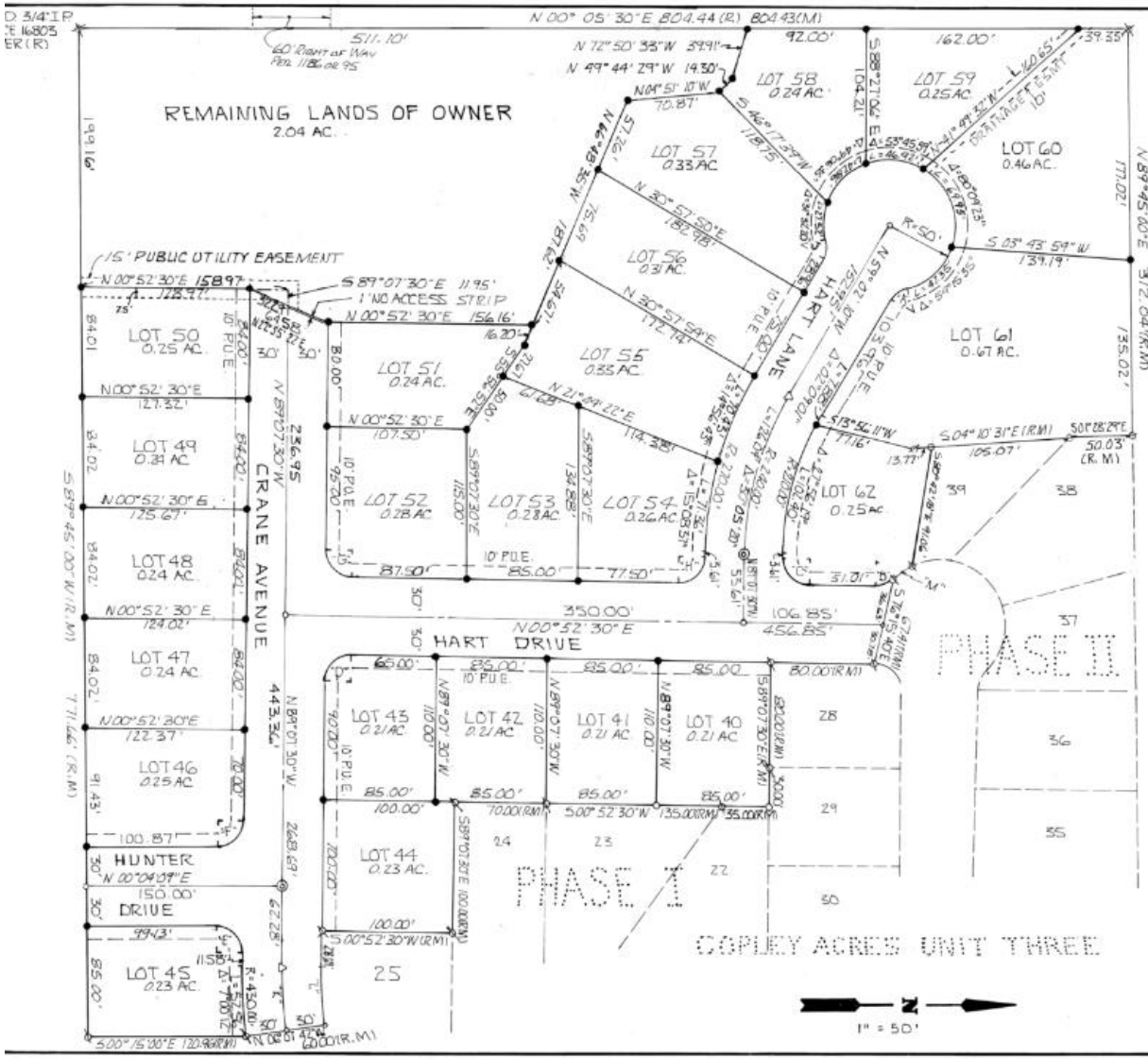
BEING A PORTION OF THE EAST 1/2 OF THE NORTHEAST 1/4 OF SECTION 22, TOWNSHIP 1 NORTH, RANGE 4 EAST, M.D.B.&M. IN THE UNINCORPORATED AREA OF BUTTE COUNTY, CALIFORNIA.

MICHAEL MOONEY
CIVIL ENGINEER
RCE 20647

5A MADRONE AVE
ORDVILLE, CA 95966
916-533-2131

AP # 36-80-31

122-28



FD. 1½" AXLE PER (R)

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVE IS THE NORTH LINE OF THE EAST 1/2 OF THE NORTHEAST 1/4 OF SECTION 22, TOWNSHIP 19 N. R 4 E. M.D.B.&M. AND IS TAKEN AS N 89°45'00" E. PER 100 M 95.

NOTE: 1229 OR 686 DOES NOT AFFECT THIS PROPERTY.

LEGEND

- ○ CALCULATED POINT
- ● SET 1/2" I.P. RCE 20647
- ⊗ FOUND 1/2" IP TAGGED RCE20647
- ⊗ FOUND AS NOTED
- "M" MEASURED
- "R" RECORD 10B M 74&75
- ◎ BUTTE COUNTY STD. S-11 CENTERLINE MON.

CURVE DATA

CURVE	"R"	"Δ"	"L"
"A";"B";"J"	20'	44°24'55"	15.50'
"C";"D";"G";"H"	20'	90°	31.42'
"E"	20'	90°48'21"	31.70'
"F"	20'	89°11'39"	31.14'
"K"	400'	7°00'12"	48.90'
"L"	310'	7°00'12"	45.25'
"M"	50'	20°21'44"	17.77'

EXHIBIT A

PHASE III

COPLEY ACRES SUBDIVISION
UNIT NUMBER THREE
FOR
FRIEDA E. HART

SHEET 2 OF 2

BEING A PORTION OF THE EAST 1/2 OF THE NORTHEAST 1/4 OF SECTION 22, TOWNSHIP 19 NORTH, RANGE 4 EAST, M.D.B.&M. IN THE UNINCORPORATED AREA OF BUTTE COUNTY, CALIFORNIA.

MICHAEL MOONEY
CIVIL ENGINEER
RCE 20647

54 MADRONE AVE
OROVILLE, CA 95966
916-533-2131

AP NO. 36-80-31

EXHIBIT A

Scott McCutcheon

From: john christofferson <surveyorjohn@gmail.com>
Sent: Saturday, July 25, 2020 10:17 AM
To: 'Scott McCutcheon'; 'Cindy Quigley'
Cc: 'Better Builders Construction'
Subject: MOONEY'S LEGAL DESCRIPTION

7/25/2020

Scott:

RE: Surveyor's Opinion

I have reviewed the Offer of Dedication for the PUE as shown on Book 122 MAPS Pages 27 and 28.

I note that the owner Frieda A. Hart offered for dedication those strips designated as "PUE", Public Utility Easement: and the Board of Supervisors
did accept that dedication. Therefore, it is my opinion that any sewer line that the District has installed in that PUE crossing Dr. Frey's parcel and Lot 50, Book 122 Pages 27 and 28, adjacent thereto, would have been installed under the aforesaid dedication.

I have reviewed the legal description that Michael Mooney prepared back in 1996. I searched my files for a response to LOAPUD'S transmittal to me dated 4/10/96. Unfortunately, I could not find one.

Here is what I noted about Mike's legal.

1) Mike describes an easement for "sanitary sewer purposes". No mention for any fixtures or appurtenances related thereto.
2) Mike describes an easement "20.00 feet in width lying **either** side of the following described centerline". You can put it on either side of the centerline.
3) Mike does not qualify that the centerline of his description "runs" along the existing centerline.

My opinion is not to be construed as a legal opinion. Consult you legal advisor for any legal question you may have concerning this matter.

Job 19-009

SURVEYOR JOHN
SURVEY CONSULTING
JOHN D. CHRISTOFFERSON, INC.
JOHN D. CHRISTOFFERSON, PLS
1804 6TH STREET
OROVILLE, CA 95965
C: 530 518 3054
SURVEYORJOHN@GMAIL.COM

EXHIBIT "A"

****

A NON-EXCLUSIVE EASEMENT FOR THE INSTALLATION, OPERATION AND MAINTENANCE OF A SANITARY SEWER LINE, TOGETHER WITH ANY AND ALL FIXTURES AND APPURTENANCES USED IN CONJUNCTION THEREWITH, OVER A STRIP OF LAND 15.00 FEET IN WIDTH, LYING 7.50 FEET ON BOTH SIDES OF THE FOLLOWING DESCRIBED CENTERLINE, OVER A PORTION OF PARCEL 2, ACCORDING TO THAT PARCEL MAP FOR FRIEDA HART MARTIN, AS FILED FOR RECORD ON OCTOBER 12, 1979 IN BOOK 73, BUTTE COUNTY MAPS AT PAGE 49, SAID PARCEL LYING IN THE NORTHEAST QUARTER OF SECTION 22, TOWNSHIP 19 NORTH, RANGE 4 EAST, M.D.M., BUTTE COUNTY, CALIFORNIA, SAID CENTERLINE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF LOT 50, ACCORDING TO THAT CERTAIN SUBDIVISION MAP ENTITLED " PHASE III, COPLEY ACRES SUBDIVISION, UNIT NUMBER THREE", RECORDED FEBRUARY 28, 1991, IN BOOK 122, BUTTE COUNTY MAPS AT PAGES 27 AND 28, SAID CORNER BEING THE SOUTHERLY TERMINUS OF AN EXISTING 15.00 FOOT WIDE PUBLIC UTILITY EASEMENT ESTABLISHED BY SAID SUBDIVISION MAP, SAID SOUTHWEST CORNER BEING THE TRUE POINT OF BEGINNING FOR THE HEREIN DESCRIBED CENTERLINE; THENCE S 04°09' E, 147 FEET, MORE OF LESS TO THE CENTER OF AN EXISTING SANITARY SEWER MANHOLE AS SAID MANHOLE EXISTED ON OCTOBER 22, 2020; THENCE CONTINUING S 04°09' E, 10.00 FEET, TO THE END OF THE DESCRIBED CENTERLINE.

END OF DESCRIPTION

****

PREPARED BY:

John D. Christofferson

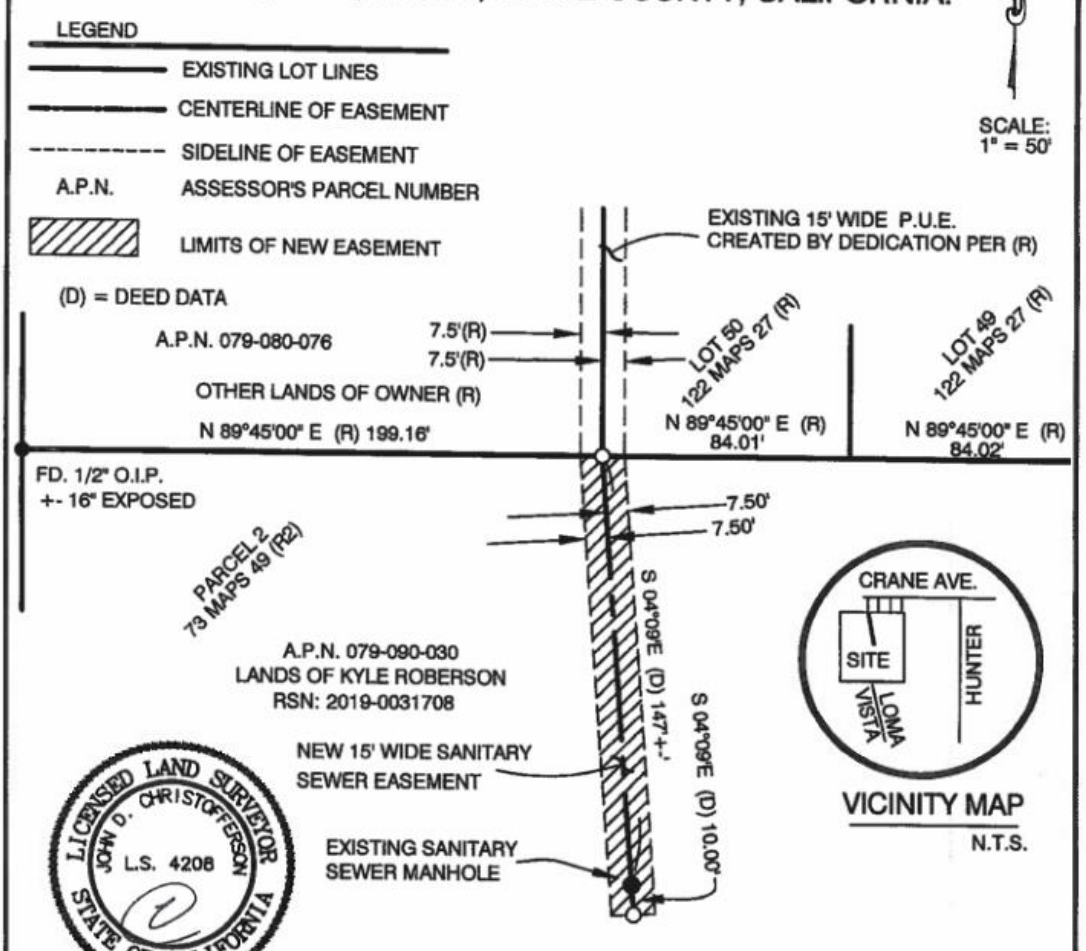
JOHN D. CHRISTOFFERSON, PLS
JOHN D. CHRISTOFFERSON, INC.

10-23-20

C:\MYFILES\CONTRACTS\2020 CONTRACTS\20-042 ROBERSON\EXHIBIT A LD.wpdOctober 22, 2020

EXHIBIT "B"

15' WIDE SANITARY SEWER EASEMENT OVER A PORTION OF PARCEL 2, BOOK 73 MAPS, PAGE 49, LYING IN THE NE 1/4, SECTION 22, T 19 N, R 4 E, M.D.M., BUTTE COUNTY, CALIFORNIA.

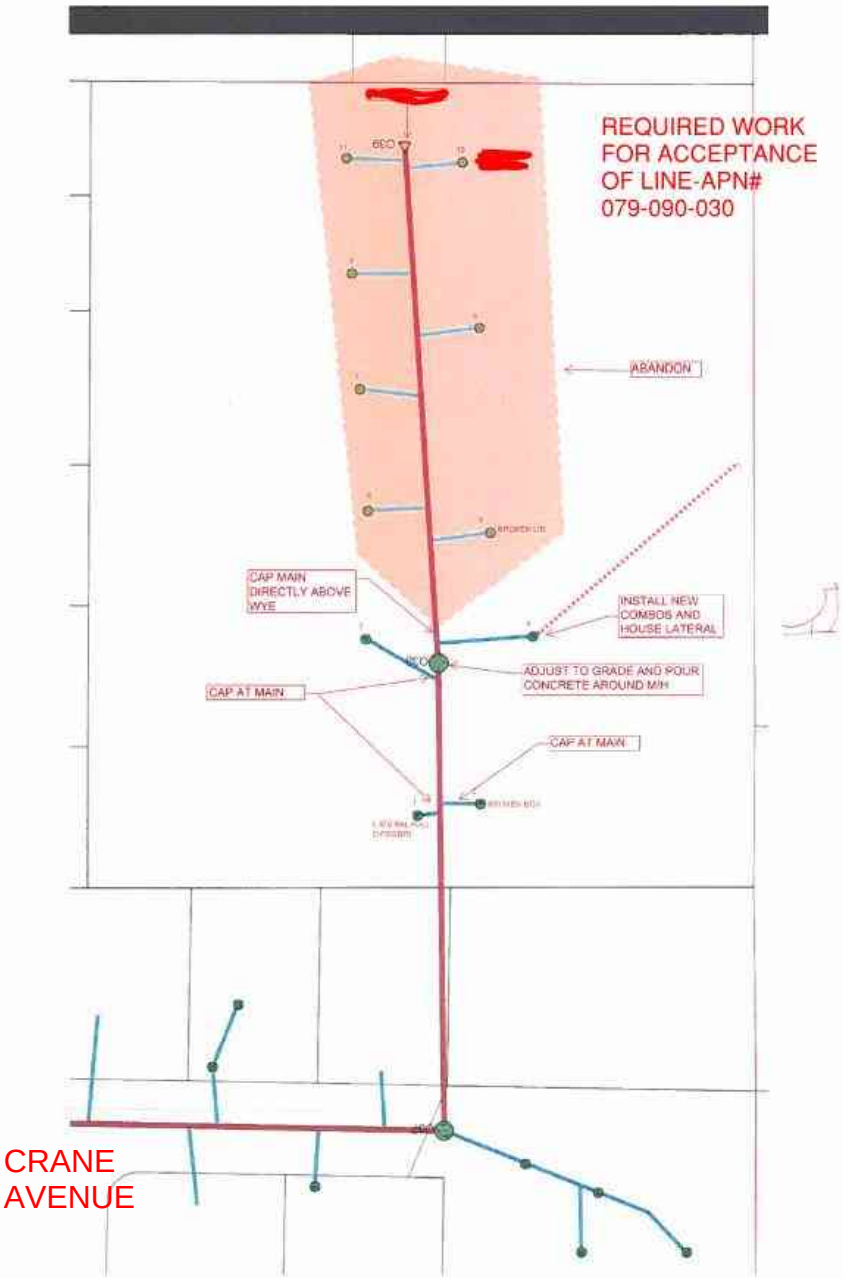


JOHN D. CHRISTOFFERSON, INC.
1804 6TH STREET
OROVILLE, CA LIFORNIA
(530) 518-3054

John D. Christofferson DATE 10-23-20

JOHN D. CHRISTOFFERSON
P.L.S. 4208

C:\AUTOCAD\Land Desktop 2009\20042\dwg\20042.dwg 10/22/2020 11:09:55 AM PDT


REQUIRED WORK
FOR ACCEPTANCE
OF LINE-APN#
079-090-030
ABANDON
CAP MAIN
DIRECTLY ABOVE
WYE
INSTALL NEW
COMSOS AND
HOUSE LATERAL
ADJUST TO GRADE AND POUR
CONCRETE AROUND M/H
CAP AT MAIN
CAP AT MAIN
N
CRANE
AVENUE

RESOLUTION NO. 05-2021
LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
KYLE ROBERSON
APN 079-090-030
ACCEPTANCE OF SEWERAGE FACILITIES

WHEREAS, Kyle Roberson is the owner (Owner) of that parcel identified as Assessor's Parcel Number 079-090-030; and,

WHEREAS, Sewerage Facilities were installed on Assessor's Parcel Number 079-090-030 under a separate Development Agreement but were never accepted into the District; and,

WHEREAS, the Sewerage Facilities previously installed have been modified by the Owner, and have been inspected according to District requirements; and,

WHEREAS, Owner has submitted a statement offering the Sewerage Facilities for dedication to District.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Lake Oroville Area Public Utility District, that the Sewerage Facilities installed on Assessor's Parcel Number 079-090-030, as modified by Owner, be approved and accepted as part of District's maintained system.

PASSED AND ADOPTED this _____ day of _____ 2021, at Oroville, California, after being moved by Director _____ and seconded by Director _____, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

By_____
William P. Sharman, President

ATTEST:

_____
Kelly Hamblin, Clerk of the Board

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 9 – Review of 2021 Sewer System Master Plan

In May of 2019 the District Board of Directors approved a proposal from Sauers Engineering to update the District's Sewer System Master Plan.
The draft plan is included in your packet for your review and comment.
Any changes requested or recommended can be made and the plan brought back to the Board for approval and adoption at the September Board of Directors meeting.

Recommended Action: No Action Requested

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

SEWER SYSTEM MASTER PLAN

JULY 2, 2021

SAUERS ENGINEERING, INC.
Civil and Environmental Engineers

LAKE OROVILLE AREA
PUBLIC UTILITY DISTRICT

SEWER SYSTEM MASTER PLAN - 2021

July 2, 2021

Board of Directors

Bill Sharman, President

Angela Mastelotto, Vice President Dee G. Fairbanks, Director

Richard Salvucci, Director Robert Marciniak, Director

Scott McCutcheon, General Manager

Approved by: _____ 2021

Scott McCutcheon Date
General Manager

SAUERS ENGINEERING, INC.
105 Providence Mine Road, Suite 202
Nevada City, California 95959
Tel. 530-265-8021

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
SEWER SYSTEM MASTER PLAN - 2021

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LAKE OROVILEE PUBLIC UTILITY DISCTRICT
SEWER SYSTEM MASTER PLAN - 2021

EXECUTIVE SUMMARY

This report is an updated master plan for the wastewater collection system requirements for the Lake Oroville Area Public Utility District. It is based on the District's billing records and mapping and on the County of Butte and City of Oroville General Plans. This study is to be used as a planning tool to assist in providing adequate wastewater collection capacity for the community being served by the District.

Existing and Projected Wastewater Flows. Average dry-weather and average wet-weather sewer flows (mgd) are predicted based on current conditions and general plan buildout conditions.

2020			Buildout		
ADWF	AWWF	PWWF	ADWF	AWWF	PWWF
0.748	0.978	6.357	0.838	1.585	9.270

Collection System. The trunk lines of the sewer pipeline system were modeled using a computer. The flow conditions listed above plus an allowance for infiltration/inflow (I/I) were applied to the model. Pipes that were too small to convey present and future wastewater loads were upsized and categorized according to the year of needed improvement. Cost estimates were prepared for anticipated future pipeline construction. Pipeline replacement requirements and costs are listed in Table 5-2 in Chapter 5.

Capital Improvement Program. A summary of anticipated construction costs for sewer system improvements (including pipeline replacements and expansions) are tabulated below.

Year of Expenditure	Cost (2020 dollars)
2020	$ 574,194
2020-Buildout	$ 20,812,844

A more detailed listing of these figures is included in the Capital Improvement Program in Chapter 5, Tables 5-2, 5-3, 5-4 and 5-5.

Chapter 1

INTRODUCTION

BACKGROUND

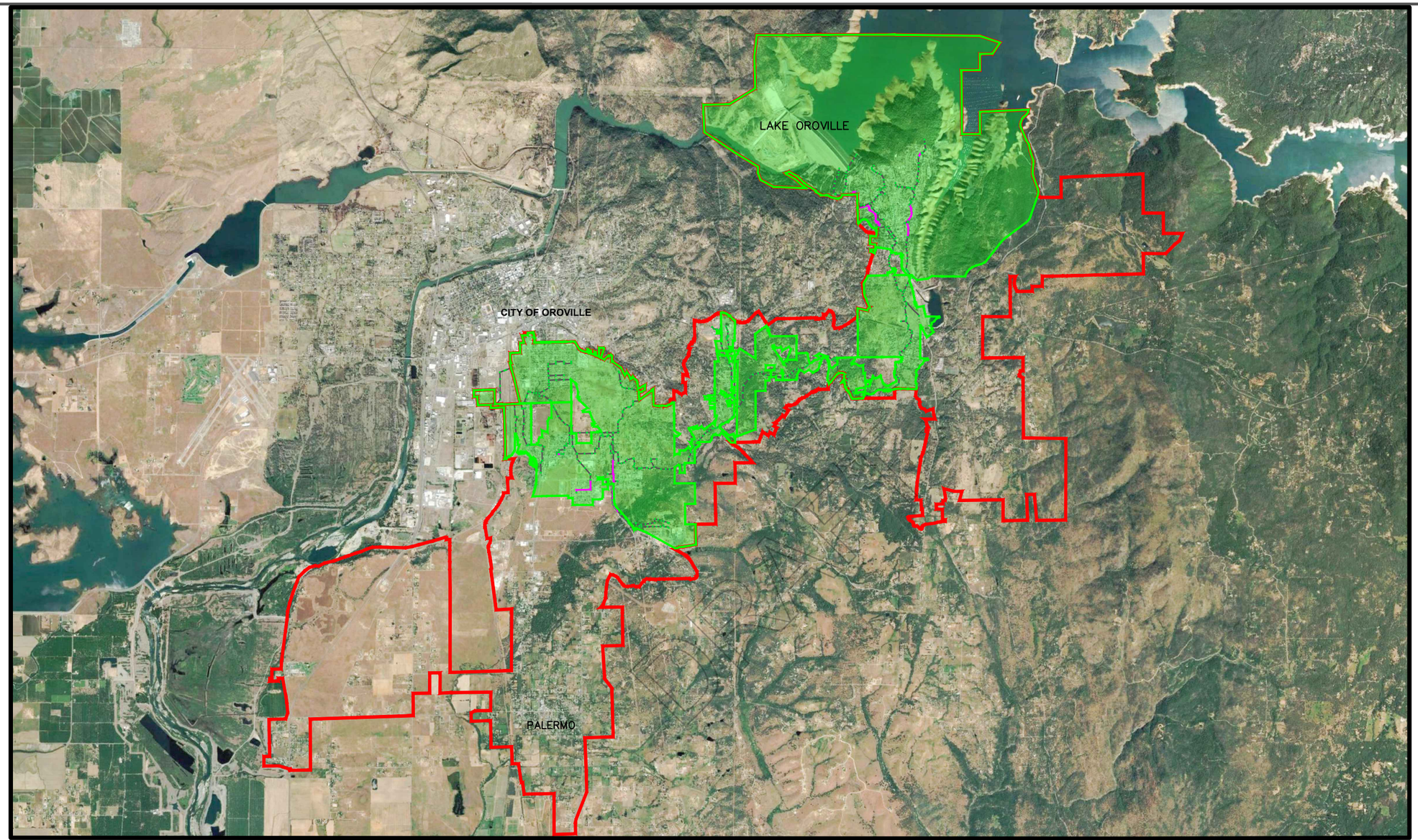
The Lake Oroville Area Public Utility District (LOAPUD) provides sanitary sewer collection services for the unincorporated area east and south of the City of Oroville in Butte County, California. The District's boundary encompasses approximately 8,457 acres (13.2 square miles) ranging in elevation between approximately 200 feet and 1,000 feet above sea level. A vicinity map for LOAPUD is shown in Figure 1.

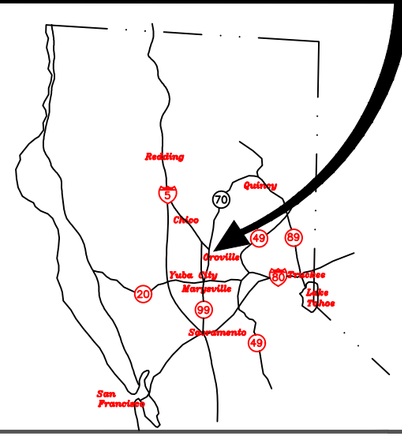
The District provides service connections to approximately 5,733 customers. Customers include single and multiple family residences, a variety of commercial uses, and public facilities including schools and recreational facilities associated with nearby Lake Oroville. For purposes of record keeping and billing, the District converts non-residential customers to equivalent dwelling units (EDUs). This adjusts larger wastewater customers to the equivalent number of residential customers which generate the same quantity of wastewater. The District currently serves 6,160 EDU according to District records.

The District, formerly known as the North Burbank Public Utility District, was formed in 1938. Until 1977, the District owned and operated a wastewater treatment plant providing treatment and disposal services in addition to collection. Treatment and disposal are now provided at a regional plant operated by the Sewerage Commission - Oroville Region (SCOR). SC-OR is operated as a Joint Powers Agency which includes LOAPUD along with Thermolito Water and Sewer District (TWSD) and the City of Oroville.

The District is located primarily in unincorporated Butte County, with some portions located within the city limits of the City of Oroville. For the unincorporated areas, land uses are governed by the Butte County General Plan 2030 adopted 2010. The County's General Plan contains policies related to community growth and development which encourage new, orderly development while offering a full range of municipal services. It also includes policies on the annexation of contiguous areas outside the existing boundaries of municipal service providers. The Local Agency Formation Commission (LAFCo) and State law require the District to adopt a Sphere of Influence giving the District responsibility in these adjacent unincorporated areas. For areas within the Oroville city limits, land uses are governed by the City of Oroville 2030 General Plan adopted in 2009. The majority of the LOAPUD service area within the city limits is the Southside area, long served by LOAPUD but recently annexed for services other than sewer by the City of Oroville. Other undeveloped areas within the city limits potentially served by LOAPUD are mostly infill.

Maps created as part of the respective General Plans provide a basis for the ultimate development of the District's service area. Ultimate development is based on the land use and zoning designations, densities, and areas of each of zoning district. It is estimated that the District is currently at approximately 53% of projected buildout within its current service area.





Legend

- Existing Service Area
- Existing Sphere of Influence
- Parcel Boundary

Sewer System Masterplan 2021

Figure 1
Vicinity Map

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
1960 ELGIN STREET
OROVILLE, CA 95966
TEL. (530) 533-2000

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Civil & Environmental Engineers
105 Providence Mine Rd, Suite 202, Nevada City, CA 95959
tel (530) 265-8021 www.sauerseng.com

Designed: KEM
Drawn: KEM
Date: JULY 2021
Scale: N.T.S.

Butte California

TREATMENT AND DISPOSAL

Since 1977, treatment and disposal of the wastewater conveyed through the District's collection system have been provided by the Sewerage Commission - Oroville Region (SC-OR) regional treatment plant located west of the District's service area. The SC-OR plant is operated through a Joint Powers Agreement (JPA) which also involves the City of Oroville and the Thermalito Water and Sewer District. The plant is rated for an average dry-weather flow of 6.5 million gallons per day with current average dry-weather flows of 2.63 million gallons per day. According to SC-OR, the plant has a current capacity capable of serving 2,300 new homes. The unused capacity of the plant is available to the JPA members under a first come, first served policy.

SEWER SYSTEM MASTER PLAN

The Sewer System Master Plan is an evaluation of the District's wastewater collection system. The system is evaluated in terms of its ability to adequately convey current flows and, by estimating the future growth of the District's service area, in terms of its ability to accommodate additional future flows. The study also identifies new collection system facilities which will be needed to allow the system to expand into new service territory.

Chapter 2 contains information on the existing and projected future wastewater flows for the District. Included are current flow projections, wastewater generation factors, and projections of future additional flows.

A description of the existing collection system is included in Chapter 3. This chapter presents an inventory of existing pipelines and lift stations, a discussion of infiltration/inflow and its effects on the system, and a discussion of the District's pipeline replacement history.

The actual sewer system master plan, including results of a computer analysis of the system, is presented in Chapter 4. Chapter 4 includes discussions on current and future wastewater flow quantities, pipeline capacities and sizing, and, based on the results of the computer analysis, a list of the pipelines in need of replacement along with their estimated costs. This chapter also includes new collection system facilities needed to meet the anticipated expansion of the system along with cost estimates.

Chapter 5 is a recommended plan and capital improvement program for the replacement of existing facilities and construction of new facilities. It provides cost estimates and the estimated time when the improvements will be needed.

Appendix A contains a discussion of the computer model analysis and Appendix B contains the computer printouts showing the results of the computer modeling.

AUTHORS AND CREDITS

Sauers Engineering, Inc. of Nevada City provided overall project coordination and was directly responsible for the preparation of the master plan. Key personnel included Keith Knibb, RCE 51290, Dean Marsh, RCE 58100, and Kirk Moberg, EIT.

Thanks go out to the members of the Lake Oroville Area Public Utility District staff who participated in the master planning process. The valuable information and assistance provided by District staff made this study possible. Staff members who contributed valuable assistance and information during the preparation of the master plan include Scott McCutcheon, General Manager; Dan Sanders, Field Operations Supervisor, Darin Kahalekulu, Office Clerk.

Chapter 2

EXISTING AND PROJECTED WASTEWATER FLOWS

This chapter of the master plan report describes the methods used to evaluate current and future wastewater generation rates, population development trends, and average wastewater flow rates.

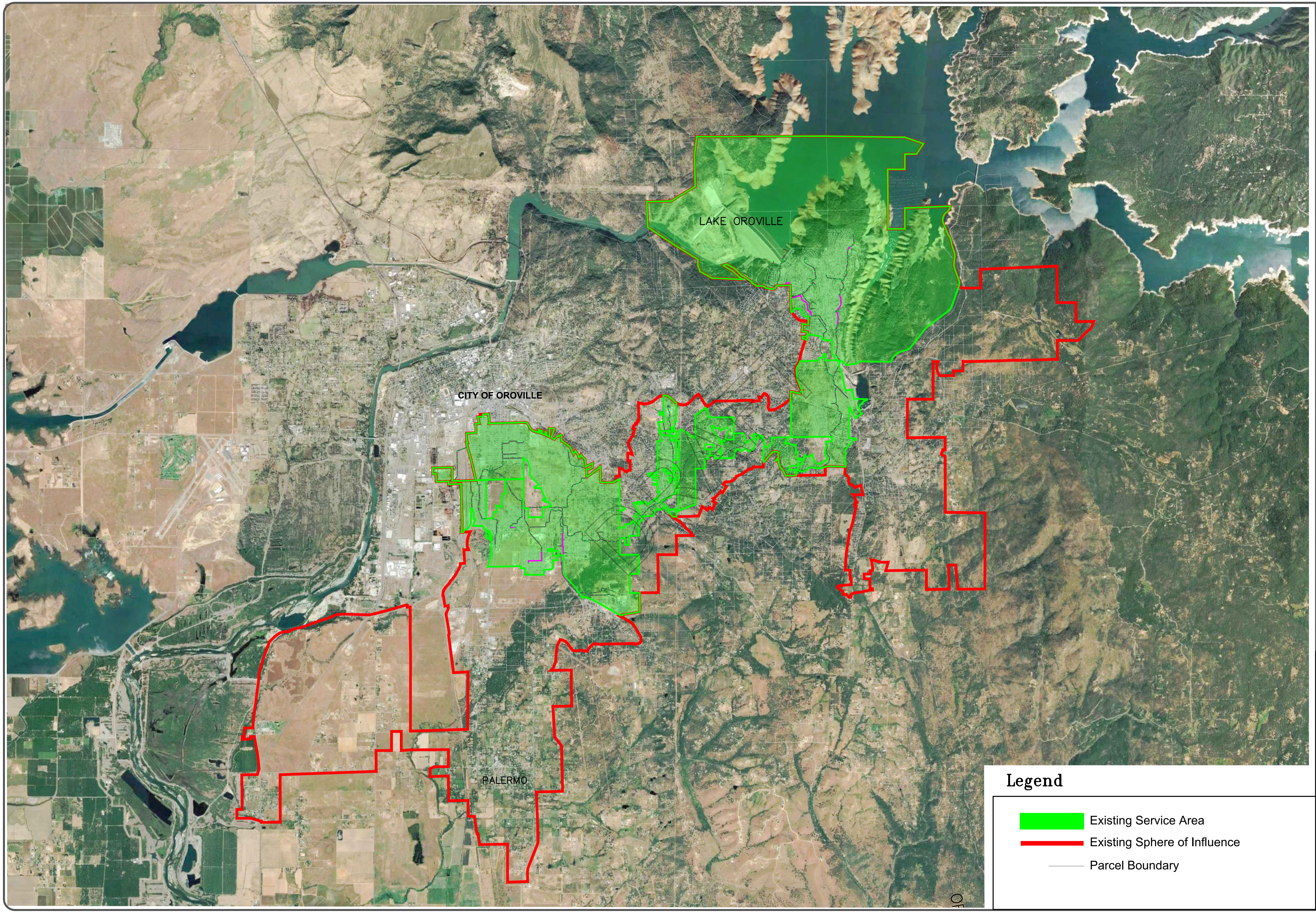
BACKGROUND

In 2010, an updated Sphere of Influence Plan for LOAPUD was adopted by the Butte Local Agency Formation Commission (LAFCO). A Sphere of Influence is a long-range planning tool that analyzes the physical boundary of a local agency or jurisdiction, and the present and probable need for services within that area. The sphere indicates the logical area in which the District anticipates services will be utilized. The Study Area for this Master Plan will include all of the territory within the existing service area boundaries along with the territory outside of the service area and within the Sphere of Influence boundaries. The Master Plan Study Area is shown on Figure 2.

Existing wastewater flows as measured at the SC-OR meter and land uses for areas currently being served by the District are the basis for predicting the current wastewater generation factors. District maps and billing records indicate the type of service (residential, commercial, public, etc.) for each customer and the total number of EDUs. Projections for future development within the study area are based on the Butte County General Plan 2030 for areas outside of the City of Oroville and the City of Oroville 2030 General Plan for areas within the City. The general plans include zoning and land use designation maps and descriptions used to determine the character and density of future development in the study area. Local conditions such as topography, water courses, and other environmental constraints were also taken into account in determining areas of land not likely to be developed. In some cases, where more specific information was available on proposed projects, that information was used in lieu of general plan designations.

WASTEWATER FLOW BASE INFORMATION

To accurately model the distribution of development and corresponding flows, the District's sewer service area was divided into drainage subareas, or collection zones. The collection zones were based on the District's sewer system maps and on topographic maps for areas not currently served. The collection zones represent areas which contribute flows through smaller collection system branches to a common point on one of the systems primary interceptor lines or sewer lift stations. Collection zone identification numbers refer to the District manhole number on the interceptor line which receives sewage from the collection zone. The map of the current collection zones is shown on Figure 3. Land use projections for each of the collection zones including existing EDU's, future projected EDU's, and future commercial areas within the current service boundary are also shown on Figure 3.



Sewer System Masterplan 2021

Figure 2
Master Plan Study Area

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
1960 ELGIN STREET
OROVILLE, CA 95966
TEL. (530) 533-2000
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Designed:	KEM
Drawn:	KEM
Date:	JULY 2021
Scale:	N.T.S.

Catchment Areas

MH#	edu's:	ADWF (gpm)	I/I (gpm)	Total Flow: (gpm)
03	5	00.48	27.99	28.47
06	137	13.02	113.99	127.01
AA10	410	38.95	274.26	313.21
11	2	00.19	8.36	8.55
14	9	00.86	55.85	56.71
B3A	32	3.04	24.18	27.22
B8	20	1.90	17.69	19.59
B12	41	3.90	35.44	39.34
C3	61	5.80	43.13	48.93
C29A	100	9.50	69.68	79.18
C11	18	1.71	15.74	17.45
C16	27	2.57	20.92	23.49
C20	14	1.33	13.18	14.51
C23	25	2.38	19.06	21.44
C28	21	1.99	12.84	14.83
E2	10	0.95	13.63	14.58
E3A	73	6.94	49.13	56.07
E13	64	6.08	26.51	32.59
E29	59	5.61	31.74	37.35
E33	44	4.18	17.53	21.71
E51	72	6.84	45.39	52.23
E59	81	7.70	47.92	55.62
E67	194	18.43	119.30	137.73
E76	129	12.26	42.07	54.33
F1	136	12.92	114.51	127.43
F31	59	5.61	46.73	52.34
F42	40	3.80	27.86	31.66
LPMH	22	2.09	2.10	4.19
G6	17	1.62	10.85	12.47
G8	16	1.52	4.94	6.46
G25	209	19.86	36.06	55.92
G49	34	3.23	3.23	6.46
G61	41	3.12	4.08	7.20
G67	13	0.99	1.66	2.59
G71	135	10.26	5.50	15.76
G99	10	0.76	3.50	4.26
G100	6	0.57	3.53	4.10
G106A	20	1.90	4.18	6.08
G109	22	2.09	3.97	6.06
G115	14	1.33	3.81	5.14
G120	46	4.37	4.36	8.73
G226	35	2.66	3.55	6.21
G245	300	28.50	8.04	36.54
31	19	1.81	22.16	23.97
37	21	1.99	7.53	9.52
38	5	0.48	3.77	4.25
39	25	2.38	10.77	13.15
S45	61	5.80	46.11	51.91
S48	28	2.66	42.43	45.09
S58	22	2.09	20.20	22.29

Catchment Areas

MH#	edu's:	ADWF (gpm)	I/I (gpm)	Total Flow: (gpm)
40	5	0.48	9.77	10.25
VV1	24	2.28	26.72	29.00
VV7	75	7.13	34.80	41.93
VV14	21	1.99	11.71	13.70
VV17	21	1.99	14.32	16.31
VV22	21	1.99	13.74	15.73
S64	11	1.05	7.51	8.56
42	18	1.71	31.97	33.68
I1AB	52	4.94	28.01	32.95
51	24	2.28	47.65	49.93
J1	22	2.09	29.93	32.02
J5	24	2.28	14.45	16.73
66	8	0.76	18.65	19.41
71	19	1.81	20.72	22.53
73	5	0.48	9.91	10.39
74	15	1.43	31.74	33.17
81	26	2.47	32.91	35.38
84	47	4.47	53.74	58.21
86	12	1.14	25.13	26.27
88	11	1.05	44.44	45.49
O10	15	1.43	20.14	21.57
O18	14	1.33	10.75	12.08
O24	29	2.76	17.04	19.80
O30	59	5.61	39.41	45.02
O45	17	1.62	11.15	12.77
O46	7	0.67	26.80	27.47
O49	40	3.80	39.57	43.37
O60	98	9.31	40.09	49.40
GC8	237	22.52	40.18	62.70
GC15	9	0.86	10.09	10.95
GCRV3	73	5.55	20.72	26.27
95	38	3.61	55.82	59.43
97	7	0.67	12.48	13.15
100	18	1.71	12.71	14.42
102	10	0.95	6.13	7.08
103	12	1.14	27.28	28.42
107	12	1.14	15.41	16.55
110	11	1.05	24.48	25.53
121	9	0.86	21.56	22.42
125	11	1.05	20.86	21.91
129	15	1.43	30.41	31.84
137	15	1.43	40.37	41.80
152	1	0.095	41.37	41.37
154	219	20.81	73.57	94.38
168	21	1.99	18.43	20.42
V1	122	11.59	58.44	70.03

Catchment Areas

MH#	edu's:	ADWF (gpm)	I/I (gpm)	Total Flow: (gpm)
174	2	0.19	11.84	12.03
180	26	2.47	23.94	26.41
185	153	14.54	47.08	61.62
LR26	1	0.095	13.68	13.78
LR20	4	0.38	24.27	24.65
LR9	6	0.57	7.51	8.08
LR7	17	1.62	22.23	23.85
Z37A	8	0.76	7.79	8.55
Z37AB	37	3.52	28.99	32.51
Z28A	31	2.95	16.82	19.77
Z3	5	0.48	11.67	12.15
Z2A	74	7.03	7.95	14.98
Z1CB	71	6.75	12.39	19.14
Z14	85	8.08	15.82	23.90
Z17	47	4.47	9.14	13.61
Z21	32	3.04	8.45	11.49
Z23	77	7.32	15.68	23.00
Z27	4	0.38	2.43	2.81
Z11B	8	0.76	1.22	1.98
Z28AA	40	3.80	8.00	11.80
Z29	121	11.50	14.28	25.78
Z30	41	3.90	7.86	11.76
Z26E	27	2.57	2.02	4.59
Z31E	13	0.99	0.79	1.78
Z37E	39	2.96	3.00	5.96
Z52E	14	1.06	0.89	1.95
Z56E	21	1.60	1.34	2.94
Z64E	30	2.28	1.46	3.74
Z73E	21	1.60	1.59	3.19
Z81E	70	5.32	5.27	10.59
Z109E	28	2.13	1.83	3.96
Z123E	35	2.66	2.23	4.89
Z137E	77	5.85	5.58	11.43
Z170E	46	3.50	2.11	5.61
Z179E	13	0.99	0.85	1.84
Z184E	14	1.33	1.47	2.80
Z185E	51	3.88	3.35	8.20
Z201E	36	2.74	2.35	5.09
Z218EB	6	0.57	0.70	1.27
Z221E	3	0.29	0.33	0.62
Z223E	28	2.66	1.02	3.68
Z234E	29	2.76	1.12	3.88
Z246E	30	2.85	1.27	4.12
Z261E	15	1.43	1.65	3.08
Z283E	96	9.12	18.56	27.68
DWR2	50	4.75	0.53	5.28
	14	1.33	0.17	1.31

ADWF: 0.095 gpm/edu

ADWF: 0.076 gpm/edu @ mobile home, RV parks, secodary homes. (MH's: G61, G67, G71, G99, G226, GCRV3, Z31E, Z37E, Z52E, Z56E, Z64E, Z73E, Z81E, Z109E, Z123E, Z137E, Z170E, Z179E, Z185E, Z201E)

CITY OF OROVILLE

LAKE OROVILLE

HERITAGE LS

PROPOSED MT. IDA LS

GRETOWN LS

Legend

- Collection Area
- VV7 Collection Area Name
- Existing Sphere of Influence Boundary
- Existing Service Boundary
- Existing Sewer Gravity Main Lines
- Existing Sewer Force Main
- Parcel Boundary
- Existing Lift Station

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Sewer System Masterplan 2021

Figure 3
Current Collection Zone Map

LAKE OROVILLE PUBLIC UTILITY AREA DISTRICT
1960 ELGIN STREET
OROVILLE, CA 95966
TEL. (530) 533-2000
Butte California

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Civil & Environmental Engineers
105 Providence Mine Rd, Suite 202, Nevada City, CA 95959
tel (530) 265-8021 www.sauerseng.com

Designed: KEM
Drawn: KEM
Date: JULY 2021
Scale: 1" = 3,000'

Sewer services were distributed within the collection zones based on the District's billing records and maps showing the parcels being served. Existing commercial services were converted to equivalent dwelling units (EDU's) for use in flow projections. The total EDU count for the District is 6,160. The existing flow projections were calculated using the SC-OR metering records for District flow to the treatment plant. In addition, some collection zone flow projections were calculated using District flow meter records and sewer lift station records.

Flow generation factors were based on the number of equivalent dwelling units being served by the District and the total flow as recorded at the SC-OR meter. Flows were averaged over the last five years for average dry-weather flow (ADWF). Wet weather flows were also estimated based on peak flows recorded at the SC-OR meter and flow measurements taken at District lift stations. Increased flow due to wet weather conditions was distributed as infiltration/inflow (I/I) to the various collection zones based on the age, condition, and known deficiencies of each collection zone system.

To determine the ADWF from the LOAPUD collection system, flows to the SC-OR Plant between 2015 and 2019 during the dry weather periods between May and October were averaged and are listed in Table 2-1.

Table 2-1
Average Dry Weather Flows
From LOAPUD to SCOR Plant

	Average Dry Weather Flow, million gallons per day (mgd)					
Month	*2015*	*2016*	*2017*	*2018*	*2019*	*Average*
May	0.754	0.775	0.791	0.791	0.867	0.796
June	0.693	0.725	0.758	0.754	0.769	0.740
July	0.690	0.706	0.731	0.729	0.708	0.713
August	0.705	0.729	0.741	0.734	0.740	0.730
September	0.714	0.751	0.751	0.755		0.743
October	0.730	0.789	0.751	0.789		0.765
					Average Dry Weather Flow (mgd)	0.748

Using the total EDU count within the District of 6,160, the average dry weather daily flow per EDU is 121 gpd/EDU (748,000 gpd/6,160 EDU). In the previous Master Plan, the waste generation factor was calculated to be 141 gpd/EDU. This difference may be attributed to a number of factors including:

- The District's continued aggressive I/I program which has continued to reduce I/I flows into the system, including dry weather I/I.
- Changes to the Uniform Plumbing Code which require low-flow fixtures.
- Customer habits with respect to water conservation in light of more frequent drought conditions.
- The District's Lateral Inspection and Replacement Program which reduces I/I from customer owned plumbing systems.

Applying a factor of safety of 1.5 to the 121 gpd/EDU derived above results in a District standard wastewater generation factor of 190 gpd/EDU. The wastewater generation factors (average dry-weather flow) used to develop flows for the current year 2020 condition and for future flow projections are as follows:

Residential:	190 gallons per day/Equivalent Dwelling Unit
Commercial/Industrial:	600 gallons per day/gross acre
Public Lands:	Case by case projection

The estimated distribution of current wastewater flows for each collection zone is shown on Figure 3. The year 2020 flow projections using the above generation factors for the ADWF are shown in Table 2-2. The AWWF shown in Table 2-2 is the actual wet weather flows metered at the SCOR Plant as discussed and shown later in Table 4-1. The PWWF shown in Table 2-2 is based on a peaking factor of 6.5.

Table 2-2

YEAR 2020 FLOW PROJECTIONS

ADWF (mgd)	AWWF (mgd)	Peak WWF (mgd)
0.748	0.978	6.357

FUTURE WASTEWATER FLOW PROJECTIONS

The Butte County general plan gives information on the potential ultimate development of the study area based on the land use and zoning designations. This ultimate, or buildout, condition can be derived from the general plan densities and the area of land in each zoning district. This does not, however, give any indication as to when the buildout condition will be realized. The rate of development in the District in recent years has been relatively steady at approximately 1% growth per year. The Center for Economic Development at CSU Chico publication, Butte County Economic and Demographic Profile 2018, shows an approximate growth rate in the Oroville area of approximately 1% since 1990. This Master Plan will continue to use a 1% growth rate for projections through buildout.

Figure 4 presents a map of areas between the District's current service boundary and SOI that could be serviced in the future. It shows the projected buildout flows from these areas and what manhole these flows would enter the main interceptor line. Table 2-3 shows the current flows from each of the collection zones along with projected future flows through buildout.

DEVLOPMENT AREAS OF INTEREST

There are areas that include both residential and commercial zoning designations, that, based on recent planning and development activities, may have greater growth potential within the study area. Some areas of interest that have the potential for being a part of the future LOAPUD Service Area include:

- Ophir/Las Plumas
- Rio D'Oro
- Stringtown/Whisper Ridge

The Ophir/Las Plumas development area is located south of the City of Oroville and north of the town of Palermo. Baggett Marysville Road borders the west side, Lower Wyandotte Road borders the east, and Ithaca Street borders the north. The total Las Plumas Study Area consists of approximately 2,247 acres with approximately 385 acres projected for development. The projected development would consist of 1,899 dwelling units and 11.5 acres of commercially zoned space. The Ophir/Las Plumas development area encompasses land that is inside the existing LOAPUD service area boundary and also land that is between the service area boundary and the Sphere of Influence boundary. It is proposed that flows generated in the Ophir/Las Plumas development area would flow to the proposed Ophir-Lincoln Lift Station near the intersection of Ophir Road and Lincoln Boulevard.

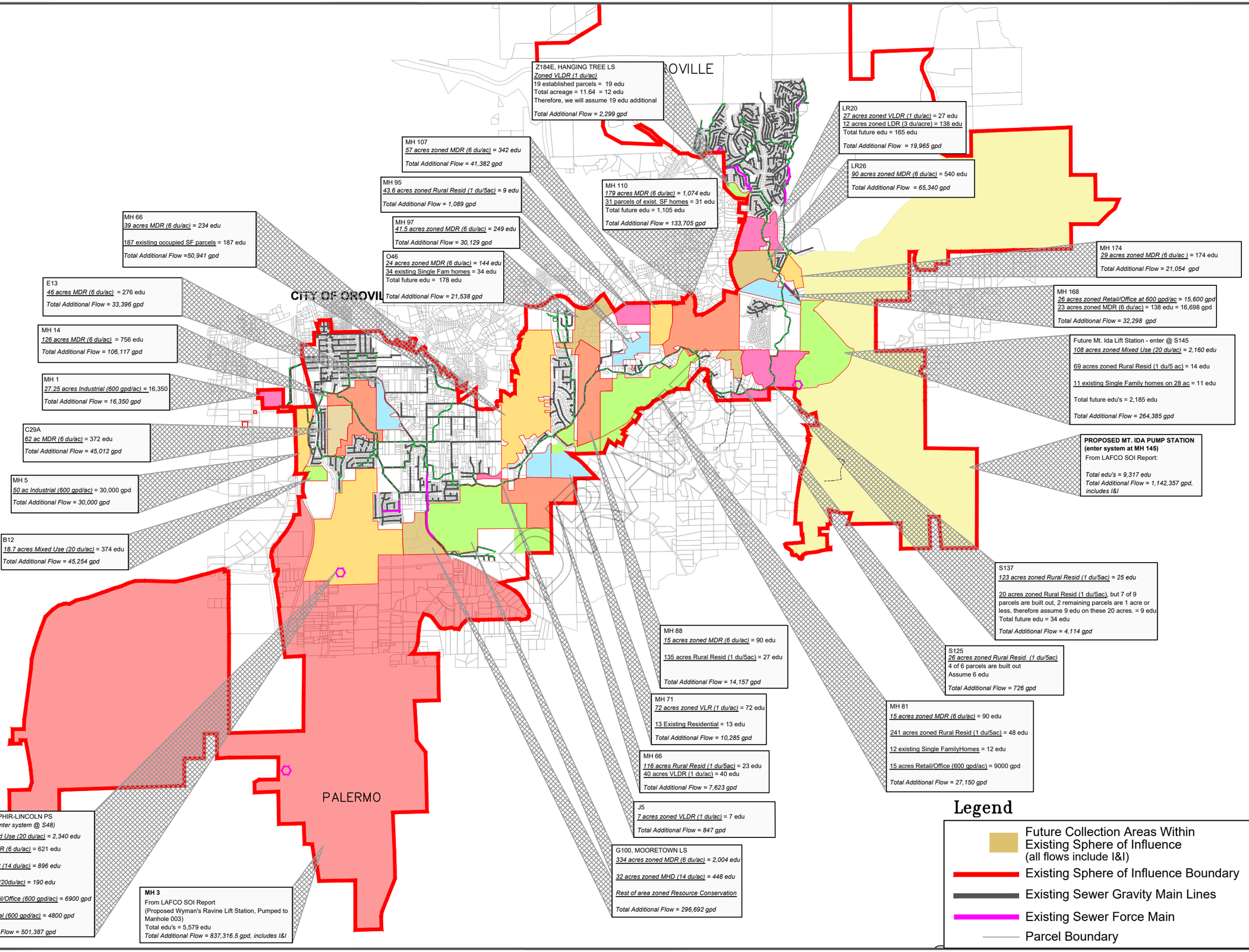
The Rio D'Oro development is located along Highway 70 south of Oroville and includes 685 acres with proposed land uses of residential, commercial, public facility, park and open space, and environmental conservation. Approximately 2,730 residential units and 30 acres of commercial use are planned. Although development efforts appear to have stalled in recent years, this is still considered an active project. The wastewater from Rio D'Oro would be piped to the new proposed Wyman's Ravine Lift Station to be located west of Palermo.

The Stringtown/Whisper Ridge development area is located at the furthest northeast portion of the District's Sphere of Influence. Uses include residential, commercial, and a golf course resort. Specific Plans for this area have been approved by Butte County and preliminary discussions between developers and the District have been had with respect to providing sewer service. Wastewater from this area is anticipated to flow to the proposed future Mt. Ida Lift Station planned for Mt Ida Road near Miners Ranch Road.

Even as the District's service area approaches buildout, it is unlikely that the entire population within the ultimate sphere of influence would be served by a public wastewater collection and treatment system due to limitations in plant capacity, the cost of extending the collection

Sewer System Masterplan 2021

Figure 4
Future Collection Zones



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Drawn: KEM
Date: JULY 2021
Scale: N.T.S.

system, topographical constraints on the collection system itself, and low population densities in some of the outlying areas. Some of the areas in the sphere of influence will continue to be served by septic systems and not pursue annexation unless there are strong incentives for annexation such as a significant number of septic system failures which present health and safety concerns.

For the purpose of this master plan, flow projections within the current service boundary were developed for buildout with a growth rate at 1%. These projections, presented in Table 2-3, were generated by estimating the distribution of new households anticipated in the general plan along with new commercial and industrial development within the individual master plan collection zones. The flow projections attempt to recognize projects in progress and any other known information.

Table 2-3

FUTURE TOTAL FLOW PROJECTIONS

Current (2020)			Buildout		
Total ADWF (mgd)	Total AWWF (mgd)	Total PWWF (mgd)	Additional ADWF (mgd)	Total ADWF (mgd)	Total PWWF (mgd)
0.747	0.978	5.467	0.838	1.585	9.270

Table 2-4 breaks down the ADWF flow projections for each collection zone within the current service boundary and the sphere of influence boundary. These tables show the projected flows for the year of analysis and also projects when buildout will occur to reach the projected buildout flow. This is based on a 1% growth rate.

Table 2-4
Current Flows & Flow Projections to Buildout at 1% Growth Rate

MH Collection Zone	Current EDU Count	ADWF (gpm)	I/I (gpm)	Total 2021 Flows (gpm)	Additional Buildout Flow (gpd)	Additional Buildout Flow (gpm)	Total Flow @ Buildout (gpm)	Years to reach buildout @ 1% growth	Year Buildout Would Occur
1	0	0	0	0.00	16,350	11.35	11.36	938.40	2959
3	5	0.48	27.99	28.47	837,317	581.47	609.94	307.98	2329
5	0	0	0	0.00	30,000	20.83	20.83	999.40	3020
6	137	13.02	113.99	127.01			127.01		
AA10	410	38.95	274.26	313.21			313.21		
11	2	0.19	8.36	8.55			8.55		
14	9	0.86	55.85	56.71	106,117	73.69	130.40	83.68	2105
B3A	32	3.04	24.18	27.22			27.22		
B8	20	1.9	17.69	19.59			19.59		
B12	41	3.9	35.44	39.34	45,254	31.43	70.77	59.01	2080
C3	61	5.8	43.13	48.93			48.93		
C29A	100	9.5	69.68	79.18	45,012	31.26	110.44	33.44	2054
C11	18	1.71	15.74	17.45			17.45		
C16	27	2.57	20.92	23.49			23.49		
C20	14	1.33	13.18	14.51			14.51		
C23	25	2.38	19.06	21.44			21.44		
C28	21	1.99	12.84	14.83			14.83		
E2	10	0.95	13.63	14.58			14.58		
E3A	73	6.94	49.13	56.07			56.07		
E13	64	6.08	26.51	32.59	33,396	23.19	55.78	54.01	2075
E29	59	5.61	31.74	37.35			37.35		
E33	44	4.18	17.53	21.71			21.71		
E51	72	6.84	45.39	52.23			52.23		
E59	81	7.7	47.92	55.62			55.62		
E67	194	18.43	119.3	137.73			137.73		
E76	129	12.26	42.07	54.33			54.33		
F1	136	12.92	114.51	127.43			127.43		
F31	59	5.61	46.73	52.34			52.34		
F42	40	3.8	27.86	31.66			31.66		
LPMH	22	2.09	2.1	4.19			4.19		
G6	17	1.62	10.85	12.47			12.47		
G8	16	1.52	4.94	6.46			6.46		
G25	209	19.86	36.06	55.92			55.92		
G49	34	3.23	3.23	6.46			6.46		
G61	41	3.12	4.08	7.2			7.2		
G67	13	0.99	1.66	2.59			2.59		
G71	135	10.26	5.5	15.76			15.76		
G99	10	0.76	3.5	4.26			4.26		
G100	6	0.57	3.53	4.1	296,692	206.04	210.14	395.64	2417
G106A	20	1.9	4.18	6.08			6.08		

Table 2-4, continued
Current Flows & Flow Projections to Buildout at 1% Growth Rate

MH Collection Zone	Current EDU Count	ADWF (gpm)	I/I (gpm)	Total 2021 Flows (gpm)	Additional Buildout Flow (gpd)	Additional Buildout Flow (gpm)	Total Flow @ Buildout (gpm)	Years to reach buildout @ 1% growth	Year Buildout Would Occur
G109	22	2.09	3.97	6.06			6.06		
G115	14	1.33	3.81	5.14			5.14		
G120	46	4.37	4.36	8.73			8.73		
G226	35	2.66	3.55	6.21			6.21		
G245	300	28.5	8.04	36.54			36.54		
31	19	1.81	22.16	23.97			23.97		
37	21	1.99	7.53	9.52			9.52		
38	5	0.48	3.77	4.25			4.25		
39	25	2.38	10.77	13.15			13.15		
S45	61	5.8	46.11	51.91			51.91		
S48	28	2.66	42.43	45.09	501,387	348.19	393.28	217.67	2239
S58	22	2.09	20.2	22.29			22.29		
40	5	0.48	9.77	10.25			10.25		
VV1	24	2.28	26.72	29			29.00		
VV7	75	7.13	34.8	41.93			41.93		
VV14	21	1.99	11.71	13.7			13.70		
VV17	21	1.99	14.32	16.31			16.31		
VV22	21	1.99	13.74	15.73			15.73		
S64	11	1.05	7.51	8.56			8.56		
42	18	1.71	31.97	33.68			33.68		
I1AB	52	4.94	28.01	32.95			32.95		
51	24	2.28	47.65	49.93			49.93		
J1	22	2.09	29.93	32.02			32.02		
J5	24	2.28	14.45	16.73	847	0.59	17.32	3.47	2024
66	8	0.76	18.65	19.41	58,564	40.67	60.08	113.55	2135
71	19	1.81	20.72	22.53	10,285	7.14	29.67	27.67	2049
73	5	0.48	9.91	10.39			10.39		
74	15	1.43	31.74	33.17			33.17		
81	26	2.47	32.91	35.38	27,150	18.85	54.23	42.93	2064
84	47	4.47	53.74	58.21			58.21		
86	12	1.14	25.13	26.27			26.27		
88	11	1.05	44.44	45.49	14,157	9.83	55.32	19.66	2041
O10	15	1.43	20.14	21.57			21.57		
O18	14	1.33	10.75	12.08			12.08		
O24	29	2.76	17.04	19.8			19.80		
O30	59	5.61	39.41	45.02			45.02		
O45	17	1.62	11.15	12.77			12.77		
O46	7	0.67	26.8	27.47	21,538	14.96	42.43	43.69	2065
O49	40	3.8	39.57	43.37			43.37		
O60	98	9.31	40.09	49.4			49.40		

Table 2-4, continued
Current Flows & Flow Projections to Buildout at 1% Growth Rate

MH Collection Zone	Current EDU Count	ADWF (gpm)	I/I (gpm)	Total 2021 Flows (gpm)	Additional Buildout Flow (gpd)	Additional Buildout Flow (gpm)	Total flow @ Buildout (gpm)	Years to reach buildout @ 1% growth	Year Buildout Would Occur
GC8	237	22.52	40.18	62.7			62.70		
GC15	9	0.86	10.09	10.95			10.95		
GCRV3	73	5.55	20.72	26.27			26.27		
95	38	3.61	55.82	59.43	1,089	0.76	60.19	1.27	2022
97	7	0.67	12.48	13.15	30,129	20.92	34.07	95.68	2117
100	18	1.71	12.71	14.42			14.42		
102	10	0.95	6.13	7.08			7.08		
103	12	1.14	27.28	28.42			28.42		
107	12	1.14	15.41	16.55	41,382	28.74	45.29	101.17	2122
110	11	1.05	24.48	25.53	133,705	92.85	118.38	154.17	2175
121	9	0.86	21.56	22.42			22.42		
125	11	1.05	20.86	21.91	726	0.50	22.41	2.29	2023
129	15	1.43	30.41	31.84			31.84		
137	15	1.43	40.37	41.8	4,114	2.86	44.66	6.64	2028
145	0	0	0	0.00	264,385	183.60	183.60	1218.10	3239
145 LAFCO	0	0	0	0.00	1,142,357	793.30	793.30	1365.18	3386
152	1	0.095	41.37	41.37			41.37		
154	219	20.81	73.57	94.38			94.38		
168	21	1.99	18.43	20.42	32,298	22.43	42.85	74.49	2095
V1	122	11.59	58.44	70.03			70.03		
174	2	0.19	11.84	12.03	21,054	14.62	26.65	79.94	2101
180	26	2.47	23.94	26.41			26.41		
185	153	14.54	47.08	61.62			61.62		
LR26	1	0.095	13.68	13.78	65,340	45.38	59.16	146.42	2167
LR20	4	0.38	24.27	24.65	19,965	13.86	38.51	44.85	2066
LR9	6	0.57	7.51	8.08			8.08		
LR7	17	1.62	22.23	23.85			23.85		
Z37A	8	0.76	7.79	8.55			8.55		
Z37AB	37	3.52	28.99	32.51			32.51		
Z28A	31	2.95	16.82	19.77			19.77		
Z3	5	0.48	11.67	12.15			12.15		
Z2A	74	7.03	7.95	14.98			14.98		
Z1CB	71	6.75	12.39	19.14			19.14		
Z14	85	8.08	15.82	23.9			23.90		
Z17	47	4.47	9.14	13.61			13.61		
Z21	32	3.04	8.45	11.49			11.49		
Z23	77	7.32	15.68	23			23.00		
Z27	4	0.38	2.43	2.81			2.81		
Z11B	8	0.76	1.22	1.98			1.98		

Table 2-4, continued
Current Flows & Flow Projections to Buildout at 1% Growth Rate

MH Collection Zone	Current EDU Count	ADWF (gpm)	I/I (gpm)	Total 2021 Flows (gpm)	Additional Buildout Flow (gpd)	Additional Buildout Flow (gpm)	Total flow @ Buildout (gpm)	Years to reach buildout @ 1% growth	Year Buildout Would Occur
Z28AA	40	3.8	8	11.8			11.8		
Z29	121	11.5	14.28	25.78			25.78		
Z30	41	3.9	7.86	11.76			11.76		
Z26E	27	2.57	2.02	4.59			4.59		
Z31E	13	0.99	0.79	1.78			1.78		
Z37E	39	2.96	3	5.96			5.96		
Z52E	14	1.06	0.89	1.95			1.95		
Z56E	21	1.6	1.34	2.94			2.94		
Z64E	30	2.28	1.46	3.74			3.74		
Z73E	21	1.6	1.59	3.19			3.19		
Z81E	70	5.32	5.27	10.59			10.59		
Z109E	28	2.13	1.83	3.96			3.96		
Z123E	35	2.66	2.23	4.89			4.89		
Z137E	77	5.85	5.58	11.43			11.43		
Z170E	46	3.5	2.11	5.61			5.61		
Z179E	13	0.99	0.85	1.84			1.84		
Z184E	14	1.33	1.47	2.8	2,299	1.60	4.40	45.34	2066
Z185E	51	3.88	3.35	8.2			8.20		
Z201E	36	2.74	2.35	5.09			5.09		
Z218EB	6	0.57	0.7	1.27			1.27		
Z221E	3	0.29	0.33	0.62			0.62		
Z223E	28	2.66	1.02	3.68			3.68		
Z234E	29	2.76	1.12	3.88			3.88		
Z246E	30	2.85	1.27	4.12			4.12		
Z261E	15	1.43	1.65	3.08			3.08		
Z283E	96	9.12	18.56	27.68			27.68		
DWR2	50	4.75	0.53	5.28			5.28		
W1	12	1.14	0.17	1.31			1.31		
Total (gpm):		581.46	3214.56	3796.84	3802909	2640.91	6437.75		
Total (MGD):		0.837	4.629	5.467	3.80		9.270		

Chapter 3

EXISTING WASTEWATER COLLECTION SYSTEM

This chapter describes the existing wastewater collection system within the District's service area. The system includes gravity pipelines, manholes, pressure pipelines, and sewer pump stations as shown on Figure 5.

WASTEWATER COLLECTION SYSTEM

According to an inventory of the District's collection system maps, the system consists of approximately 77 miles of gravity sewer pipeline ranging from 3-inch to 30-inch diameter and approximately 4.5 miles of force main. The force main inventory includes approximately 2.5 miles of force main from the District's lift stations and approximately 2 miles of small diameter pressure pipe within the Villa Verona STEP system. The collection system also includes approximately 1,550 manholes. Table 3-1 shows the pipeline system inventory. There are also nine sewer lift stations in the system.

Table 3-1

COLLECTION SYSTEM INVENTORY

Collection System Pipeline (3"-10", typ)	Collection System Manholes	Interceptor Pipeline (12"-24", typ)	Interceptor Manholes	Force Main (3"-8", typ)	Individual STEP Systems
348,128 ft. (65.9 mi.)	1,550	58,360 ft. (11.0 mi.)	203	23,760 ft. (4.5 mi.)	304

Pipeline materials vary throughout the collection system and include examples of many of the most popular pipeline materials used for sewer construction over the years. Materials include concrete, clay, steel, ductile iron, asbestos-cement, and polyvinyl chloride. Pipe joint materials have also changed over the years with older pipelines likely consisting of concrete mortar or leaded joints and newer pipelines consisting of synthetic rubber joints. The newer joint materials are believed to greatly improve pipe performance, with a marked reduction in infiltration rates.

Manholes are typically concrete, either cast-in-place or precast. Normal manhole depths range from 3 to 10 feet deep. There are some manholes which are very shallow, less than 2 feet, and some that are very deep, greater than 18 feet.

<u>Villa Verona STEP System</u>

The District operates an existing STEP (septic tank effluent pump) system in the Villa Verona Assessment District area. This system utilizes individual pumps and septic tanks located on the

LAKE OROVILLE

L-1 LIFT STATION

L-2 LIFT STATION

L-3 LIFT STATION

ROYAL OAKS LIFT STATION

HANGING TREE LIFT STATION

HERITAGE LIFT STATION

CITY OF OROVILLE

SC-OR METERING STATION

SC-OR WASTEWATER TREATMENT PLANT

LAS PLUMAS LIFT STATION

VISTA DEL CERRO LIFT STATION

MOORETOWN LIFT STATION

Legend

- Existing Sphere of Influence Boundary
- Existing Sewer Gravity Main Lines
- Existing Sewer Force Main
- Parcel Boundary
- Existing Lift Station

Sewer System Masterplan 2021

Figure 5
Existing Facilities Map

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Designed: KEM
Drawn: KEM
Date: July 2021
Scale: 1" = 3,000'

customer's property to pump wastewater from the customer to a District pipeline. These systems are used where local topography does not lend itself to either a conventional gravity collection system or a regional sewer lift station. These systems are considered high maintenance due to the need for servicing each of the pumps and periodic pumping of the septic tanks. Due to the high maintenance and the increased spill potential from the STEP system, the District has undertaken a program to replace portions of the Villa Verona STEP system with a conventional gravity system in areas where it is feasible. To date, the District has installed approximately 6,800 feet of gravity pipeline eliminating approximately 30 STEP system tank and pump systems and allowing for the connection of another 30 customers without the need for new tanks and pumps. Preliminary design for Phase 2 of the Villa Verona Replacement Project includes approximately 15,500 additional feet of pipeline replacement which would result in the elimination of another nearly 130 STEP system installations.

Regional Lift Stations

The collection system includes nine regional sewer lift stations currently maintained by LOAPUD for pumping sewage from local low-lying areas into the gravity collection system. Sewer lift station information is included in Table 3-2. Two of the lift stations are part of multiple stage pump systems whereby discharge from the stations flows to subsequent stations to be pumped again. Sewage from portions of the Kelly Ridge collection system must be pumped twice prior to reaching the gravity system.

TABLE 3-2 - LOAPUD LIFT STATIONS

Royal Oaks Lift Station	
Location:	Royal Oaks Dr.
Capacity:	200 gpm
EDUs Served:	129
Surface Elevation:	920'
Pumps:	2 - Moyno 1GOHS1, 15 hp
Wet Well Size:	1,500 gallon
Lift:	96'
Nearest Surface Water:	50'
Constructed:	1976
Upgrades:	Generator, SCADA, 2008

Hanging Tree Lift Station	
Location:	Hanging Tree Ct.
Capacity:	350 gpm
EDUs Served:	495
Surface Elevation:	985'
Pumps:	2, 2-Stage Gorman Rupp T6A-B 88 hp
Wet Well Size:	1,500 gallons
Lift:	176'
Nearest Surface Water:	5'
Constructed:	1976
Upgrades:	New Pumps, SCADA, 2003

Heritage Lift Station	
Location:	Rachell Road
Capacity:	130 gpm
EDUs Served:	12
Surface Elevation:	840'
Pumps:	2 - Peabody Barnes 4SEH-1002, 15 hp
Wet Well Size:	1,000 gallons
Lift:	22'
Nearest Surface Water:	30'
Constructed:	1976

Las Plumas Lift Station	
Location:	Las Plumas Ave.
Capacity:	110 gpm
EDUs Served:	110
Surface Elevation:	273'
Pumps:	2-Wemco Torque 3S2 submersible
Wet Well Size:	1,500 gallons
Lift:	11'
Nearest Surface Water:	300'
Constructed:	1965

L-1 Lift Station	
Location:	Bidwell Canyon Rd.
Capacity:	335 gpm
EDUs Served:	320
Surface Elevation:	938'
Pumps:	2 - Gorman Rupp T3A3S-B/WW, 15 hp
Wet Well Size:	4,500 gal
Overflow Storage:	11,000 gal
Lift:	42'
Nearest Surface Water:	100'
Constructed:	1976
Upgrades:	Rehab 2007

L-2 Lift Station	
Location:	Bidwell Canyon Rd.
Capacity:	447 gpm
EDUs Served:	422
Surface Elevation:	936'
Pumps:	2 - Gorman Rupp T6A3S-B/WW, 50 hp
Wet Well Size:	7,000 gal
Overflow Storage:	27,000 gal
Lift:	92'
Nearest Surface Water:	150'
Constructed:	1976
Upgrades:	Rehab 2007

L-3 Lift Station	
Location:	Bidwell Canyon Rd.
Capacity:	86 gpm
EDUs Served:	70
Surface Elevation:	949'
Pumps:	2-FLYGT submers. NP3102, 6 hp
Wet Well Size:	7,050 gal
Overflow Storage:	7,535 gal
Lift:	81'
Nearest Surface Water:	150'
Constructed:	1976
Upgrades:	Rehab 2007

Mooretown Lift Station	
Location:	Lower Wyandotte Rd.
Capacity:	325 gpm
EDUs Served:	668
Surface Elevation:	245'
Pumps:	2 - FLYGT NP3171 submersible 30 hp
Wet Well Size:	1,500 gal
Overflow Storage:	16,000 gal
Lift:	122'
Nearest Surface Water:	10'
Constructed:	1996
Upgrades:	Expansion 2006

Vista Del Cerro Lift Station	
Location:	Vista Del Cerro Rd.
Capacity:	300 gpm
EDUs Served:	217
Surface Elevation:	253’
Pumps:	HYDR-O-MATIC #s RV4B & LV4B, 15 hp
Wet Well Size:	1,500 gallons
Lift:	36'
Nearest Surface Water:	300'
Constructed:	1977

INFILTRATION/INFLOW

The District’s wastewater collection system is known to experience high rates of infiltration/inflow (I/I). This is not unusual considering the age and materials of much of the system. I/I is what accounts for the difference between dry weather flows and wet weather flows. Flows measured at the SC-OR meter indicate peak wet-weather flows are typically three to four times higher than dry-weather flows and can be as high as seven to eight times. These increases are directly attributable to I/I entering the system during wet weather conditions.

Infiltration is mainly groundwater which enters the collection system indirectly through defective pipes, pipe joints, damaged lateral connections, or manhole walls. Infiltration is related to high groundwater which is in turn influenced by rainfall and soil type. Infiltration does continue to impact the sewer system after a storm event has ended until the groundwater level is lower than the collection system. Infiltration also impacts the District's system even during the dry summer month periods due to nearby creeks and other water bodies.

Inflow is extraneous storm water which directly enters the sewer system through roof leaders, yard drains, sump pumps, clean outs, cellar drains, and storm drains which have been connected to the sewer collection system. Storm water may also enter the system through damaged or misplaced manhole lids and frame seals. Inflow tends to impact the sewer system in direct relation to storm events, starting as soon as runoff develops and ending shortly after the storm event ends.

High I/I rates can severely impact a sewer system in a number of ways. These include:

- The District pays to treat non-sewage flows.
- Peak I/I flows are the primary cause of surcharges and spills at manholes.
- Since design of replacement pipelines must take into account peak flows, the design tends to be driven by the need to accommodate I/I.
- The design of sewer lift stations must take into account I/I leading to larger facilities required to accommodate non-sewage flows.
- The District pays increased costs for larger facilities than would otherwise be needed for sewage flows.
- The District must pay SCOR for excess peak flows.

The District maintains an ongoing and aggressive I/I reduction program which has been successful as evidenced by the history of flow patterns to the SC-OR plant over the years. Using television inspections, smoke testing, and personnel experience, the District has identified a number of I/I problem sections in the collection system including pipelines and manholes. District crews have repaired and rehabilitated some of the worst problem areas. The District also utilizes portable flow meters which help in locating and isolating areas of high I/I. This has made the I/I reduction program more effective by concentrating efforts on areas which have been identified as having high I/I rates.

Private Sewer Laterals

Although the District has seen significant improvement in terms of decreased I/I flows, I/I is still a problem in many locations and the District, especially in the oldest portions of the collection system. Most of the worst conditioned pipeline and manholes have been identified and either repaired or replaced. An additional source of I/I is privately owned sewer laterals which connect the individual buildings to the sewer main. Historically, these laterals are the responsibility of the property owner rather than the District which, over the years, has led to a

severe lack of maintenance on these pipes. As a result, private sewer laterals are now one of the primary sources of I/I into the District's system.

In 2009, the District adopted a lateral pipeline testing and replacement program. This program requires that under various conditions, a property owner must test their sewer lateral and repair or replace the lateral if it does not meet current District standards. Triggers which require testing the lateral include connection of a new structure, remodel, change in use of a structure, repair/replacement of building sewer lines, and where District inspection reveals defects in the existing lateral. The District is currently exploring opportunities to provide assistance to property owners with repair/replacement expenses. With this lateral replacement program, it is anticipated that more lateral service lines will be replaced in the future which will have significant impact on I/I reduction.

Recent Replacement History

Since the 2000 Master Plan, the District has repaired and/or replaced sections of pipe throughout the service area to mitigate the I/I problem. The areas where pipeline has been replaced or repaired in response to I/I concerns are shown in Table 3-3.

Table 3-3
Sewer Pipeline Replacement History
In Response To I/I Concerns

Location	*Year*	*Size*	*Manhole # from*	*Manhole # to*	*Total Feet*	*Replace*
State Line Interceptor	2006-2009	Various	--	--	±8,270	Replace
Mission Line	2019	12"	S-16	S-18	465'	Replace
Idora Street	2018	6"	D-7	D-8	50'	Replace
Bidwell Reroute Line	2017	6"	--	--	265'	Replace
P-Line	2016-2018	12"&15"	S-113	P-7	1,795'	Replace
Laundromat Project	2014	8"	A-44	A-45	100'	Replace
Clinton Ave.	2011	8"	B-16	B-17	427'	Replace
Oakvale Court	2007	15"	S-113	S-125	2,992	Replace
Lincoln Crossing	2006	30"	M/H6	S-10	1,986	Replace
Lincoln Crossing	2006	36"	M/H1	M/H2	177	Replace
Lower Wyandotte	2006	27"	S-67	#11	1,985	Replace

L-2 Lift Station	2006	8"	L-2	L-3	1,000	Replace
Richtor Tract	2007	12"	A-10	A-40	955	Replace
Foothill Crossing	2008	30"	S-97	S-98	146	Replace
Foothill Crossing	2008	30"	S-98	S-99	70	Replace
Wahoo	2007	12"	S-126	S-127	140	Replace
Silverleaf	2007	8"	Z-31E	Z-31EA	87	Replace
Lower Wyandotte	2006	6"	G-67	G-70	72	Replace
Marysville Bagget	2005	N.A.	B-13	B-14	10	Replace
The district has also made numerous repairs to leaking pipe joints throughout their collection system in the last ten years.						

Chapter 4

COLLECTION SYSTEM MASTER PLAN

The objective of the collection system master plan is to (1) determine the capacity and limitations of the existing collection system, and (2) determine the physical modifications, renovations, and additions to the existing collection system necessary to meet current and future needs. To meet these objectives, the area served by the system, both currently and in the future, was identified, subdivided, and evaluated so that the wastewater generated in the service area could be calculated. The existing collection system was then analyzed to determine its ability to transport the generated flows to the SC-OR treatment facilities.

SERVICE AREA

The present service area and current sphere of influence as previously discussed is shown on Figure 2. As development occurs and the need for service expands, the service area will expand. Potential new service areas considered in this master plan are also shown on Figure 4. Predicting the timing and rate of expansion is very difficult because it is influenced by so many extraneous factors. For the purposes of modeling the collection system, the service area was analyzed in two stages; current year 2020 and buildout.

COLLECTION SYSTEM MODEL

The geometry of the existing system was modeled on a computer with the aid of the following information:

Lake Oroville Area Public Utility District Geographic Information System Mapping, Updates Ongoing

Villa Verona Replacement – Phase 1 Improvement Plans, May 2009

Lake Oroville Area Public Utility District System Map, February 2000

North Burbank Public Utility District Modifications to Royal Oaks Pump Sta., Sep 1978

North Burbank Public Utility District Sphere of Influence, June 1984

Kelly Ridge Estates Improvement Plans, September 1970

L-System Lift Station Modifications, January, 2007

Topographic Survey State Line Rehabilitation, March 2002

Topographic Survey Sanitary Sewer Facilities, May 2006

State Line Sewer Replacement 2006 - Phase 1, April 2006

State Line Sewer Replacement 2009 - Phase 2, May 2009

LOAPUD Sewer System Masterplan, 2010

In the model, existing interceptor lines and major collector lines were listed with their manholes, pipeline diameters, inlet and outlet elevations, and lengths. The topographic maps were used to lay out proposed interceptor and collector lines to serve areas beyond the present limits of the system. Elevations were also obtained from topographic maps and Google Earth™. A more detailed discussion of the modeling techniques and applicable input and output parameters is included in Appendix A of this report.

WASTEWATER FLOW QUANTITIES

In Chapter 2, land use and population trends were analyzed and projected into the future. Factors of wastewater production were applied to develop flow rates for land use areas at points of time in the future. These flow rates provide the basis for formulation of this master plan.

The collection system was modeled for the year 2020 and at buildout growth conditions. Sewage flows for the 2020 model were based on the current distribution of development and land uses. Collection zones were established using the District's sewer system maps. Collection zones consisted of areas of branched systems of smaller collection pipelines which eventually tie together to discharge at a single point into one of the sewer interceptor lines. Only the sewer interceptor lines, major collector lines, and some of the force mains were included in the collection system model. Flows accumulated in the collection zone pipelines were input as point sources into the appropriate interceptor line manholes.

Collection system models for the buildout conditions were based on the Butte County and City of Oroville General Plan maps for the study area. The additional residential and commercial development was distributed within the study area with emphasis on currently active new developments. Additional growth included infill of areas currently within the sewer service area and new development outside the sewer service area which could reasonably be expected to connect to the sewer system. For purposes of this master plan, some areas within the study area which are currently being served by individual septic/leachfield systems are expected to continue to use those systems and not contribute flow to the sewer system.

Essential elements in the development of the system requirements are the unit and per capita flows for the various types of anticipated land uses, as well as the characteristics of these general flows. The requirements must reflect the variations in the seasonal, daily, and hourly rates of flow so that the various elements of the system are properly related to each other and are economically sized.

The wastewater flow into the system is comprised of domestic flow, infiltration, and inflow. Domestic flow is generated in households, commercial and industrial establishments, and

public facilities. The flow of wastewater, excluding I/I, will vary throughout the day, with maximum flows occurring during the day and minimum flow at night. Domestic flow does not have a significant seasonal variation.

Sewer Pipeline Design Considerations

When designing for the proper size and slope for a new sewer line, the maximum domestic flow must be determined. The relationship between maximum domestic flow and average flow is usually expressed through a design term called "peaking factor." This peaking factor is multiplied by the average flow to determine the peak flow. Design peaking factors vary with the size of the collection system. Large systems have lower peaking factors (often about 2.0), while small systems have higher peaking factors (in the range of 3.0 to 4.0).

From a sewer modeling point of view, it is important to look at the sewer pipelines in terms of their capacity for storm events and the peak wet weather flows (PWWF). Analyzing a pipeline's ability to carry PWWFs is crucial to lessen the potential for pipeline surcharging and potential overflowing of manholes. Taking this into account, the computer modeling program peaked domestic flows based on a wet weather peaking factor developed by comparing SC-OR metering records of dry weather ADWF and wet weather PWWF.

Peak Flows

The peak daily flow during this study period is shown to be 7.7 mgd with an average daily flow during this study period of 0.75 mgd. Table 4-1 shows that daily wet weather flows are typically 0.8 to 1.2 mgd. This is 1.3 times the average daily dry weather flow. However, the SCOR plant receives peak flows from LOAPUD of short duration that can be in the range of 6 to 8 mgd. Although these are short duration flows, they do have the potential to cause temporary spillage or overflows and the lifting of manhole lids. The SCOR plant charges the District for exceeding its peak flow. This charge is one time annually, for the highest recorded daily peak flow of that year. SCOR determines that peak flow based on multiplying their waste generation factor of 260 gpd/edu times the number of LOAPUD edu's times a peaking factor of 4. This equates to an allowable peak day flow of approximately 6.2 mgd. Comparing these instantaneous peak flows to the ADWF as seen at the SCOR Plant, a peaking factor of 6.5 was determined and was used in the model to determine PWWF. The PWWF in the model was used to determine the adequate pipe size for existing and future pipes in the District and determine when that pipe size would be needed to carry the projected PWWF.

Table 4-1
Average Wet Weather Flow

	Average Wet Weather Flow, million gallons per day (mgd)					
Month	*2015*	*2016*	*2017*	*2018*	*2019*	*Average*
November	0.778	0.821	0.835	0.849		0.821
December	0.853	1.192	0.799	0.962		0.951
January	0.852	1.376	1.673	1.03	1.32	0.713
February	1.035	0.912	1.843	0.838	1.882	1.250
March	0.819	1.463	1.004	1.222	1.417	1.185
April	0.798	0.813	1.085	1.066	0.977	0.948
					Average Wet Weather Flow (mgd)	0.978

Both infiltration and inflow are significant sources of flow in the existing District system. This is primarily due to the age and deteriorated condition of some of the older pipes, joints, private sewer laterals, and manholes. It is expected that new lines to be constructed will be much less susceptible to I/I.

Infiltration and inflow are, for the purposes of the computer model, treated as a single quantity that is accounted for in peaking the ADWF. The ADWF and PWWF quantities of I/I are calculated as components of design flows. The total design flows are comprised of infiltration, inflow, and domestic flows as follows:

ADWF = Average daily domestic flow + Average dry-weather I/I
PWWF = Peak daily domestic flow + Peak wet-weather I/I.

The PWWF figures are used as design flows in evaluating the collection system so that the system will be able to transmit the maximum projected flow to the treatment facilities without sanitary sewer overflow (SSO) incidents.

PIPELINE SIZING

The District's system was modeled on a computer using the previously discussed geometry and design flows. Figures 6, 7, and 8 show the manholes and the sections of pipeline between these manholes that were analyzed in the sewer model. These figures show the manhole numbers as entered in the computer model. The collection zones shown earlier in Figure 3 correspond to this manhole numbering whereas the collection zone number corresponds to the manhole on the interceptor line where the collection zone areas flow is introduced. The computer program analyzed the carrying capacity of each sewer line reach by reach. The capacity of each line was

Sewer System Masterplan 2021

Figure 6
Manhole ID Numbers

SCOR PLANT

LOWER WYANDOTTE

GREENVILLE ST

OROVILLE GARDEN RANCH RD

FOOTHILL BLVD

ORO-BANGOR

V-6 ROAD

BANGOR HWY

OAK KNOLL WAY

LINCOLN BLVD

MONTE VISTA AVE

LAS PLUMAS
LIFT STATION

VISTA DEL CERRO
LIFT STATION

MOORETOWN
LIFT STATION

LOWER WYANDOTTE

Legend

- Sewer Gravity Collector Line
- Force Main
- S87 Manhole Location & ID #

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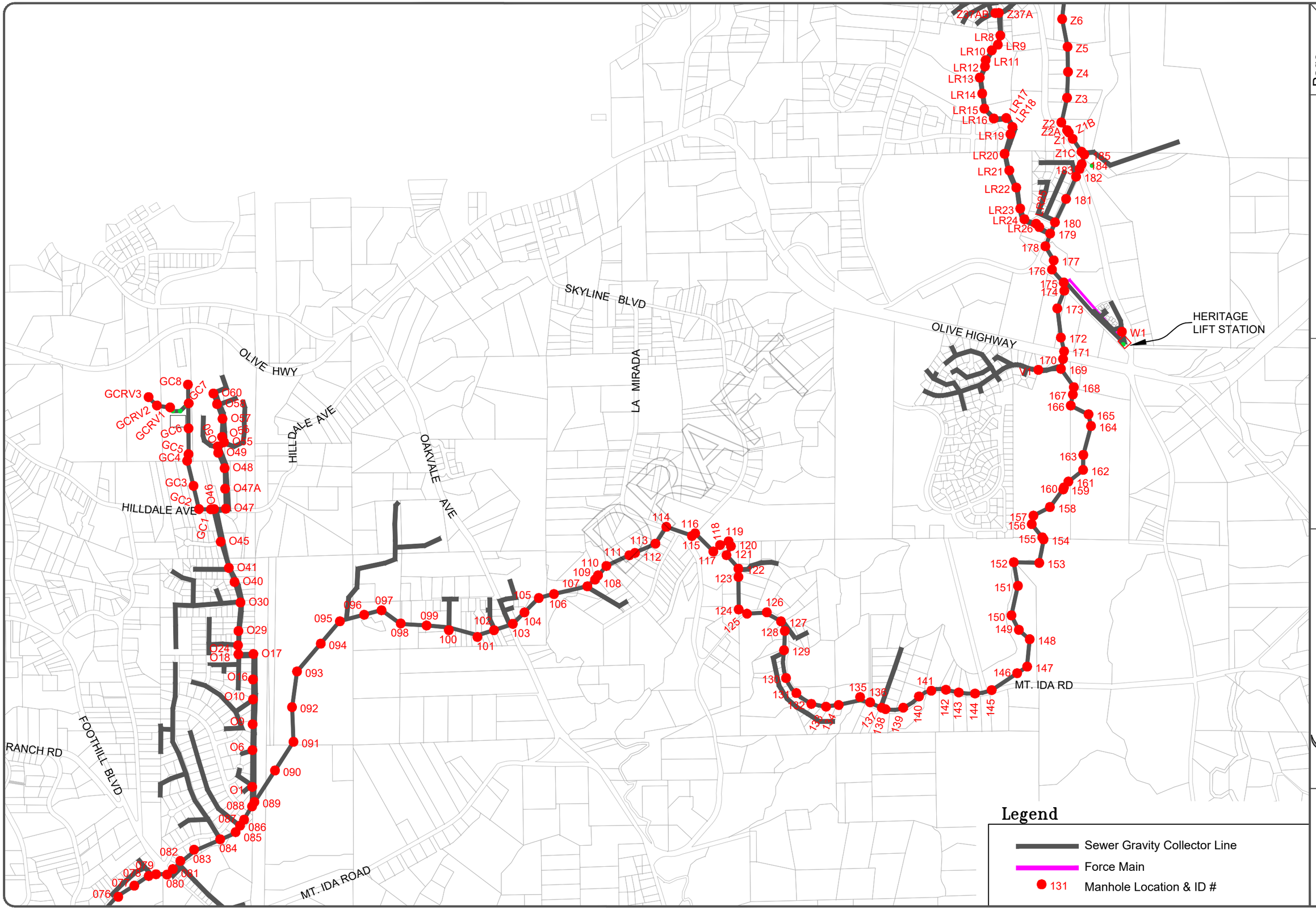
Figure 7
Manhole ID Numbers



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calculated using Manning's equation and a Manning's friction coefficient of 0.013. A pipe was considered undersized when its depth to diameter ratio (D/d) at peak flow exceeded the design value of 0.75.

In the event that a pipeline reach was undersized, a correct replacement pipeline size for the projected flow was calculated. Results of these analyses for within the existing service boundary as well as analysis of projected peak wet weather flows out to the sphere of influence are included in the computer printouts in Appendix B of this report.

MODEL RESULTS

The results of the computer modeling indicate that some portions of the existing interceptor line are in need of replacement to a larger diameter under the current PWWF conditions. When a peaking factor is applied to look at peak wet weather flows, many sections of pipeline for the current 2020 year are shown to be undersized as shown in the tabulated results in Appendix B-1. This situation can be caused by either that section of pipes diameter being too small or the slope of that section of pipe is too shallow to carry the flow. A pipe section will also be called out to be replaced if the d/D ratio is greater than 0.75. A section of pipe can also be labeled pressurized even if its d/D ratio is less than 0.75 and its slope and pipe diameter is adequate. This can be due to the downstream section of pipe being pressurized with a d/D of 1.0 and the wastewater is backed up in to the upstream section of pipe.

ADDITIONAL COLLECTION SYSTEM IMPROVEMENTS

As part of this study, additional improvements were analyzed which would improve the operation of the collection system. These improvements are shown on Figure 9.

Kelly Ridge 'A' Line

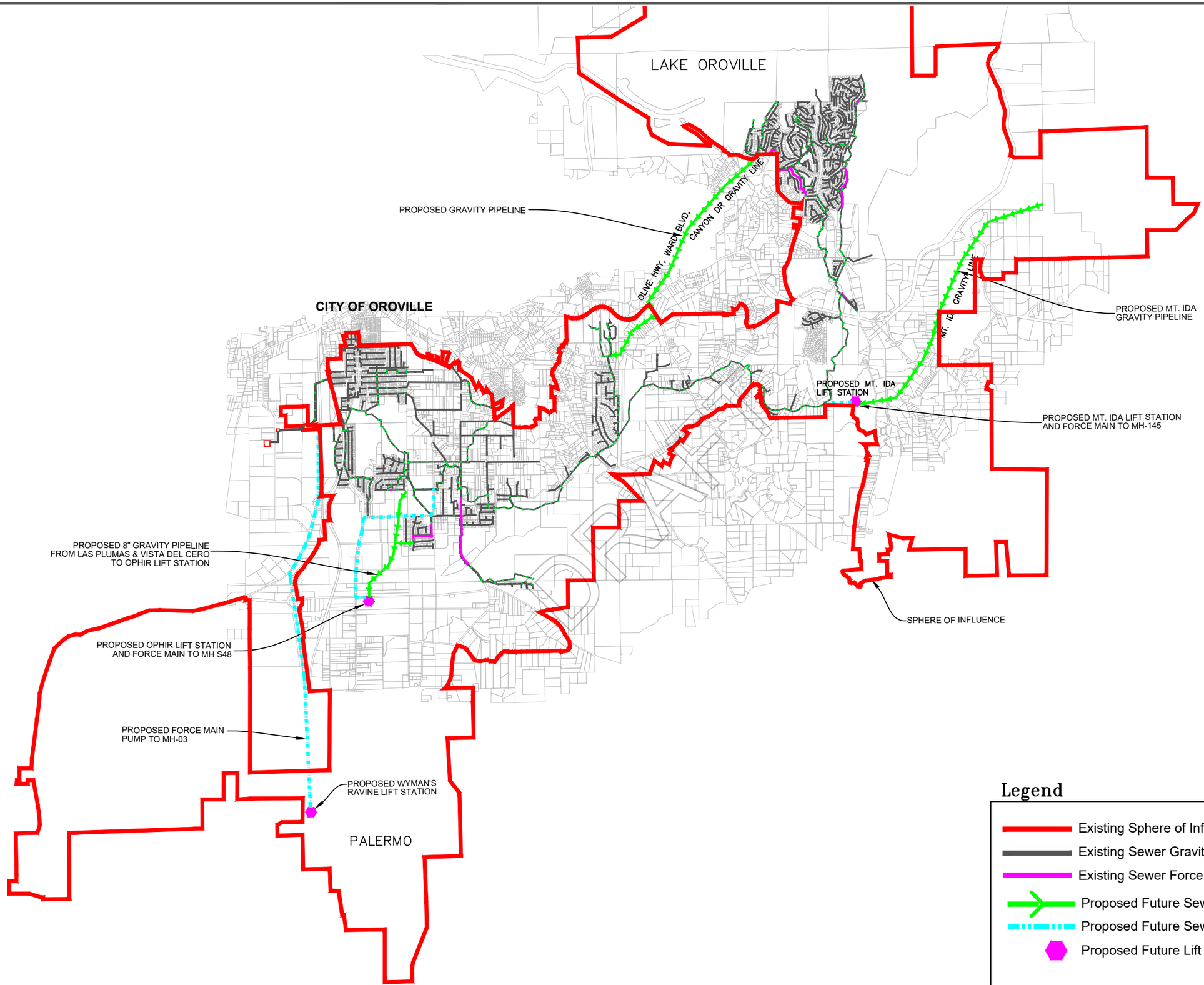
There is an opportunity to decrease reliance on pumping wastewater from the Kelly Ridge area by installing a new gravity pipeline north of Olive Highway. This line would be essentially located as was originally proposed as part of the Kelly Ridge Estates development and has been referred to as the 'A' Line. If carefully planned, this pipeline could extend into Kelly Ridge conveying flows currently being pumped by the Royal Oaks and Hanging Tree lift stations.

Las Plumas Collector Line

With the anticipated construction of a new lift station near the intersection of Ophir Road and Lincoln Boulevard, currently undeveloped areas to the north and east will have the opportunity to receive sewer service by constructing a gravity sewer from Ophir Road to Las Plumas Avenue east of Lincoln Boulevard. This pipeline would also facilitate the decommissioning of the Las Plumas Lift Station and the Vista Del Cerro Lift Station.

New Service Areas

As part of this study, transmission lines and lift stations were modeled to extend the collection system to new service areas. The model was analyzed for projected flow conditions with



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Sewer System Masterplan 2021

Figure 9
Future Collection Facilities

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additional collection zones outside of the existing service boundary but within the existing sphere of influence as shown earlier in Figure 4. The system was modeled with the additional flow projections from these additional collection zones and the results are tabulated in Appendix B.

The pipelines and lift stations shown for the analysis outside of the service boundary are hypothetical sewer lines and stations based on the projected service area and the most effective use of existing topography. It is expected that the developers and/or property owners of the new service areas will bear the cost of installing these new facilities. This computer model may be used as a planning tool by the District. As these new facilities are installed, the District may require that they be sized to accommodate additional future connections.

The modeling anticipated the extension of a number of new pipelines, both gravity and force mains, to provide service to new outlying areas within the study area. In some cases, the location, alignment, and preliminary sizing were included in the collection system model. In other cases, it was considered too speculative given the uncertainties predicting actual locations and densities of future development.

New Lift Stations

In addition to pipelines, the modeling also anticipates the construction of three new sewer lift stations. One of these proposed stations which is currently being planned for construction in Summer 2021 is the Ophir-Lincoln Lift Station located near the intersection of Ophir Road and Lincoln Boulevard. This lift station will serve the area also known as the Las Plumas Study Area generally between Ophir Road and Las Plumas Road eat of Lincoln Boulevard. This lift station would eventually allow for the decommissioning of the Las Plumas Lift Station and the Vista Del Cerro Lift Station. The second lift station is identified as the Mt. Ida Lift Station and would provide service to the Stringtown Area which encompasses the area southeast and east of Highway 162 near the intersection area of Mt. Ida Road, Miners Ranch Road and Old Olive Highway and eastward past Forbestown Road as shown previously on Figure 4. The proposed Mt. Ida Lift Station would eventually allow for the decommissioning of the Heritage Lift Station. The third new station which is identified as the Wyman's Ravine Lift Station would be located in the vicinity of Wyman's Ravine and Railroad Avenue near the town of Palermo as shown previously on Figure 4. This lift station would provide service for the Rio D'Oro development as well as he community of Palermo.

Community of Palermo

The community of Palermo, located south of LOAPUD's current service boundary, has also explored alternative ways to extend wastewater service to the area. The community is has investigated alternatives for collection and conveyance, and/or treatment and disposal of their wastewater. Two alternatives have being evaluated. The first would be to construct new wastewater collection infrastructure (sewer mains, manholes, service laterals) within the Palermo service area with a new regional lift station (the proposed Wymans Ravine Lift Station) that would pump the wastewater to the existing LOAPUD gravity system, or the SC-OR treatment plant. The second would be to construct the wastewater collection infrastructure

and also construct a new stand-alone wastewater treatment plant in the vicinity of Palermo to treat and dispose of the wastewater from the Palermo area. It is anticipated that with either of these scenarios, the Palermo service area would annex to LOAPUD to provide ongoing operation and maintenance.

Existing Pipeline Upgrades

Based on projected peak wet weather flows within the Master Study Area, there are sections of the existing system that need to be upsized to meet design conditions. Some will require replacement immediately and some in the future. The sections of greatest concern are portions of the District's State Line Interceptor.

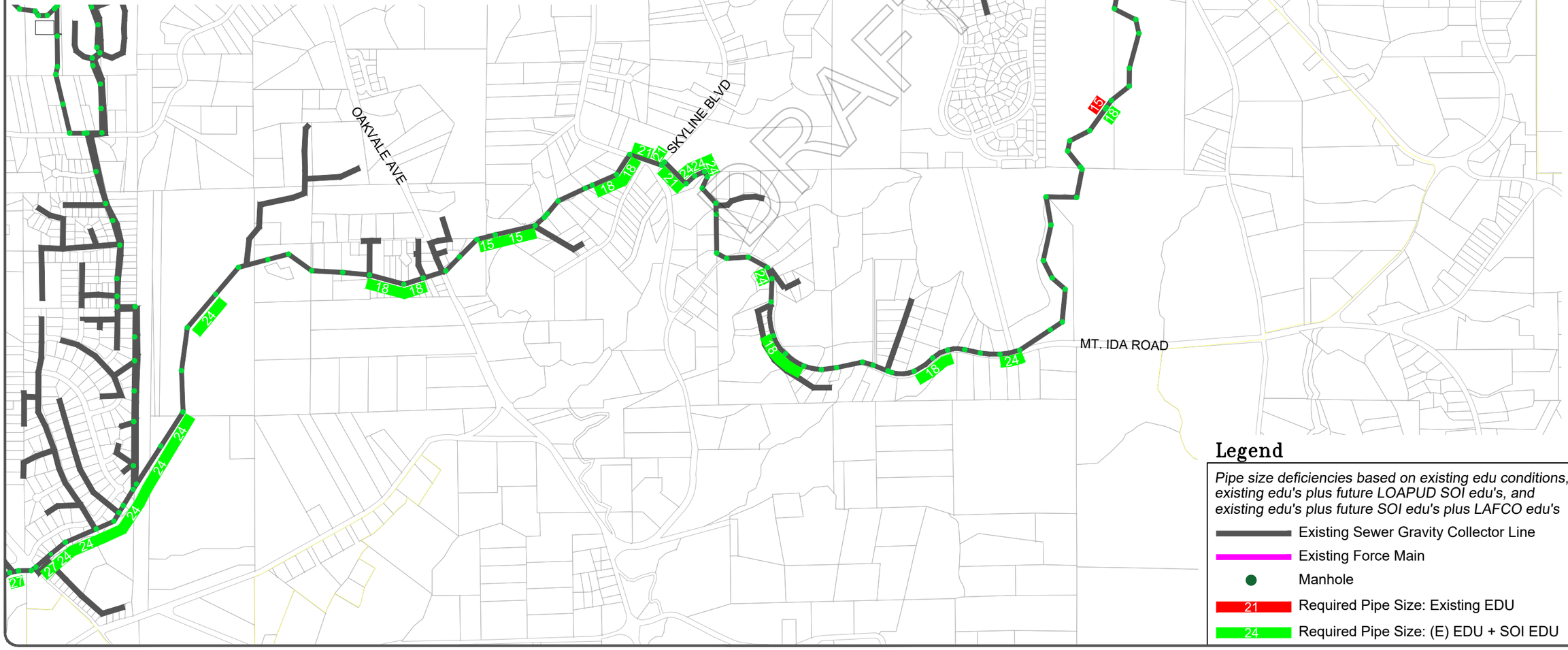
The State Line is the District's primary interceptor line conveying flows from throughout the service area to the SCOR treatment plant. This pipeline periodically surcharges during peak wet-weather events which was confirmed by the model. Portions of the State Line have been replaced with adequately sized pipe, however the model indicates that a significant portion of the line would be in need of replacement either now or by buildout, including section of pipe that are deemed necessary for replacement now to accommodate peak wet weather flows. Table 4-2 lists all sections of pipeline that would need replacement currently or prior to buildout. This table shows the current diameter of sections of pipe needing replacement and the diameter required based on the year of analysis and the collection boundary. Thus it shows the required pipe section size based on the District staying within its current service boundary (SB) or to expand service out to the sphere of influence (SOI). This data is also shown graphically on Figures 9 and 10.

Of particular concern with regard to the replacement of portions of the State Line is a large section of pipeline from Carriage Manor Mobile Home Park east to Oro-Bangor Highway and along Oro-Bangor Highway to Foothill Boulevard and past Foothill Boulevard paralleling Fairhill Drive. As Table 4-2 and Figures 9 and 10 show, this is the portion between manholes S-69A to S-96. The lack of adequate capacity of the existing pipeline in this area is mostly due to minimal slope of the pipe, with slopes as low as 0.002 to 0.003. This section of pipeline is also old clay pipe which can be a leading contributor to I/I. It is recommended that this whole stretch of pipeline from S-69A to S-96 be replaced with the required pipe size at buildout conditions. Also, it is recommended that the portion of pipeline approximately between S-93 to S-98 be replaced following an alternate alignment by moving the pipe to within Oro-Bangor Highway. An analysis of the topography and resulting slope of the pipeline shows that this alignment will provide improved flow characteristics for this section.

Figures 9 and 10 graphically show the sections of pipeline needing replacement, the replacement pipe size. This graphical representation shows the required pipe diameter size based on projected PWWF for the entire Master Study Area. The sections of pipeline highlighted in red are required to be replaced now to accommodate peak wet weather flows. The sections of pipeline highlighted in green are required to be replaced prior to buildout. The time to reach buildout for each of these sections was shown previously in Table 2-4.

Table 4-2
LOAPUD Sewer Master Plan 2021
Pipeline Replacement – Based on Max/Full Depth of 0.75

Pipe Segment:	Pipe #:	Pipe Length (ft)	Existing Dia. (in)	Existing EDU Upgrade Size Required Dia: (in)	Future SOI Upgrade Size Required Dia: (in)
RO LS FM – Z198E	C234	128	6	8	8
159-160	C159	20	12	15	18
144-145	C144	231	18		24
140-141	C140	198	12		18
139-140	C139	263	12		18
130-131	C130	251	12		18
129-130	C129	394	12		18
127-128	C127	140	18		24
119-120	C119	70	18		24
118-119	C118	124	18		24
117-118	C117	133	18		24
116-117	C116	349	18		21
115-116	C115	50	18		21
114-115	C114	386	18		21
113-114	C113	279	12		18
112-113	C112	305	12		18
106-107	C106	470	12		15
105-106	C105	216	12		15
101-102	C101	233	15		18
100-101	C100	408	15		18
93-94	C93	501	18		24
90-91	C90	467	18		24
89-90	C89	517	18		24
88-89	C88	70	18		24
87-88	C87	216	18		24
86-87	C86	96	18		24
85-86	C85	114	18		24
84-85	C84	221	18		24
83-84	C83	386	18		24
82-83	C82	214	18		24
81-82	C81	226	18		27
78-79	C78	104	18		27
77-78	C77	240	18		24
76-77	C76	283	18		27
75-76	C75	241	18		24
74-75	C74	301	18		24
73-74	C73	296	18	21	30
72-73	C72	300	18	21	27
71-72	C71	370	18	21	27
70-71	C70	115	18	24	30
69-70	C69	315	18		27
68-69	C68	383	18		24
67-68	C67	359	18		24
66-67	C66	311	18		27
65-66	C65	208	18		27
64-65	C64	414	18		24
63-64	C63	252	18		27
62-63	C62	309	18		27
61-62	C61	474	18	21	30
60-61	C60	298	18		30
59-60	C59	215	18		30
58-59	C58	340	18		24
51-52	C51	292	27		30
50-51	C50	52	27		30
49-50	C49	423	27		30
29-30	C29	361	24		27
28-29	C28	181	24		27
27-28	C27	271	24		27
25-26	C25	395	15		21
24-25	C24	457	15		18
23-24	C23	133	15		18
22-23	C22	162	24		27
21-22	C21	133	24		27
20-21	C20	286	24		27
18-19	C18	419	15		21
17-18	C17	285	15		21
16-17	C16	181	15		18
34-5	C4	476	24		30
3-4	C3	264	24		27
S41-30	C365	127	24		27
F34-F37	C436	267	8		12
50-I1AB	C464	38	8		24
39-VV1A	C404	31	12	18	27
	Totals:	19,038			



Legend

Pipe size deficiencies based on existing edu conditions, existing edu's plus future LOAPUD SOI edu's, and existing edu's plus future SOI edu's plus LAFCO edu's

- Existing Sewer Gravity Collector Line
- Existing Force Main
- Manhood
- 21 Required Pipe Size: Existing EDU
- 24 Required Pipe Size: (E) EDU + SOI EDU

Sewer System Masterplan 2021

Figure 10
Pipeline Replacement Map #1

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Figure 11
Pipeline Replacement Map #2

V-6 ROAD

OAK KNOLL WAY

LINCOLN BLVD

FOOTHILL BLVD

GREENBANK AVE

EDGEMONT DR

ORO-BANGOR HWY

Under the scenario that includes LAFCo flows (buildout) Mooretown LS will need to be increased in capacity to 400 gpm. Pipe segements entering lift station will not need to be enlarged.

Legend

Pipe size deficiencies based on existing edu conditions, existing edu's plus future LOAPUD SOI edu's, and existing edu's plus future SOI edu's.

- Existing Sewer Gravity Collector Line
- Existing Force Main
- Manhole
- 21 — Required Pipe Size: Existing EDU
- 24 — Required Pipe Size: (E) EDU + SOI EDU

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The sewer model also identified existing lift stations which will require expansion due to projected peak flows. Table 4-3 shows the projected lift station capacity requirements from present conditions out to buildout. These capacity requirements are based on peak wet weather flows for the entire Master Study Area. This table shows the current (2020) capacity of each lift station and the required capacity for each lift station at the study interval for each service area. Thus, the table identifies what capacity would be required for each lift station if the District were to only continue serving within the existing service boundary or if the District were to expand service out to the masterplan study area. Model results indicate that only the Mooretown Lift Station will require expansion as additional development is connected.

Table 4-3
Sewer Model Wet Well Summary

		Wet Well Data Over 4-Day Simulation Run																Lift Station Pump Model Data				
Lift Station Name	Scenario	Surcharge Depth (ft)	Avg. Depth (ft)	Max. Depth (ft)	Max. Total Inflow (gpm)	Total inflow (MG)	Hours Surcharged (h)	Max. Surcharge (ft)	Min. Freeboard (ft)	Hours Flooded (h)	Max. Flood Rate (gpm)	Total Flood Vol. (MG)	Max. Ponded Depth (ft)	Avg. Volume (1000 ft³)	Avg. Percent Full (%)	Max. Volume (1000 ft³)	Max. Percent Full (%)	Current Capacity	Max. |Flow| (gpm)	Avg. Flow (gpm)	Total Vol. (MG)	Run Time Hours
HangingTreeWetWell	Existing edu + I&I	13.3	6.82	10.01	1422.12	0.80	96	7.16	3.34	0	0	0	0	0.343	51	0.503	75	350	349.33	292.49	0.428	6.153
HangingTreeWetWell	(E) edu +I &I with Upsized Pipes	13.3	6.82	10.01	1417.16	0.80	96	7.16	3.34	0	0	0	0	0.343	51	0.503	75	350	349.33	292.50	0.425	36.356
HangingTreeWetWell	Buildout edu + I&I	13.3	6.82	10.01	1423.45	0.81	96	7.16	3.34	0	0	0	0	0.343	51	0.503	75	350	349.33	292.51	0.434	37.037
HangingTreeWetWell	Buildout edu + I&I & Upsized Pipes	13.3	6.82	10.01	1420.30	0.81	96	7.16	3.34	0	0	0	0	0.343	51	0.503	75	350	349.33	292.51	0.435	37.036
HeritageWetWell	Existing edu + I&I	19.5	5.25	6	2.22	0.01	96	5.00	13.52	0	0	0	0	0.148	27	0.17	31	130	142.19	72.40	0.006	0.23
HeritageWetWell	(E) edu +I &I with Upsized Pipes	19.5	5.25	6	2.22	0.01	96	5.00	13.52	0	0	0	0	0.148	27	0.17	31	130	141.46	72.40	0.006	2.302
HeritageWetWell	Buildout edu + I&I	19.5	5.25	6	2.22	0.01	96	5.00	13.52	0	0	0	0	0.148	27	0.17	31	130	143.94	72.41	0.006	2.302
HeritageWetWell	Buildout edu + I&I & Upsized Pipes	19.5	5.25	6	2.22	0.01	96	5.00	13.52	0	0	0	0	0.148	27	0.17	31	130	75.81	72.39	0.006	2.302
L1WetWell	Existing edu + I&I	13.5	4.57	6	67.52	0.30	23.69	0.67	8.33	0	0	0	0	0.23	32	0.302	42	335	340	327.41	0.326	4.17
L1WetWell	(E) edu +I &I with Upsized Pipes	13.5	4.57	6	67.52	0.30	23.58	0.67	8.33	0	0	0	0	0.23	32	0.302	42	335	340	327.97	0.329	25.12
L1WetWell	Buildout edu + I&I	14	4.57	6	67.52	0.30	23.68	0.67	8.33	0	0	0	0	0.23	32	0.302	42	335	340	327.31	0.327	25.008
L1WetWell	Buildout edu + I&I & Upsized Pipes	14	4.57	6	67.52	0.30	23.64	0.67	8.33	0	0	0	0	0.23	32	0.302	42	335	340	327.53	0.327	25.079
L2WetWell	Existing edu + I&I	13	7.97	9.02	286.61	0.94	96	8.19	4.52	0	0	0	0	0.626	59	0.708	67	447	455	338.60	0.939	11.503
L2WetWell	(E) edu +I &I with Upsized Pipes	13	7.97	9.03	289.65	0.95	96	8.19	4.51	0	0	0	0	0.626	59	0.709	67	447	455	337.86	0.946	70.082
L2WetWell	Buildout edu + I&I	13	7.97	9.08	287.91	0.95	96	8.25	4.46	0	0	0	0	0.626	59	0.713	67	447	455	339.68	0.953	70.09
L2WetWell	Buildout edu + I&I & Upsized Pipes	13	7.97	9.03	289.77	0.95	96	8.20	4.51	0	0	0	0	0.626	59	0.709	67	447	455	339.02	0.953	70.245
L3WetWell	Existing edu + I&I	13.56	5.49	8	20.60	0.09	96	7.17	5.56	0	0	0	0	0.431	40	0.628	59	86	93.11	86.68	0.086	3.995
L3WetWell	(E) edu +I &I with Upsized Pipes	13.56	5.49	8	20.60	0.09	96	7.17	5.56	0	0	0	0	0.431	40	0.628	59	86	93.11	86.65	0.086	24.453
L3WetWell	Buildout edu + I&I	13.56	5.49	8	20.60	0.09	96	7.17	5.56	0	0	0	0	0.431	40	0.628	59	86	93.11	86.67	0.086	24.453
L3WetWell	Buildout edu + I&I & Upsized Pipes	13.56	5.49	8	20.60	0.09	96	7.17	5.56	0	0	0	0	0.431	40	0.628	59	86	93.11	86.64	0.086	24.459
LasPlumasWetWell	Existing edu + I&I	12	4.02	5	50.45	0.03	96	4.50	7.15	0	0	0	0	0.133	33	0.166	41	110	127.18	108.61	0.024	0.767
LasPlumasWetWell	(E) edu +I &I with Upsized Pipes	12	4.02	5	50.53	0.03	96	4.50	7.15	0	0	0	0	0.133	33	0.166	41	110	127.18	108.61	0.023	5.371
LasPlumasWetWell	Buildout edu + I&I	12	6.88	9	8.10	0.02	96	8.50	3.15	0	0	0	0	0.228	57	0.299	74	110	116.3	112.96	0.023	5.016
LasPlumasWetWell	Buildout edu + I&I & Upsized Pipes	12	6.88	9	6.46	0.02	96	8.50	3.15	0	0	0	0	0.228	57	0.299	74	110	116.3	112.96	0.023	5.016
MooretownWetWell	Existing edu + I&I	23	4.36	6.05	145.40	0.63	96	4.39	17.11	0	0	0	0	0.219	19	0.304	26	325	387.38	153.01	0.626	16.907
MooretownWetWell	(E) edu +I &I with Upsized Pipes	23	4.51	6.01	144.08	0.62	96	4.35	17.15	0	0	0	0	0.227	19	0.302	26	325	327.79	321.62	0.622	48.349
MooretownWetWell	Buildout edu + I&I	23	15.48	20.93	557.07	1.80	78.03	15.78	2.23	0	0	0	0	0.793	67	1.073	90	325	339.75	335.56	1.798	134.005
MooretownWetWell	Buildout edu + I&I & Upsized Pipes	23	3.03	4.06	376.75	1.96	0	0.00	19.09	0	0	0	0	0.155	13	0.208	18	325	406.27	403.47	1.963	121.694
RoyalOaksWetWell	Existing edu + I&I	12.73	4.51	10	34.16	0.13	96	9.00	2.73	0	0	0	0	0.127	35	0.283	79	200	254.62	238.16	0.163	3.344
RoyalOaksWetWell	(E) edu +I &I with Upsized Pipes	12.73	4.5	10	32.51	0.12	96	9.00	2.73	0	0	0	0	0.127	35	0.283	79	200	254.62	237.59	0.152	15.635
RoyalOaksWetWell	Buildout edu + I&I	12.73	4.5	10	32.51	0.12	96	9.00	2.73	0	0	0	0	0.127	35	0.283	79	200	254.62	237.58	0.152	15.635
RoyalOaksWetWell	Buildout edu + I&I & Upsized Pipes	12.73	4.5	10	32.51	0.12	96	9.00	2.73	0	0	0	0	0.127	35	0.283	79	200	254.62	237.61	0.152	15.634
VistaDelCerroWetWell	Existing edu + I&I	16.5	4.98	7	71.80	0.32	96	4.51	9.83	0	0	0	0	0.288	30	0.404	42	300	276.87	247.02	0.323	5.464
VistaDelCerroWetWell	(E) edu +I &I with Upsized Pipes	16.5	4.98	7	71.80	0.32	96	4.51	9.83	0	0	0	0	0.288	30	0.404	42	300	276.89	247.05	0.323	32.653
VistaDelCerroWetWell	Buildout edu + I&I	16.5	4	6	71.80	0.32	96	3.50	10.83	0	0	0	0	0.231	24	0.346	36	300	300.77	214.86	0.322	37.546
VistaDelCerroWetWell	Buildout edu + I&I & Upsized Pipes	16.5	4	6	71.80	0.32	96	3.50	10.83	0	0	0	0	0.231	24	0.346	36	300	300.77	214.85	0.322	37.546

Chapter 5

RECOMMENDED PLAN AND CAPITAL IMPROVEMENT PROGRAM

Collection system improvements will be necessary to meet current and future needs of the study area. Phased implementation of these improvements is recommended. This chapter summarizes the recommended improvement plan and provides cost estimates for anticipated improvements.

COLLECTION SYSTEM PIPELINE REPLACEMENT

Table 5-1 is a list of unit prices used to develop the cost estimates for future sewer construction.

Table 5-1
Sewer Pipeline Construction Costs

Pipe Diameter (inch)	Cost/Foot ($)
8	$140
10	$160
12	$190
15	$230
18	$260
21	$275
24	$285
27	$300
30	$320
36	$340

Using these unit costs, Table 5-2 gives estimated construction costs (2020 pricing basis) for each discrete reach of pipeline needing replacement (as shown in Table 4-2) for current and for future capacity needs. In Table 5-2, there are two columns that list construction costs: one column for costs associated for pipeline replacements to meet current capacity needs (existing customers), and one column for costs associated with future capacity needs. The construction cost is based on the ultimate pipeline diameter that would be needed at buildout as shown in Table 4-2. The cost of replacing existing sewers which are incapable of carrying current and anticipated future flows includes the cost of materials and construction. Materials include pipeline, manholes, and fittings. Construction costs include soil and rock excavation, pipeline placement, backfill, surface restoration, contractor's overhead and profit, and other factors. Cost estimates do not include right-of-way, engineering, or similar expenses.

Table 5-2
LOAPUD Sewer Master Plan 2021
Pipeline Replacement – Based on Max/Full Depth of 0.75

Pipe Segment:	Pipe #:	Pipe Length (ft)	Existing Dia. (in)	Existing EDU Upgrade Size Required Dia: (in)	Costs Related to Current Capacity Needs ($)	Future SOI Upgrade Size Required Dia: (in)	Costs Related to Future Capacity Needs ($)	Total Cost (in 2020 $)
RO LS FM – Z198E (Z201E-Z198E)	C234	128	6	8	$17,920.00	8	$0.00	$17,920.00
159-160	C159	20	12	15	$4,600.00	18	$600.00	$5,200.00
144-145	C144	231	18			24	$65,835.00	$65,835.00
140-141	C140	198	12			18	$51,480.00	$51,480.00
139-140	C139	263	12			18	$68,380.00	$68,380.00
130-131	C130	251	12			18	$65,260.00	$65,260.00
129-130	C129	394	12			18	$102,440.00	$102,440.00
127-128	C127	140	18			24	$39,900.00	$39,900.00
119-120	C119	70	18			24	$19,950.00	$19,950.00
118-119	C118	124	18			24	$35,340.00	$35,340.00
117-118	C117	133	18			24	$37,905.00	$37,905.00
116-117	C116	349	18			21	$95,975.00	$95,975.00
115-116	C115	50	18			21	$13,750.00	$13,750.00
114-115	C114	386	18			21	$106,150.00	$106,150.00
113-114	C113	279	12			18	$72,540.00	$72,540.00
112-113	C112	305	12			18	$79,300.00	$79,300.00
106-107	C106	470	12			15	$108,100.00	$108,100.00
105-106	C105	216	12			15	$49,680.00	$49,680.00
101-102	C101	233	15			18	$60,580.00	$60,580.00
100-101	C100	408	15			18	$106,080.00	$106,080.00
93-94	C93	501	18			24	$142,785.00	$142,785.00
90-91	C90	467	18			24	$133,095.00	$133,095.00
89-90	C89	517	18			24	$147,345.00	$147,345.00
88-89	C88	70	18			24	$19,950.00	$19,950.00
87-88	C87	216	18			24	$61,560.00	$61,560.00
86-87	C86	96	18			24	$27,360.00	$27,360.00
85-86	C85	114	18			24	$32,490.00	$32,490.00
84-85	C84	221	18			24	$62,985.00	$62,985.00
83-84	C83	386	18			24	$110,010.00	$110,010.00
82-83	C82	214	18			24	$60,990.00	$60,990.00
81-82	C81	226	18			27	$67,800.00	$67,800.00
78-79	C78	104	18			27	$31,200.00	$31,200.00
77-78	C77	240	18			24	$68,400.00	$68,400.00
76-77	C76	283	18			27	$84,900.00	$84,900.00
75-76	C75	241	18			24	$68,685.00	$68,685.00
74-75	C74	301	18			24	$85,785.00	$85,785.00
73-74	C73	296	18	21	$81,400.00	30	$13,320.00	$94,720.00
72-73	C72	300	18	21	$82,500.00	27	$7,500.00	$90,000.00
71-72	C71	370	18	21	$101,750.00	27	$9,250.00	$111,000.00
70-71	C70	115	18	24	$32,775.00	30	$4,025.00	$36,800.00
69-70	C69	315	18			27	$94,500.00	$94,500.00
68-69	C68	383	18			24	$109,155.00	$109,155.00
67-68	C67	359	18			24	$102,315.00	$102,315.00
66-67	C66	311	18			27	$93,300.00	$93,300.00
65-66	C65	208	18			27	$62,400.00	$62,400.00
64-65	C64	414	18			24	$117,990.00	$117,990.00
63-64	C63	252	18			27	$75,600.00	$75,600.00
62-63	C62	309	18			27	$92,700.00	$92,700.00
61-62	C61	474	18	21	$130,350.00	30	$21,330.00	$151,680.00
60-61	C60	298	18			30	$95,360.00	$95,360.00
59-60	C59	215	18			30	$68,800.00	$68,800.00
58-59	C58	340	18			24	$96,900.00	$96,900.00
51-52	C51	292	27			30	$93,440.00	$93,440.00
50-51	C50	52	27			30	$16,640.00	$16,640.00
49-50	C49	423	27			30	$135,360.00	$135,360.00
29-30	C29	361	24			27	$108,300.00	$108,300.00
28-29	C28	181	24			27	$54,300.00	$54,300.00
27-28	C27	271	24			27	$81,300.00	$81,300.00
25-26	C25	395	15			21	$108,625.00	$108,625.00
24-25	C24	457	15			18	$118,820.00	$118,820.00
23-24	C23	133	15			18	$34,580.00	$34,580.00
22-23	C22	162	24			27	$48,600.00	$48,600.00
21-22	C21	133	24			27	$39,900.00	$39,900.00
20-21	C20	286	24			27	$85,800.00	$85,800.00
18-19	C18	419	15			21	$115,225.00	$115,225.00
17-18	C17	285	15			21	$78,375.00	$78,375.00
16-17	C16	181	15			18	$47,060.00	$47,060.00
34-5	C4	476	24			30	$152,320.00	$152,320.00
3-4	C3	264	24			27	$79,200.00	$79,200.00
S41-30	C365	127	24			27	$38,100.00	$38,100.00
F34-F37	C436	267	8			12	$50,730.00	$50,730.00
50-I1AB	C464	38	8			24	$10,830.00	$10,830.00
39-VV1A	C404	31	12	18	$8,060.00	27	$1,240.00	$9,300.00
	Totals:	19,038			$459,355.00		$4,947,775.00	$5,407,130.00

A summary of the cost estimates listed in Table 5-2 is provided in Table 5-3. These estimates include a 25% allowance for engineering, administrative, legal, and contingency costs.

Table 5-3

PIPELINE REPLACEMENT SUMMARY

	Construction Cost (2020 dollars)		
	2020	Future	Total
LOAPUD Sewer System	$ 459,355	$ 4,947,775	$ 5,407,130
Engineering, Contingencies @ 25%	114,839	1,236,944	1,351,782
Total	**$574,194**	**$6,184,719**	**$6,758,912**

The District should monitor the ability of critical pipelines to convey peak wet-weather flows. Table 4-3 and the data tables contained in Appendix B will be helpful in directing the staff's attention to the pipelines expected to be unable to convey the expected flows. Typical events of overloaded pipelines are surcharging in manholes and, in extreme cases, overflow of raw wastewater at manhole covers.

Following field confirmation of problem areas listed in Tables 4-2 and 5-2, it will be necessary to prepare plans and specifications, secure additional rights-of-way, if applicable, and proceed with bidding for construction. It would be normal to identify critical lines during winter. Engineering could be scheduled for spring, with construction scheduled for the following summer. Some work may be scheduled each year or the District could fund a large project each five to ten years.

Chapter 4 discussed potential future improvement projects to accommodate future expansion of the system to meet future development needs. It is difficult to predict the order or timing of expansion since there are so many variables predicting growth trends. Table 5-4 lists these proposed projects and the estimated associated construction costs. Because of the uncertainties in locating and sizing these facilities, these should be considered very preliminary estimates. These facilities only include the transmission mains, force mains, and lift stations and do not include any of the on-site collection systems. Cost estimates are calculated the same as for the pipeline replacements.

Table 5-4

PROPOSED SEWER COLLECTION SYSTEM FACILITIES

Location	Facility	Length (ft)	Estimated Construction Cost ($)
Oro Quincy Hwy, Mt. Ida Rd, Forbestown Rd	"Hawk Ravine" gravity transmission pipeline	14,900	2,831,000
	Mt Ida Lift Station		1,500,000
	Force main	1,600	160,000
Olive Hwy, Ward Bl, Canyon Dr	"A Line" Gravity transmission pipeline	13,100	2,489,000
Las Plumas Study Area	Las Plumas Gravity pipeline	6,750	1,282,500
Wyman's Ravine & Railroad Ave: Las Plumas Study Area	Wyman's Ravine Lift Station		1,500,000
	Force main	19,400	1,940,000
		Total Construction Costs	**$11,702,500**
		Engineering, contingencies @ 25%	**$ 2,925,625**
		Total	**$14,281,125**

Table 5-5 lists the total cost estimates for sewer pipeline replacements and system expansion projects.

Table 5-5

CAPITAL IMPROVEMENTS PROGRAM ESTIMATED CONSTRUCTION COSTS

Project Type	2020 Projects	Future Projects
Pipeline Replacement	$574,194	$6,184,719
Proposed Facilities	$0	$14,281,125
Total	**$574,194**	**$20,812,844**

APPENDIX A

COMPUTER ANALYSIS

The Lake Oroville Area Public Utility District sewer collection system was modeled using the PCSWMM 2021 Version 7.4.3200 software package developed by Computational Hydraulics Int. First, a map of the collection system was digitized including pipes (conduits) and manholes (junctions) to produce a geometrically accurate layout of the system. Next, data and design conditions were attached to each of the model entities. This information included pipeline lengths and diameters, pipe and manhole invert and ground elevations, maximum depth ratio (depth of flow divided by the diameter of the pipe or d/D) and minimum velocity requirements, pump station capacities and flow rates, wastewater flow inputs, and rainfall information and collection system I/I. Analysis results are given for each main pipeline modeled in the system.

Appendix B shows the tabulated results of the computer model analysis. Appendix B presents the analysis for the manholes at both scenario conditions of current edu flows within the current service boundary and at projected buildout flows within the sphere of influence. Appendix B also presents the analysis for the pipes at both scenario conditions of current edu flows within the current service boundary and at projected buildout flows within the sphere of influence

Geographic information is given for each pipeline including pipe diameter (inches), length (feet) and slope. Flows are given showing total sanitary flow, peakable flow, full pipe flow, and design flow at d/D of 0.75. Flow rates are given in million gallons per day (mgd). The tables show depth ratio (d/D) and velocity (fps) within the pipe for the projected flows.

A pipeline was considered overloaded when the modeled d/D was greater than the maximum allowable d/D assigned to the pipe. Where this occurred, larger pipeline sizes were modeled in the program to determine a replacement pipeline diameter which would relieve the overloading conditions.

The computer analysis also identified pipelines which experience surcharge under modeling conditions. Surcharge is not necessarily an indication that a pipe is undersized. Adequately sized pipelines may experience surcharge when a backwater condition is created in a downstream pipeline. This should be considered when setting priorities for pipeline replacements. Identifying and replacing the pipelines responsible for creating the backwater condition may provide surcharge relief for a larger portion of the system.

The depth ratio (depth of flow divided by the diameter of the pipe or d/D) is a good indicator of the severity of an overload condition. For this analysis, a pipeline was considered overloaded if the d/D was greater than 0.75. Some pipelines identified as overloaded may have a depth ratio

only slightly higher than 0.75 while others may be flowing full. This should be considered when setting priorities for pipeline replacement. In some cases, a d/D of 0.75 may be too high.

In the computer model wastewater inflow and I&I at manholes were considered separately. Based on influent flow records at the treatment plant, wet weather I/I is known to be a significant source of flow in the collection system. Based on records, the average wet weather flow to SCORE and through the system is 5.5 MGD. A max day wet weather flow at the SCOR plant is approximately 6 MGD.

In many pipelines, including many shown to be overloaded, I/I accounts for the majority of the flow and is the reason for the overloading condition. Assumptions were made as to the location and extent of I/I entering the system based on the number of pipes leading into a manhole (catchment area), the topography of the catchment area and on assumed and known ages and material types of pipes. A weighting factor was given to a catchment area based on the topography (flat or hills), pipe age and material and the percent of the total system collection pipe footage within that catchment area. Appendix C contains the table showing the calculations for determining I/I throughout the collection system area.

Based on dry weather flows at the SCOR plant, Average Dry Weather Flows per edu average 121 gpd/edu. However, in modeling the system, other factors are accounted for that can refine the ADWF. And it is also assumed through records as well as operator experience that average flows from locations such as mobile home parks, retirement homes, or areas where majority of homes are second homes, the ADWF per edu is much less. Utilizing known records from other municipalities and utilizing industry standards, an ADWF of 110 gpd/edu was used for said areas. Thus, applying the ADWF of 110 gpd/edu in said areas, it was determined that an ADWF of 137 gpd/edu was required to be applied to all other areas in the collection system to equal the ADWF recorded at the SCOR plant when combined with the 110 gpd/edu.

The ADWF numbers were input at various locations throughout the system at manholes representing “catchment areas”. After these flows were input based on the number of edu’s within each catchment area, the I/I flows were calculated within each catchment area to equal the wet weather flow of 5.5 MGD at the SCOR plant. The calculations for I/I within each catchment area is shown in Appendix C.

Complementing the computer modeling program with a comprehensive I/I study would be very beneficial in defining and prioritizing a pipeline replacement program. Once a model is calibrated to accurately recreate I/I impacts in the system, the affects of eliminating I/I sources can also accurately be modeled.

This computer analysis is intended to identify potential collection system problem areas and provide guidance on possible pipeline replacements based on the conditions set in the model.

Prior to any actual pipeline replacement project, a thorough investigation of the actual design parameters including field verification of existing conditions should be conducted.

These printouts can be a powerful tool in effectively understanding the collection system. First, the printouts can be quickly scanned to identify reaches in need of improvement. Second, in conjunction with the accompanying maps, they describe the collection system status for any given location and its ability to handle larger loads where development or annexation is being considered. Third, this appendix serves as a guide for overall system improvements. It is a comprehensive but brief analysis of the trunk line system status that gives an overview of expected future conditions.

APPENDIX B

SAMPLE COMPUTER MODEL RESULT PRINTOUTS

The following are sample sheets of the computer model result printouts for the various modeling scenarios. Full sets of the printouts are available upon request.

Appendix B-4
Model Report for Pipes
Future Buildout Inflows with I&I with Upsized Pipe - over a 4-day simulation period

Pipe Name	Upstream MH	Downstream MH	Pipe Size (ft)	Pipe Length (ft)	Roughness	Upstream Elevation (ft)	Downstream Elevation (ft)	Slope (ft/ft)	Max Flow (gpm)	Max Velocity (ft/s)	Max/Full Flow (max (peak) fraction of pipe full flow during simulation)	Max/Full Flow (max (peak) fraction of pipe full depth during simulation)	Time Pipe Full Both Ends (hrs)	Time Pipe Full Upstream (hrs)	Time Pipe Full Downstream (hrs)	Time Pipe Flow is Greater Than Full Normal (hrs)	Time Where Flow Through Pipe was Limited By Its Capacity (hrs)
C1	2	1	2.5	368.063	0.013	172.504	168.739	0.01023	8513.84	10.74	0.46	0.39	0	0	0	0	0
C519	B2A	B1	0.667	504.362	0.013	191.61	190.058	0.00308	157.17	2.6	0.52	0.41	0	0	0	0	0
C52	53	52	2.25	130.312	0.013	299	298.67	0.00253	4472.46	3.71	0.64	0.64	0	0	0	0	0
C520	B1	5	0.667	310.228	0.013	190.058	178.211	0.03822	157.17	1.51	0.15	0.63	0.01	0.01	94.67	0.01	0.01
C521	C29A	C3	0.667	137.061	0.013	201.332	194.91	0.04691	150.39	5.47	0.13	0.49	0	0	0	0	0
C522	G25	VistaDelCerroW	0.667	38.082	0.013	242.304	235	0.19542	71.8	0.8	0.03	0.56	0.01	0.01	96	0.01	0.01
C523	E9	E8	0.667	497.274	0.013	237.389	224.7	0.02553	84.65	3.39	0.1	0.22	0	0	0	0	0
C524	E8	E6	0.667	473.869	0.013	224.7	216.298	0.01773	84.65	1.49	0.12	0.39	0	0	0	0	0
C525	LPMH	LasPlumasWetW	0.5	16.519	0.013	266	261.873	0.25802	6.46	0.1	0.01	1	93.23	93.23	96	0.01	0.01
C526	Z218EB	RoyalOaksWetW	1	120.828	0.013	893.035	843.573	0.44867	1.73	0.01	0	0.5	0.01	0.01	96	0.01	0.01
C527	Z179E	HangingTreeInle	0.5	277.329	0.013	945.755	910	0.13001	2.63	1.95	0	0.52	0.01	0.01	76.44	0.01	0.01
C528	Z11B	L1WetWell	0.5	20.453	0.013	933.05	919.671	0.86482	2.59	0.06	0	0.51	0.01	0.01	96	0.01	0.01
C529	Z283E	Z26E	0.5	174.418	0.013	1044.616	1032.305	0.07076	35	4.07	0.05	0.15	0	0	0	0	0
C53	54	53	2.25	104.585	0.013	299.6	299	0.00574	4473.54	4.49	0.42	0.55	0	0	0	0	0
C530	Z26E	Z16E	0.5	200.408	0.013	1032.305	1007.416	0.12516	44.65	5.31	0.05	0.15	0	0	0	0	0
C531	Z16E	Z15E	0.667	215.424	0.013	1007.416	987.151	0.09449	44.64	4.65	0.03	0.11	0	0	0	0	0
C532	Z15E	Z10E	0.667	304.658	0.013	987.151	962.056	0.08265	44.64	4.05	0.03	0.13	0	0	0	0	0
C533	Z10E	Z9E	0.667	97.634	0.013	962.056	957.852	0.0431	44.64	3.61	0.04	0.13	0	0	0	0	0
C534	Z9E	Z3E	0.667	205.997	0.013	957.852	946.423	0.05557	44.64	3.72	0.03	0.13	0	0	0	0	0
C535	Z3E	Z17	0.667	90.52	0.013	946.423	942.09	0.04792	44.64	2.56	0.04	0.27	0	0	0	0	0
C536	Z1CB	Z50C	0.5	126.928	0.013	948.935	934.171	0.11711	24.55	5.31	0.03	0.11	0	0	0	0	0
C537	Z50C	L2WetWell	0.5	87.814	0.013	934.171	918.242	0.18445	24.53	0.49	0.02	0.55	0.01	0.01	96	0.01	0.01
C538	Z2-A	Z9A	0.5	225.103	0.013	957.505	947.727	0.04348	20.6	3.53	0.04	0.12	0	0	0	0	0
C539	Z9A	Z9	0.5	19.064	0.013	947.727	942.55	0.28216	20.6	5.97	0.02	0.08	0	0	0	0	0
C54	55	54	2.25	151.449	0.013	300.13	299.6	0.0035	4473.65	5.07	0.54	0.5	0	0	0	0	0
C540	Z9	L3WetWell	0.833	39.078	0.013	942.55	931.556	0.29318	20.6	0.16	0	0.52	0.01	0.01	95.99	0.01	0.01
C55	56	55	2.25	237.516	0.013	300.82	300.13	0.00291	4473.78	4.63	0.6	0.53	0	0	0	0	0
C56	57	56	2.25	70.787	0.013	301.089	300.82	0.0038	4473.78	4.54	0.52	0.54	0	0	0	0	0
C57	58	57	2.25	114.745	0.013	301.476	301.089	0.00337	4473.83	4.65	0.55	0.53	0	0	0	0	0
C58	59	58	2	339.902	0.013	304.539	301.476	0.00901	4474	5.78	0.46	0.54	0	0	0	0	0
C59	60	59	2.5	214.524	0.013	304.943	304.539	0.00188	4474.29	4.83	0.56	0.44	0	0	0	0	0
C6	7	6	2.5	79.417	0.013	188.694	181.59	0.08981	7073.47	10.2	0.13	0.35	0	0	0	0	0
C60	61	60	2.5	298.459	0.013	305.522	304.943	0.00194	4474.64	3.97	0.55	0.51	0	0	0	0	0
C61	62	61	2.5	474.079	0.013	306.321	305.522	0.00169	4423.2	3.65	0.59	0.54	0	0	0	0	0

Appendix B-5
Model Report for Manholes
Current Service Boundary Inflows with I/I - over a 4-day simulation period

MH Name	Tributary edu's per manhole	MH In Elev. (ft)	MH Out Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Average Value (gpm)	Time Pattern 1	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Max. Lat. Inflow (gpm)	Max. Total Inflow (gpm)	Total Lat. Inflow (MG)	Total inflow (MG)	Total Daily Inflow (MGD)
1	0		168.739	174.839	6.1	0		0		0.44	0.48	169.21	0	4237.15	0	21.3	5.325
2	0	172.544	172.504	178.644	6.14	0		0		0.77	0.83	173.33	0	3899.32	0	19.5	4.875
3	5	173.866	173.756	185.176	11.42	27.993	RainlandI	0.475	CommercialGrinderPump	0.94	1.02	174.78	28.71	3899.43	0.164	19.5	4.875
4	0	175.852	175.802	185.752	9.95	0		0		0.85	0.92	176.72	0	3871.56	0	19.4	4.85
5	0	178.251	178.211	190.371	12.16	0		0		0.97	1.05	179.26	0	3872.65	0	19.4	4.85
6	137	181.74	181.59	197	15.41	113.997	RainlandI	13.015	ResDiurnalFlowCurve	0.74	0.8	182.39	137.42	3781.19	0.731	18.9	4.725
7	0	188.704	188.694	200.984	12.29	0		0		0.39	0.42	189.12	0	3409.87	0	16.9	4.225
8	0	189.909	189.759	206.209	16.45	0		0		0.74	0.79	190.55	0	3410.05	0	16.9	4.225
9	0	190.651	190.551	200.511	9.96	0		0		1.01	1.09	191.65	0	3410.08	0	16.9	4.225
10	0	191.187	191.127	199.437	8.31	0		0		0.84	0.92	192.04	0	3410.17	0	16.9	4.225
11	2	191.59	191.5	200.35	8.85	8.357	RainlandI	0.19	ResDiurnalFlowCurve	1.07	1.16	192.66	8.7	3410.18	0.049	16.9	4.225
12	0	192.189	191.75	200.6	8.85	0		0		0.88	0.97	192.72	0	3401.63	0	16.8	4.2
13	0	192.282	192.132	201.642	9.51	0		0		0.89	0.98	193.11	0	3401.8	0	16.8	4.2
14	9	195.248	195.078	204.078	9	55.849	RainlandI	0.855	ResDiurnalFlowCurve	0.62	0.68	195.75	57.39	3401.96	0.327	16.8	4.2
15	0	196.972	196.892	208.832	11.94	0		0		0.65	0.7	197.59	0	3344.67	0	16.5	4.125
16	0	199.741	198.801	213.461	14.66	0		0		0.66	0.72	199.52	0	3344.68	0	16.5	4.125
17	0	204.723	204.613	211.073	6.46	0		0		0.6	0.66	205.27	0	2838.51	0	13.9	3.475
18	0	213.983	213.883	222.103	8.22	0		0		0.59	0.66	214.54	0	2838.83	0	13.9	3.475
19	0	231.771	231.671	240.671	9	0		0		0.55	0.61	232.28	0	2839.05	0	13.9	3.475
20	0	232.22	232.12	251.12	19	0		0		0.85	0.93	233.05	0	2839.19	0	13.9	3.475
21	0	233.262	233.232	241.422	8.19	0		0		0.85	0.94	234.17	0	2839.22	0	13.9	3.475
22	0	233.802	233.652	244.952	11.3	0		0		0.89	0.99	234.64	0	2839.33	0	13.9	3.475
23	0	235.266	234.616	243.366	8.75	0		0		0.76	0.84	235.45	0	2839.25	0	13.9	3.475
24	0	239.42	239.33	246.44	7.11	0		0		0.58	0.64	239.97	0	2839.47	0	13.9	3.475
25	0	254.392	254.302	262.622	8.32	0		0		0.6	0.66	254.96	0	2839.65	0	13.9	3.475
26	0	268.377	268.287	276.687	8.4	0		0		0.58	0.64	268.93	0	2840.14	0	13.9	3.475
27	0	269.355	269.195	293.805	24.61	0		0		0.92	1	270.2	0	2840.55	0	13.9	3.475
28	0	270.161	270.131	296.431	26.3	0		0		0.88	0.97	271.1	0	2841.98	0	13.9	3.475
29	0	270.772	270.662	295.792	25.13	0		0		0.88	0.97	271.63	0	2595.36	0	12.6	3.15
30	0	272.282	271.742	287.742	16	0		0		0.87	0.96	272.7	0	2597.13	0	12.6	3.15
31	19	282.102	281.902	289.642	7.74	22.16	RainlandI	1.805	ResDiurnalFlowCurve	0.34	0.36	282.27	25.41	2176.76	0.138	10.9	2.725
32	0	286.213	286.193	292.813	6.62	0		0		0.4	0.43	286.62	0	2152.39	0	10.7	2.675
33	0	287.622	287.542	294.242	6.7	0		0		0.7	0.76	288.3	0	2152.64	0	10.7	2.675
34	0	289.214	289.204	297.524	8.32	0		0		0.73	0.79	289.99	0	2152.86	0	10.7	2.675
35	0	289.684	289.574	305.774	16.2	0		0		0.97	1.05	290.62	0	2153.69	0	10.7	2.675
36	0	290.543	290.483	303.343	12.86	0		0		0.88	0.95	291.44	0	2154.39	0	10.8	2.7
37	21	290.96	291.01	303.96	12.95	7.53	RainlandI	1.995	ResDiurnalFlowCurve	0.69	0.75	291.76	11.12	2154.58	0.055	10.8	2.7
38	5	291.566	291.646	311.386	19.74	3.771	RainlandI	0.475	ResDiurnalFlowCurve	0.87	0.94	292.59	4.63	2144.99	0.024	10.7	2.675

APPENDIX C

COMPUTER MODEL I/I CALCULATIONS

Appendix C
LOAPUD Masterplan Model I/I Calculations

MH #	Catchment #	Area ft²	# of MH's	% of MH Total	# of edu's	% of edu Total	Length of Mainline	% of Total Mainline Length	% Total (MH's, edu's, Length)	Average of % Total	Catchment Area Count	Area Type / Pipe Age Weighting Factor	Catchment Area I/I (MGPD) (Max AWWF x % Total x Weighting Factor)	Catchment Area I/I (GPM)
3	3	642616.1	7	0.491%	5	0.080%	2804	0.746%	1.316%	0.439%	1	1.75	0.0403	27.993
6	6	2392688.45	33	2.314%	137	2.184%	6600	1.755%	6.254%	2.085%	1	1.5	0.1642	113.997
11	11	254202.77	3	0.210%	2	0.032%	382	0.102%	0.344%	0.115%	1	2	0.0120	8.357
14	14	328124.88	22	1.543%	9	0.143%	6460	1.718%	3.404%	1.135%	1	1.35	0.0804	55.849
31	31	1768139.13	6	0.421%	19	0.303%	1850	0.492%	1.216%	0.405%	1	1.5	0.0319	22.160
37	37	885071.6311	1	0.070%	21	0.335%	340	0.090%	0.495%	0.165%	1	1.25	0.0108	7.525
38	38	182137.21	1	0.070%	5	0.080%	370	0.098%	0.248%	0.083%	1	1.25	0.0054	3.771
39	39	643992.67	2	0.140%	25	0.399%	640	0.170%	0.709%	0.236%	1	1.25	0.0155	10.771
40	40	451243.57	2	0.140%	5	0.080%	900	0.239%	0.459%	0.153%	1	1.75	0.0141	9.768
42	42	740017.14	9	0.631%	18	0.287%	2200	0.585%	1.503%	0.501%	1	1.75	0.0460	31.968
51	51	1068756.78	15	1.052%	24	0.383%	4435	1.179%	2.614%	0.871%	1	1.5	0.0686	47.649
66	66	1105266.09	5	0.351%	8	0.128%	1500	0.399%	0.877%	0.292%	1	1.75	0.0269	18.653
71	71	544824.57	4	0.281%	19	0.303%	1470	0.391%	0.974%	0.325%	1	1.75	0.0298	20.722
73	73	227043.78	1	0.070%	5	0.080%	800	0.213%	0.363%	0.121%	1	2.25	0.0143	9.914
74	74	1229465.9	9	0.631%	15	0.239%	2340	0.622%	1.493%	0.498%	1	1.75	0.0457	31.743
81	81	582960.47	8	0.561%	26	0.415%	2150	0.572%	1.547%	0.516%	1	1.75	0.0474	32.907
84	84	1596855.84	12	0.842%	47	0.749%	3520	0.936%	2.527%	0.842%	1	1.75	0.0774	53.741
86	86	418292.55	5	0.351%	12	0.191%	1850	0.492%	1.034%	0.345%	1	2	0.0362	25.130
88	88	352798.3	13	0.912%	11	0.175%	5080	1.351%	2.438%	0.813%	1	1.5	0.0640	44.441
95	95	3821940.76	23	1.613%	38	0.606%	5475	1.456%	3.675%	1.225%	1	1.25	0.0804	55.822
97	97	730529.96	3	0.210%	7	0.112%	995	0.265%	0.587%	0.196%	1	1.75	0.0180	12.475
100	100	481151.01	2	0.140%	18	0.287%	640	0.170%	0.597%	0.199%	1	1.75	0.0183	12.706
102	102	316527.26	1	0.070%	10	0.159%	85	0.023%	0.252%	0.084%	1	2	0.0088	6.129
103	103	824251.42	10	0.701%	12	0.191%	2270	0.604%	1.496%	0.499%	1	1.5	0.0393	27.275
107	107	878094.2	4	0.281%	12	0.191%	950	0.253%	0.724%	0.241%	1	1.75	0.0222	15.407
110	110	468984.52	11	0.771%	11	0.175%	2500	0.665%	1.612%	0.537%	1	1.25	0.0353	24.481
121	121	1085320.21	9	0.631%	9	0.143%	1535	0.408%	1.183%	0.394%	1	1.5	0.0310	21.562
125	125	1346219.12	9	0.631%	11	0.175%	2130	0.566%	1.373%	0.458%	1	1.25	0.0300	20.856
129	129	1422138.98	12	0.842%	15	0.239%	3465	0.921%	2.002%	0.667%	1	1.25	0.0438	30.414
137	137	981588.99	17	1.192%	15	0.239%	4610	1.226%	2.657%	0.886%	1	1.25	0.0581	40.365
152	152	2394549.28	26	1.823%	1	0.016%	5885	1.565%	3.404%	1.135%	1	1	0.0596	41.370
154	154	3402210.22	20	1.403%	219	3.492%	4360	1.159%	6.054%	2.018%	1	1	0.1059	73.569
168	168	400513.77	6	0.421%	21	0.335%	1722	0.458%	1.213%	0.404%	1	1.25	0.0265	18.434
174	174	211807.33	6	0.421%	2	0.032%	1228	0.327%	0.779%	0.260%	1	1.25	0.0170	11.837
180	180	540828.32	10	0.701%	26	0.415%	3215	0.855%	1.971%	0.657%	1	1.25	0.0431	29.937
185	185	56730701.26	6	0.421%	153	2.439%	900	0.239%	3.099%	1.033%	1	1.25	0.0678	47.084
AA10	AA10	4189099.34	60	4.208%	410	6.537%	16173	4.301%	15.045%	5.015%	1	1.5	0.3949	274.263
B12	B12	646768.51	9	0.631%	41	0.654%	2480	0.659%	1.944%	0.648%	1	1.5	0.0510	35.443
B3A	B3A	477136.16	5	0.351%	32	0.510%	1750	0.465%	1.326%	0.442%	1	1.5	0.0348	24.175
B8	B8	251690.29	4	0.281%	20	0.319%	1395	0.371%	0.970%	0.323%	1	1.5	0.0255	17.689
C11	C11	186954.61	5	0.351%	18	0.287%	850	0.226%	0.864%	0.288%	1	1.5	0.0227	15.744
C16	C16	255153.62	4	0.281%	27	0.430%	1025	0.273%	0.984%	0.328%	1	1.75	0.0301	20.918
C20	C20	171324.32	3	0.210%	14	0.223%	700	0.186%	0.620%	0.207%	1	1.75	0.0190	13.180
C23	C23	292217.8	5	0.351%	25	0.399%	1115	0.297%	1.046%	0.349%	1	1.5	0.0275	19.063
C28	C28	248452.15	2	0.140%	21	0.335%	200	0.053%	0.528%	0.176%	1	2	0.0185	12.840
C29A	C29A	862738.33	13	0.912%	100	1.594%	4950	1.316%	3.822%	1.274%	1	1.5	0.1003	69.678
C3	C3	581744.27	8	0.561%	61	0.973%	3130	0.832%	2.366%	0.789%	1	1.5	0.0621	43.129
DWR2	DWR2	222444.94	1	0.070%	50	0.797%	0	0.000%	0.867%	0.289%	1	0.05	0.0008	0.527
E13	E13	5802388.72	1	0.070%	64	1.020%	0	0.000%	1.091%	0.364%	1	2	0.0382	26.506

Appendix C
LOAPUD Masterplan Model I/I Calculations

MH #	Catchment #	Area ft²	# of MH's	% of MH Total	# of edu's	% of edu Total	Length of Mainline	% of Total Mainline Length	% Total (MH's, edu's, Length)	Average of % Total	Catchment Area Count	Area Type / Pipe Age Weighting Factor	Catchment Area I/I (MGPD) (Max AWWF x % Total x Weighting Factor)	Catchment Area I/I (GPM)
E2	E2	292682.06	4	0.281%	10	0.159%	755	0.201%	0.641%	0.214%	1	1.75	0.0196	13.626
E29	E29	435237.65	5	0.351%	59	0.941%	1692	0.450%	1.741%	0.580%	1	1.5	0.0457	31.742
E33	E33	3155287.65	2	0.140%	44	0.702%	450	0.120%	0.961%	0.320%	1	1.5	0.0252	17.526
E3A	E3A	723513.66	10	0.701%	73	1.164%	3120	0.830%	2.695%	0.898%	1	1.5	0.0707	49.125
E51	E51	715117.11	9	0.631%	72	1.148%	2673	0.711%	2.490%	0.830%	1	1.5	0.0654	45.389
E59	E59	670588.33	8	0.561%	81	1.291%	2920	0.776%	2.629%	0.876%	1	1.5	0.0690	47.924
E67	E-67	1920775.48	32	2.244%	194	3.093%	9461	2.516%	7.853%	2.618%	1	1.25	0.1718	119.295
E76	E76	1430508.19	5	0.351%	129	2.057%	1361	0.362%	2.769%	0.923%	1	1.25	0.0606	42.069
F1	F1	1471022.24	30	2.104%	136	2.168%	6220	1.654%	5.926%	1.975%	1	1.59	0.1649	114.511
F31	F31	562631.12	11	0.771%	59	0.941%	2600	0.691%	2.403%	0.801%	1	1.6	0.0673	46.734
F42	F42	741924.7	7	0.491%	40	0.638%	1502	0.399%	1.528%	0.509%	1	1.5	0.0401	27.855
G100	G100	314879.59	8	0.561%	6	0.096%	1900	0.505%	1.162%	0.387%	1	0.25	0.0051	3.530
G106A	G106A	427491.17	7	0.491%	20	0.319%	2130	0.566%	1.376%	0.459%	1	0.25	0.0060	4.181
G109	G109	429078.26	4	0.281%	22	0.351%	900	0.239%	0.871%	0.290%	1	0.375	0.0057	3.968
G115	G115	571489.48	9	0.631%	14	0.223%	1500	0.399%	1.253%	0.418%	1	0.25	0.0055	3.808
G120	G120	2004924.88	6	0.421%	46	0.733%	1060	0.282%	1.436%	0.479%	1	0.25	0.0063	4.363
G226	G226	2086284.18	20	1.403%	35	0.558%	3600	0.957%	2.918%	0.973%	1	0.1	0.0051	3.546
G245	G245	1267547.07	18	1.262%	300	4.783%	2150	0.572%	6.617%	2.206%	1	0.1	0.0116	8.042
G25	G25	2784637.15	23	1.613%	209	3.332%	9300	2.473%	7.418%	2.473%	1	0.4	0.0519	36.061
G49	G49	2028061.66	12	0.842%	34	0.542%	4800	1.276%	2.660%	0.887%	1	0.1	0.0047	3.233
G6	G6	349889.83	3	0.210%	17	0.271%	875	0.233%	0.714%	0.238%	1	1.25	0.0156	10.848
G61	G61	682982.69	6	0.421%	41	0.654%	2270	0.604%	1.678%	0.559%	1	0.2	0.0059	4.079
G67	G67	290587.51	2	0.140%	13	0.207%	750	0.199%	0.547%	0.182%	1	0.25	0.0024	1.662
G71	G71	1335813.71	14	0.982%	135	2.152%	5225	1.389%	4.524%	1.508%	1	0.1	0.0079	5.497
G8	G8	462733.7	1	0.070%	16	0.255%	0	0.000%	0.325%	0.108%	1	1.25	0.0071	4.941
G99	G99	969457.08	23	1.613%	10	0.159%	4150	1.104%	2.876%	0.959%	1	0.1	0.0050	3.495
GC15	GC15	299476.78	6	0.421%	9	0.143%	1000	0.266%	0.830%	0.277%	1	1	0.0145	10.089
GC8	GC8	457502.33	6	0.421%	237	3.779%	785	0.209%	4.408%	1.469%	1	0.75	0.0579	40.179
GCRV3	GCRV3	1820773.34	8	0.561%	73	1.164%	2060	0.548%	2.273%	0.758%	1	0.75	0.0298	20.715
I1AB	I1AB	3709073.32	4	0.281%	52	0.829%	780	0.207%	1.317%	0.439%	1	1.75	0.0403	28.009
J1	J1	1167217.74	8	0.561%	22	0.351%	2745	0.730%	1.642%	0.547%	1	1.5	0.0431	29.927
J5	J5	1461050.29	3	0.210%	24	0.383%	750	0.199%	0.792%	0.264%	1	1.5	0.0208	14.446
LPMH	LPMH	269360.3	5	0.351%	22	0.351%	1070	0.285%	0.986%	0.329%	1	0.175	0.0030	2.097
LR20	LR20	228433.07	11	0.771%	4	0.064%	1865	0.496%	1.331%	0.444%	1	1.5	0.0349	24.265
LR26	LR26	72751.87	6	0.421%	1	0.016%	1180	0.314%	0.750%	0.250%	1	1.5	0.0197	13.681
LR7	LR7	216008.25	8	0.561%	17	0.271%	2375	0.632%	1.464%	0.488%	1	1.25	0.0320	22.234
LR9	LR9	135011.84	2	0.140%	6	0.096%	440	0.117%	0.353%	0.118%	1	1.75	0.0108	7.506
O10	O10	477739.51	7	0.491%	15	0.239%	2240	0.596%	1.326%	0.442%	1	1.25	0.0290	20.139
O18	O18	347380.06	3	0.210%	14	0.223%	1030	0.274%	0.707%	0.236%	1	1.25	0.0155	10.747
O24	O24	456474.08	4	0.281%	29	0.462%	1425	0.379%	1.122%	0.374%	1	1.25	0.0245	17.041
O30	O30	1237436.19	9	0.631%	59	0.941%	3845	1.022%	2.594%	0.865%	1	1.25	0.0568	39.410
O45	O45	386632.91	3	0.210%	17	0.271%	950	0.253%	0.734%	0.245%	1	1.25	0.0161	11.151
O46	O46	875093.93	12	0.842%	7	0.112%	3050	0.811%	1.764%	0.588%	1	1.25	0.0386	26.800
O49	O49	838037.94	18	1.262%	40	0.638%	2650	0.705%	2.605%	0.868%	1	1.25	0.0570	39.568
O60	O60	444660.06	10	0.701%	98	1.563%	1410	0.375%	2.639%	0.880%	1	1.25	0.0577	40.085
S45	S45	2606833.91	7	0.491%	61	0.973%	2650	0.705%	2.168%	0.723%	1	1.75	0.0664	46.111
S48	S48	1054725.04	13	0.912%	28	0.446%	3645	0.969%	2.327%	0.776%	1	1.5	0.0611	42.426
S58	S58	376009.83	6	0.421%	22	0.351%	1265	0.336%	1.108%	0.369%	1	1.5	0.0291	20.196
S64	S64	637223.88	2	0.140%	5	0.080%	500	0.133%	0.353%	0.118%	1	1.75	0.0108	7.506
V1	V1	2482980.79	34	2.384%	122	1.945%	7830	2.082%	6.412%	2.137%	1	0.75	0.0842	58.439

Appendix C
LOAPUD Masterplan Model I/I Calculations

MH #	Catchment #	Area ft²	# of MH's	% of MH Total	# of edu's	% of edu Total	Length of Mainline	% of Total Mainline Length	% Total (MH's, edu's, Length)	Average of % Total	Catchment Area Count	Area Type / Pipe Age Weighting Factor	Catchment Area I/I (MGPD) (Max AWWF x % Total x Weighting Factor)	Catchment Area I/I (GPM)
VV1	VV1	1829281.01	9	0.631%	24	0.383%	1700	0.452%	1.466%	0.489%	1	1.5	0.0385	26.721
VV14	VV14	1621854.47	2	0.140%	21	0.335%	630	0.168%	0.643%	0.214%	1	1.5	0.0169	11.714
VV17	VV17	861100.73	7	0.491%	21	0.335%	1325	0.352%	1.178%	0.393%	1	1	0.0206	14.317
VV22	VV22	940325.43	6	0.421%	21	0.335%	1411	0.375%	1.131%	0.377%	1	1	0.0198	13.742
W1	W1	632369.13	10	0.701%	12	0.191%	1877	0.499%	1.392%	0.464%	1	0.01	0.0002	0.169
VV7	VV7	4478250.74	9	0.631%	75	1.196%	1745	0.464%	2.291%	0.764%	1	1.25	0.0501	34.802
Z109E	Z109E	521386.3	6	0.421%	28	0.446%	2390	0.636%	1.503%	0.501%	1	0.1	0.0026	1.826
Z11B	Z11B	131642.72	2	0.140%	8	0.128%	500	0.133%	0.401%	0.134%	1	0.25	0.0018	1.218
Z123E	Z123E	433112.61	9	0.631%	35	0.558%	2415	0.642%	1.831%	0.610%	1	0.1	0.0032	2.226
Z137E	Z137E	1004392.14	24	1.683%	77	1.228%	6320	1.681%	4.591%	1.530%	1	0.1	0.0080	5.580
Z14	Z14	1060084.28	28	1.964%	85	1.355%	7100	1.888%	5.207%	1.736%	1	0.25	0.0228	15.819
Z17	Z17	919649.62	21	1.473%	47	0.749%	5780	1.537%	3.759%	1.253%	1	0.2	0.0132	9.137
Z170E	Z170E	585021.26	5	0.351%	46	0.733%	2455	0.653%	1.737%	0.579%	1	0.1	0.0030	2.111
Z179E	Z179E	124398.93	4	0.281%	13	0.207%	800	0.213%	0.701%	0.234%	1	0.1	0.0012	0.851
Z184E	Z184E	460541	5	0.351%	14	0.223%	2375	0.632%	1.205%	0.402%	1	0.1	0.0021	1.465
Z185E	Z185E	912046.57	14	0.982%	51	0.813%	3605	0.959%	2.754%	0.918%	1	0.1	0.0048	3.346
Z1CB	Z1CB	1003642.76	22	1.543%	71	1.132%	5280	1.404%	4.079%	1.360%	1	0.25	0.0178	12.392
Z201E	Z201E	572330.53	8	0.561%	36	0.574%	2995	0.796%	1.931%	0.644%	1	0.1	0.0034	2.347
Z21	Z21	593238.5	16	1.122%	32	0.510%	4325	1.150%	2.782%	0.927%	1	0.25	0.0122	8.453
Z218EB	Z218BE	121481.85	4	0.281%	6	0.096%	760	0.202%	0.578%	0.193%	1	0.1	0.0010	0.703
Z221E	Z221E	61914.82	2	0.140%	3	0.048%	300	0.080%	0.268%	0.089%	1	0.1	0.0005	0.326
Z223E	Z223E	378091.43	9	0.631%	28	0.446%	2285	0.608%	1.685%	0.562%	1	0.05	0.0015	1.024
Z23	Z23	953902.97	27	1.893%	77	1.228%	7670	2.040%	5.161%	1.720%	1	0.25	0.0226	15.679
Z234E	Z234E	623318.19	10	0.701%	29	0.462%	2580	0.686%	1.850%	0.617%	1	0.05	0.0016	1.124
Z246E	Z246E	924013.33	11	0.771%	30	0.478%	3170	0.843%	2.093%	0.698%	1	0.05	0.0018	1.272
Z261E	Z261E	1056724.35	19	1.332%	15	0.239%	4300	1.143%	2.715%	0.905%	1	0.05	0.0024	1.650
Z26E	Z26E	381379.6	9	0.631%	27	0.430%	2245	0.597%	1.659%	0.553%	1	0.1	0.0029	2.016
Z27	Z27	68646.79	2	0.140%	4	0.064%	235	0.062%	0.267%	0.089%	1	0.75	0.0035	2.429
Z283E	Z283E	1628351.64	35	2.454%	96	1.531%	7990	2.125%	6.110%	2.037%	1	0.25	0.0267	18.563
Z28A	Z28A	697409.63	7	0.491%	31	0.494%	1500	0.399%	1.384%	0.461%	1	1	0.0242	16.820
Z28AA	Z28AA	391470.14	4	0.281%	40	0.638%	1500	0.399%	1.317%	0.439%	1	0.5	0.0115	8.003
Z29	Z29	1798383.99	40	2.805%	121	1.929%	11655	3.099%	7.834%	2.611%	1	0.15	0.0206	14.280
Z2A	Z2A	1185594.65	23	1.613%	74	1.180%	5900	1.569%	4.362%	1.454%	1	0.15	0.0114	7.951
Z3	Z3	231913.5	6	0.421%	5	0.080%	1730	0.460%	0.961%	0.320%	1	1	0.0168	11.673
Z30	Z30	676957.04	15	1.052%	41	0.654%	3310	0.880%	2.586%	0.862%	1	0.25	0.0113	7.856
Z31E	Z31E	193355.2	3	0.210%	13	0.207%	885	0.235%	0.653%	0.218%	1	0.1	0.0011	0.794
Z37A	Z37A	127912.46	2	0.140%	8	0.128%	600	0.160%	0.427%	0.142%	1	1.5	0.0112	7.790
Z37AB	Z37AB	698678.92	14	0.982%	37	0.590%	3060	0.814%	2.385%	0.795%	1	1	0.0417	28.989
Z37E	Z37E	959964.06	12	0.842%	39	0.622%	3780	1.005%	2.469%	0.823%	1	0.1	0.0043	3.000
Z52E	Z52E	385366.75	3	0.210%	14	0.223%	1120	0.298%	0.731%	0.244%	1	0.1	0.0013	0.889
Z56E	Z56E	425400.16	5	0.351%	21	0.335%	1560	0.415%	1.100%	0.367%	1	0.1	0.0019	1.337
Z64E	Z64E	320722.77	4	0.281%	30	0.478%	1650	0.439%	1.198%	0.399%	1	0.1	0.0021	1.455
Z73E	Z73E	432796.04	6	0.421%	21	0.335%	2085	0.554%	1.310%	0.437%	1	0.1	0.0023	1.592
Z81E	Z81E	1452054.94	20	1.403%	70	1.116%	6825	1.815%	4.334%	1.445%	1	0.1	0.0076	5.266
TOTAL			1426	100.00%	6272	100.00%	376051	100.00%	300.00%	100.00%	143	143	4.637	3220.470
													MGD	GPM

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 10 – Review of 2021 Sewer System Management Plan

In May of 2019 the District Board of Directors approved a proposal from Sauers Engineering to update the District's Sewer System Management Plan.
The draft plan is included in your packet for your review and comment.
Any changes requested or recommended can be made and the plan brought back to the Board for approval and adoption at the September Board of Directors meeting.

Recommended Action: No Action Requested

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

Sewer System Management Plan

August 2021

This Sewer System Management Plan includes the elements required by:

State Water Resources Control Board
Order No. 2006-0003-DWQ
Statewide General WDR for Wastewater Collection Agencies

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

SEWER SYSTEM MANAGEMENT PLAN

Lake Oroville Area Public Utility District is implementing the elements of the State Water Resources Control Board Order No. 2006-0003-DWQ Statewide General Water Discharge Requirements (WDR) for Wastewater Collection Agencies.

SSMP ELEMENT	Adopted	Revised
Development Plan and Schedule	September 11, 2007	
Section I - Goal	September 11, 2007	*September___, 2021*
Section II - Organization	September 11, 2007	*September___, 2021*
Section III - Legal Authority	January 11, 1989	June 14, 2005
Section IV - O&M Plan	April 2009	*September___, 2021*
Section V - Design & Performance Standards	February 1980	December 2011
Section VI - Overflow Response Plan	April 2009	*September___, 2021*
Section VII - FOG Control Program	April 2009	*September___, 2021*
Section VIII - System Capacity Plan	February 2010	Update in progress
Section IX - Monitoring Measurement & Program Modifications	September 14, 2009	*September___, 2021*
Section X - SSMP Program Audits	September 14, 2009	*September___, 2021*
Section XI - Communication Program	September 14, 2009	*September___, 2021*
Complete SSMP Implementation	September 14, 2009	*September___, 2021*

SECTION I - GOAL

Sewer System Management Plan (SSMP)

Section I - Goal

Goal: The Goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent Sewer System Overflow (SSO), as well as mitigate any SSO's that do occur.

In order to meet the above stated Goal, the District commits to the following:

- Properly manage, operate, and maintain all portions of the Enrollee's wastewater collection system to minimize SSO's.
- Reduce the number of SSO's and achieve the greatest reasonable reduction in SSO's.
- Minimize and mitigate the adverse impacts of SSO's that may occur despite best efforts.
- Meet all applicable regulatory notification and reporting requirements.
- Protect public health and safety, and the environment.
- Provide a safe work environment for employees and contractors.
- Ensure corrective action is taken in a timely manner.
- Ensure compliance with current regulatory requirements.
- Cost effectively minimize Infiltration/Inflow ("I/I").
- Be available and responsive to the needs of the public and work cooperatively. with local, state, and federal agencies to reduce, mitigate the impacts of, and properly report SSO's.
- Implement regular, proactive maintenance of the system to remove roots, debris, and Fats, Oils & Grease (FOG) in areas prone to blockages that may cause sewer backups or SSO's.

These goals were adopted by LOAPUD at a Board meeting on _____, 2021.

SECTION II - ORGANIZATION

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
SEWER SYSTEM MANAGEMENT PLAN (SSMP)
SECTION II ORGANIZATION
DISTRICT DIRECTORY

Sewer System Owner:
Lake Oroville Area Public Utility District
1960 Elgin Street

Oroville, CA 95966

www.loapud.com

Main Office:
tel. 530-533-2000
fax 530-533-1750

Contact Persons:

Scott McCutcheon	Kelly Hamblin	Dan Sanders
General Manager	Communications Officer	Field Operations Supervisor
Office: 530-533-2000	Office: 530-533-2000	Office: 530-533-2000
Cell: 530-520-2892		Cell: 530-520-7118

Regulatory Agencies:
Governor's Office of Emergency Services 800-852-7550

California Regional Water Quality Control Board, Central Valley Region
415 Knollcrest Drive, Redding, CA 96002
Office: 530-224-4845 Fax 530-224-4857
Contact: Greg Cash
Direct line: 530-224-3208

Online spill reporting system: http://ciwqs.waterboards.ca.gov

Butte County Environmental Health
202 Mira Loma Drive, Oroville, CA 95965
Office: 530-522-3880
Contact: Danette York, Director

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

Phone Contact List

DISTRICT OFFICE 530-533-2000

Office Staff After- Hours Contact Numbers

NAME	PHONE	CELLULAR	EMAIL
SCOTT MCCUTCHEON	514-1641	520-2892	scottm@loapud.com
KELLY HAMBLIN			kellyh@loapud.com
DARIN KAHALEKULU		403-6782	darink@loapud.com

Field Staff After-Hours Contact Numbers

NAME	PHONE	CELLULAR	EMAIL
DAN SANDERS	645-2688	520-7188	dsanders@loapud.com
LEVI TOMLINSON	693-2475	353-8065	ltomlinson@loapud.com
ROBERT BRODERSON	533-3845	701-1319	rbroderson@loapud.com

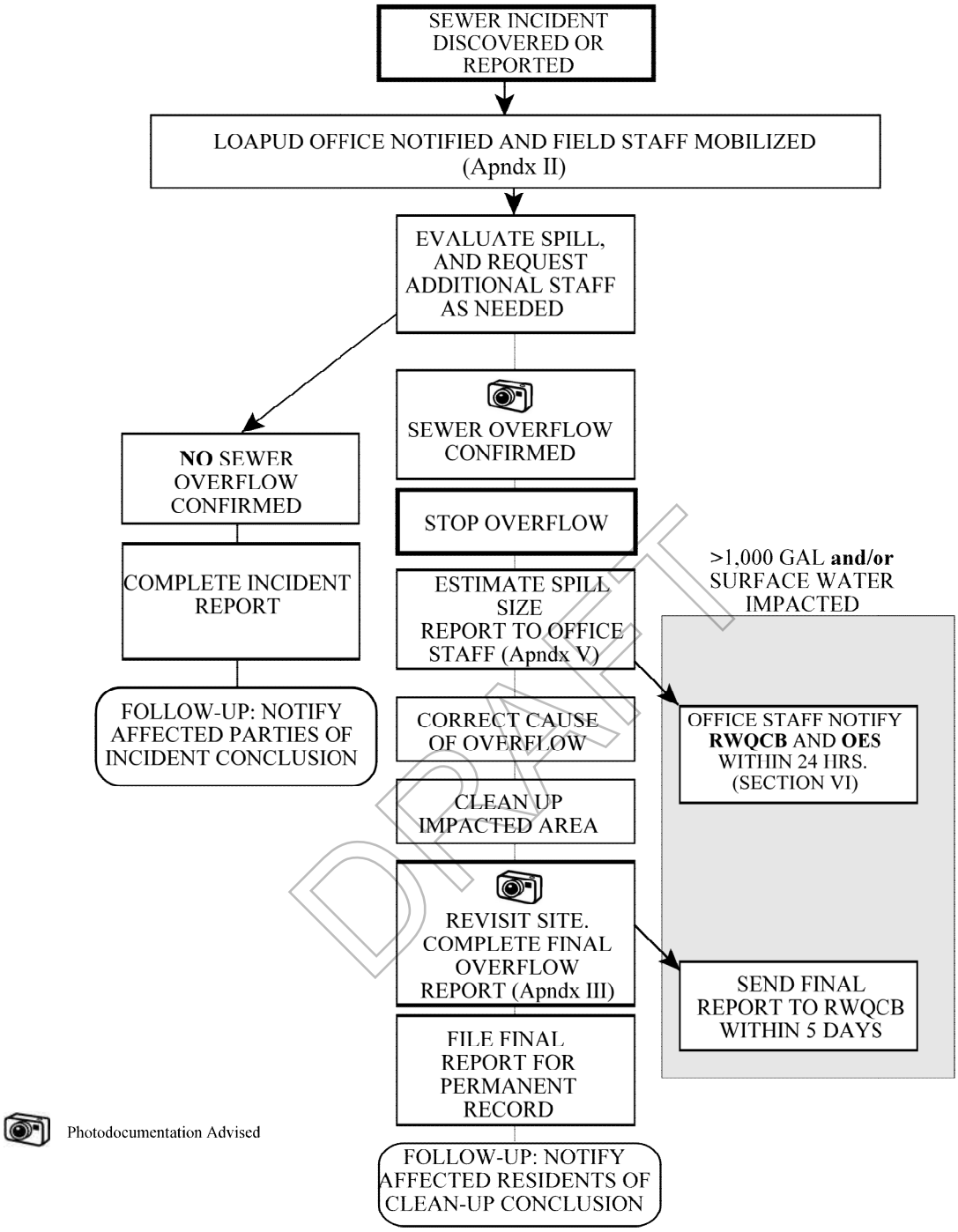
Regional Contacts

Agency	Phone
Governor's Office of Emergency Services	**800-852-7550**
Regional Water Quality Control Board	**530-224-3208 (Greg Cash)**
Butte County Dept. of Environmental Health	**530-538-7281**
SC-OR	530-534-0353
Thermalito Water and Sewer District	530-533-0740
Butte County Office of Emergency Services	530-538-7373
City of Oroville Public Works	530-538-2420
Butte County Dept. Of Public Works	530-538-7681
California Dept. Fish & Game	916-358-2900

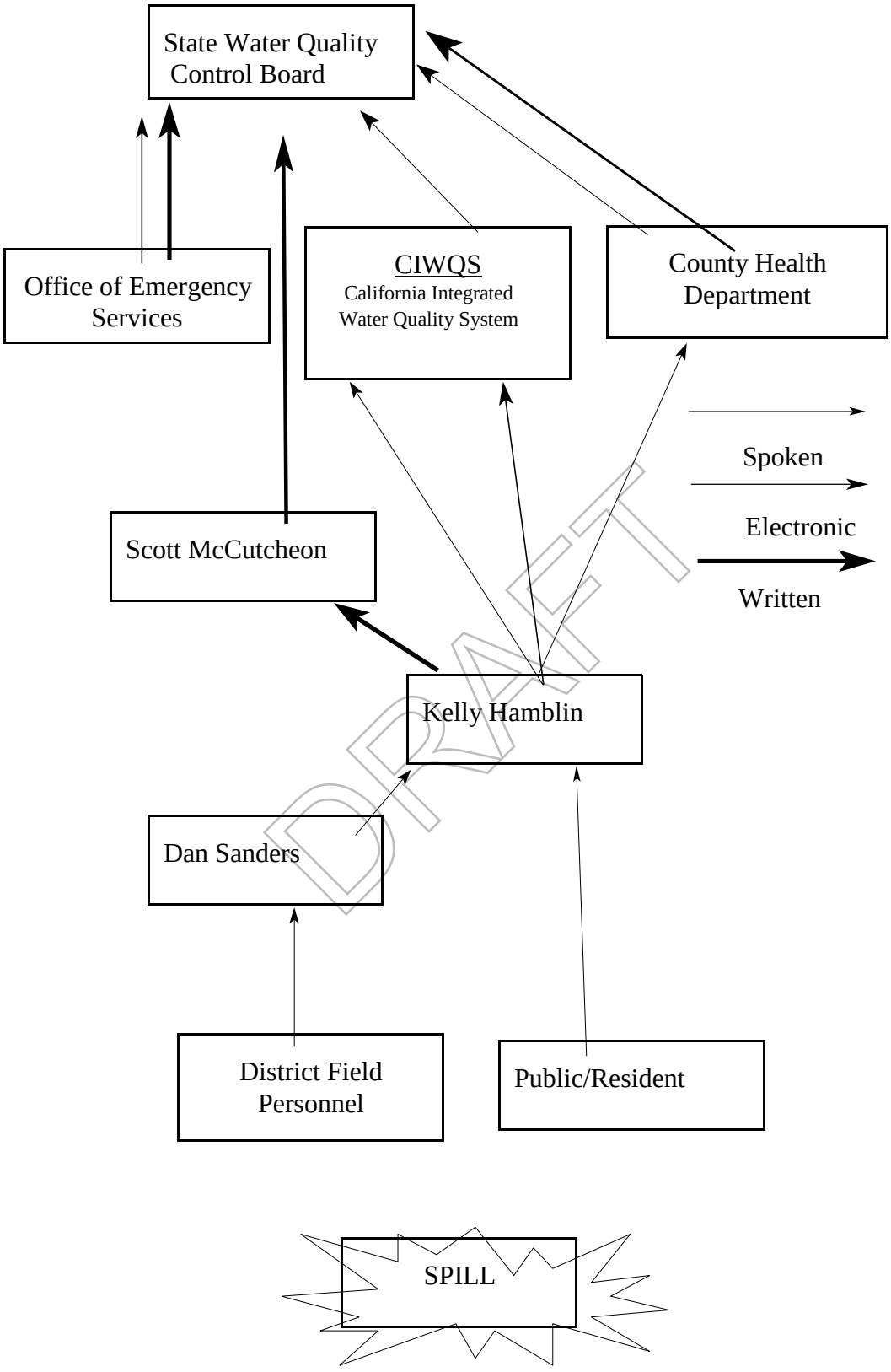
Any Category 1 SSO must be reported to the Governor's Office of Emergency Services, the RWQCB and Butte County Dept. Environmental. Health as per Section VII. Other contacts shall be made as appropriate given the nature and extent of the SSO.

Revised August 2021

SPILL RESPONSE FLOW CHART



SPILL REPORTING CHAIN OF COMMUNICATION



SECTION III - LEGAL AUTHORITY

SECTION III LEGAL AUTHORITY

Lake Oroville Area Public Utility District was formed and operates under the Public Utility District Act, Statutes of 1921 of the California Public Utility Code. A five-member Board of Directors, elected at large by the District's voters, is responsible for setting policy and general administrative procedures for the District. The policies and procedures set by the Board are administered by the District General Manager.

The LOAPUD Board of Directors has adopted numerous policies and ordinances governing the operation of this utility. The LOAPUD Manual of Board Policies includes adopted Policy # 3065, SEWER USE REGULATIONS, (adopted January 11, 1989 and amended June 14, 2005) regarding the use of public sewers within Lake Oroville Area Public Utility District. This Policy specifically: • Prohibits illicit discharges to the system (Section 5.1 - 5.8);

- Requires that the system is properly constructed (Section 4.1 - 4.8);
- Ensures access to system elements for inspection and maintenance (Section 4.4);
- Limits the discharge of Fats, Oils and Grease (FOG) (Section 5.2 - 5.4); and
- Enforces any violation of these elements (Section 7.1 - 7.5)

LOAPUD has adopted and may continue to adopt additional ordinances, policies, agreements, and procedures that further define their legal authority in these areas and provide more detailed guidelines and/or requirements specific to these issues.

SECTION IV – SEWER OPERATIONS AND MAINTENANCE PLAN

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

SEWER OPERATIONS AND MAINTENANCE PLAN

DECEMBER 2020

Prepared by:

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Table of Contents

I. INTRODUCTION AND AUTHORITY

Lake Oroville Area Public Utility District (LOAPUD or the District) owns and operates a sanitary sewer collection system serving over 8,457 acres of unincorporated area east and south of the City of Oroville in Butte County, California. This **Sewer Operations and Maintenance Plan** details the O&M practices for the collection system as required by the State of California and detailed in the State Water Resources Control Board Order # 2006-0003 DWQ Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. This plan describes the District's program for the organizational and physical management and maintenance of the collection system. It is one element in the District's comprehensive Sewer System Management Plan (SSMP) which also includes a Sewer Overflow Prevention and Response Plan, a Fats, Oils and Grease (FOG) Control Plan, and a Sewer System Master Plan.

II. GENERAL INFORMATION

LOAPUD's collection system includes over 77 miles of pipelines, 1,550 manholes, and nine (9) lift stations. The system serves approximately 4,500 customers. These include single and multi-family dwellings as well as commercial and industrial services, totaling an estimated 6,160 equivalent dwelling units (EDU).

The LOAPUD collection system discharges to a regional treatment facility owned and operated by the Sewerage Commission - Oroville Region (SC-OR) which is a joint-powers authority with LOAPUD as a member, along with the City of Oroville and Thermalito Water and Sewer District.

III. PLAN OBJECTIVES

The primary objective of this plan is to define the District's operations and maintenance practices for the proper stewardship of the collection system. In addition, this Sewer Operations and Maintenance Plan specifically addresses the requirements of the Statewide General Permit for an operation and maintenance program:

- Maintain up-to-date mapping of the sewer collection system showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves;
- Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. Include tracking documents such as work orders;

- Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
- Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and
- Provide equipment and replacement part inventories, including identification of critical replacement parts.

IV. ORGANIZATIONAL STRUCTURE AND PERSONNEL

A. District Organizational Structure

Lake Oroville Area Public Utility District was formed and operates under the Public Utility District Act, Statutes of 1921 of the California Public Utility Code. A five-member board, elected by the District's voters at large, is responsible for setting policy and general administrative procedures.

The policies and procedures are administered by the District General Manager. The General Manager oversees the District staff and consultants. He is also responsible for providing the Board members with information on the status of the District and its assets.

District staff includes office staff and field operations staff. Office staff functions include dispatch of field staff, maintenance and spill documentation, billing and accounting, public record requests and announcements, regulatory compliance, customer service and provision of information to the Board, via the General Manager. Field operations staff are responsible for the physical operations and maintenance of the District's infrastructure, including inspection, performing preventive maintenance, cleaning, and repairs.

Consultants working at the prerogative of the Board and under the direction of the General Manager include engineering consultants and legal consultants on an on-going basis. Other professional services may be contracted for in a similar manner on an as-needed basis. Outside contractors may also be retained at the discretion of the Board and under direction of the General Manager for large construction projects.

B. Internal Communication

LOAPUD's internal written communication includes but is not limited to:

- Work Orders, typically generated by the office staff and directed to the field crews detailing necessary maintenance activities;
- Job Reports, executed by the field staff and returned to the office staff for follow up and or record keeping;
- Memorandums between the General Manager, the office staff, and the field crews;
- Board Packages, prepared by the General Manager and office staff to provide information to the Board of Directors;
- Information, memorandums and reports generated by the District's consultants and delivered to the General Manager.

In addition to written communication, staff communicates "in-house" by way of cellular telephone, e-mail, staff meetings, and verbal communication.

C. Personnel Training

The District provides all new employees with an orientation program including completing an "Employee Safety Orientation Checklist." The District is subject to all of the rules and regulations of Cal OSHA. The District requires that all employees receive OSHA required training that is related to their job description. In the case of pump and lift station maintenance, this training includes confined space entry, CPR, first aid and emergency response. All employees are encouraged to obtain additional job related training as it is available, and/or as required in the industry.

Worker and public safety is of utmost importance in the wastewater field. Safety and emergency equipment is accessible and in adequate supply for field employees, including:

- rubber / disposable gloves;
- hard hats, safety glasses, rubber boots;
- protective clothing;
- anti-bacterial soap and first aid kit;
- tripods and non-entry rescue equipment;
- fire extinguishers;
- equipment to enter manholes;
- portable crane / hoist;
- atmospheric testing equipment and gas detectors;
- confined space ventilation equipment;
- H_2S monitors;
- full body harness;
- traffic / public access control equipment; and
- Lower Explosion Limit (LEL) meters.

Employees are trained in the use and applicability of this equipment.

V. SEWER SYSTEM MAINTENANCE PROCEDURES

A. Preventive Maintenance Program

The District has established this program for the routine and response-related operations and maintenance activities. Routine activities include system inspection, cleaning and routine maintenance as detailed in Sections V.B.1, V.B.2, V.B 4, V.C and V.D. These activities, as well as wet weather preparation activities, are routine in nature and follow scheduling as noted.

Response-related activities include emergency sewer overflow response, response to system problems reported to the District by customers and/or the public, and repairs and/or rehabilitation in response to collection system problems noted in system inspections and investigations by field crews, as well as equipment repair or replacement as needed.

LOAPUD utilizes a system of Work Orders and Job Reports to schedule and track both routine and response-related work. A copy of a blank Work Order and a blank Job Report is included in the Appendix of this plan.

B. Maintenance Activities

1. Collection System Inspection

Collection system inspection includes the routine and response-related inspection, investigation and testing of the collection system components including gravity sewer pipes, manholes, and force mains. Inspection activities not only enable proactive maintenance, but are critical in investigation and analysis of Infiltration and Inflow (I&I).

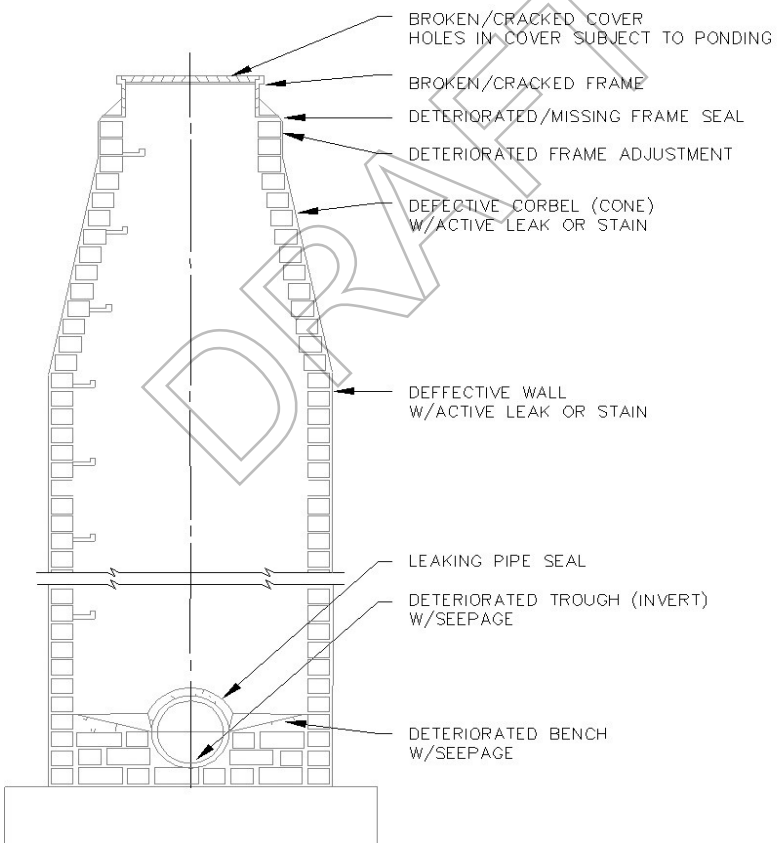
Inspection techniques include visual inspection, cameras, and Closed-Circuit Television (CCTV). CCTV inspections are the most comprehensive and cost efficient method to inspect he internal condition of sewer pipes 4" and larger. The CCTV camera is assembled to keep the lens as close as possible to the center of the pipe. In larger sewers, the camera and lights are attached to a raft, which is floated through the sewer from one manhole to the next. To see details of the sewer walls, the camera and lights swivel both vertically and horizontally. In smaller sewers, the cable and camera are attached to a sled, to which a drogue is attached and flows from one manhole to the next. Documentation of inspections is very critical to a successful operation and maintenance program. CCTV inspections produce a video record of the inspection that can be used for future reference to prioritize rehabilitation projects and to assess corrective actions.

Visual inspections are important and can be noted in Job Reports and incorporated support other inspection techniques.

Infiltration and Inflow (I&I) investigation of the collection system specifically targets pathways for surface water, groundwater and storm water to improperly enter the sanitary sewer system. It may include CCTV and visual inspections as described above, as well as the following specific techniques:

Manhole Inspections:

Manhole inspection includes an inspection of every component of each manhole structure. These components and possible causes of I&I intrusion are shown below. Proper safety procedures, following OSHA regulations for confined-space entry, must be followed. During the inspection, a quick check of the pipe conditions entering and exiting the manholes can be achieved by simply lamping these pipes. Supplemental photographs or video recordings can be included if there are particular defects or rehabilitation requirements that merit further analysis.



Note: brick manholes are no longer in use in system.

Smoke Testing:

Smoke testing is an effective and economical method of locating major sources of I&I such as storm drainage connections, curb inlets, and area drains. The smoke testing program includes:

Using high-capacity smoke blowers (>3,500 cfm);
Isolating individual sewer lines, when possible;
Informing and educating the affected customers;
Testing during periods of dry weather; and
Carefully documenting all identified defects (photographs or video recording).

Smoke testing not only identifies sources of I&I, but it is an effective technique for locating structural defects such as collapsed, broken or cracked pipe and offset, separated, or deteriorated pipe joints. The District has conducted ongoing annual smoke testing and should conduct a once-through smoke testing program every 2 to 5 years.

In addition to I&I sources in the District's infrastructure, smoke testing will also locate I&I problems in private service laterals. This includes possible ways that rainfall runoff and groundwater can enter into the District's sewer system from private property. Most such connections violate current local plumbing codes and must be remedied by the private party.

2. Collection System Cleaning

The District recognizes that to maintain proper function, a sewer collection system needs regular scheduled cleaning. Some common causes of sanitary sewer overflows include grease blockages, root blockages, and debris blockages. Frequent system cleaning is preventive maintenance.

The District personnel routinely clean every gravity line in the collection system. Areas with few problems are cleaned on the regular maintenance schedule, while areas with known sags, root intrusion problems, or a history of grease or other problems are cleaned on a more frequent basis. Also, some areas with known wet weather problems are cleaned and inspected at the beginning and during the wet season as preventive maintenance.

District equipment for cleaning includes multiple jet-rodders with a variety of jetting and cutting heads that field crews are able to select from, depending upon pipe specifics. The tools and equipment allow personnel to properly clean lines of roots, greases, sediment, and accumulated solids and debris.

Equipment to allow for pipeline and manhole access, short term pipeline bypass, and traffic control as necessary are all available to the cleaning crews on an as-needed basis.

3. Repair and Rehabilitation

Where collection system elements are found to have structural problems, they are prioritized for repair, rehabilitation or replacement. Large rehabilitation and replacement projects are typically placed on the Capital Improvement Plan, and may be done with in-house resources or contracted out.

District field crews routinely repair, replace or rehabilitate smaller sections of pipe. This includes repairing or replacing stretches of pipeline that have structural defects, major root intrusion, misaligned or damaged joints, sags, or other problems. Crews also use their resources to respond to emergency line breaks, breaches or clogs with a combination of cleaning, repair, and/or replacement techniques.

In all cases where active sewer pipelines are involved, District field crews are trained and practice appropriate safety in traffic control, manhole access, sewer bypass, temporary power and pumping, trenching and trench safety, proper disposal of waste and wastewater, and proper construction and reconstruction processes.

C. Lift Station Maintenance Practices

The LOAPUD collection system includes nine lift stations. The specific layout and equipment, including pumps, motors, valves, controls, alarms, ventilation, and stand-by power varies at each station, and field personnel keep a binder for each station that includes manufacturer's maintenance manuals and warrantees specific to the equipment. In all cases, the manufacturer's specific recommendations shall override general maintenance guidelines provided in this operations and maintenance manual, so long as safety is the first priority.

This manual provides general lift station maintenance practices, most of which apply to all nine lift stations. Field personnel shall familiarize themselves with the specific manufacturer's recommended maintenance for equipment at each lift station, and shall use that information as appropriate. Maintaining equipment in accordance with manufacturer's recommendation may be required to maintain effective coverage for warrantees and guarantees for equipment performance, and logging and recording routine maintenance may be necessary.

Use equipment service cards/service record cards or lift station maintenance logs for record keeping of lift station maintenance practices. Following is a table of general lift station maintenance. Some items may not be applicable to every station.

- Building and Grounds Maintenance:

  Weekly check of heating and ventilation systems
  Weekly light cleaning
  Weekly run standby generators
  Quarterly complete cleaning
  Annual check of grounds, fencing, outdoor maintenance
  Annual check all back up batteries
  Annual check of building roof, doors, windows for leakage or repairs
  Annual check of electrical, plumbing and ventilation systems Annually check all safety equipment (fire extinguishers, first aid kits, etc.)
  Elimination of rodents, pests, as needed.

- Sumps, wet wells and overflow storage structures:

  Weekly check for grease or solids buildup or debris.
  Annually drain and clean during low flow period, re-coat or patch as necessary.

- Pumps

  Prior to any direct maintenance, pumps and motors shall be disconnected from electrical supply, and field staff shall observe all safety and Cal OSHA requirements.
  Daily, record run times for pumps.
  Daily, inspect for suction end blockages. Check suction and discharge operating pressures. A higher vacuum than normal may indicate a suction line blockage. A low discharge pressure may indicate worn impeller or breakage in force main.
  Daily, check motor temperature and pump bearing temperature.
  Daily, listen or feel for unusual noises or vibrations.
  Daily, check for proper guards and safety gear.
  Daily, check for leakage on packing glands.
  Weekly, operate pumps alternately.
  Weekly, check mechanical seals for leakage or excessive heat.

  Weekly, inspect wearing rings, stuffing boxes, packing rings and seals as applicable, and replace when worn or damaged. For pumps with mechanical seals, inspect mechanical seals, o-rings, springs, and maintain as recommended by the manufacturer. Lubricate and check seals as recommended. Repair or replacement of mechanical seals requires that the pump be taken out of service for repair. Installation of new mechanical seals must be done be a qualified pump mechanic with the proper tools and supplies.
  Monthly, or as manufacturer recommends, lubricate bearings. Drain old lubricant and dispose of properly and add fresh lubricant as recommended.

Annually, as a minimum, or more frequently as manufacturer recommends or any time unusual noise, wear or vibration are noted, check the alignment between pump and motor, realign as necessary, tighten any flange connections.
Annually inspect suction line for alignment, eliminate any potential for air pockets.
Annually check all piping supports for wear, corrosion or settling. Pipes should be supported externally, and not bearing weight on pump casing.

TESCO EMASS

After pump maintenance, properly prime pumps as needed prior to placing back in service. This may require manual venting of casing and operation of discharge valving.
If pump is to be left off-line for maintenance, open motor breaker switch, lock out and tag, with reason for out-of-service.
Never operate a pump in dry conditions.

- Motors

Daily, keep motors clean and free of dirt and grease.
Daily, note any unusual noises, smells or vibrations. Annually, verify that motor nameplate data is current in maintenance log.
Annually, lubricate pump motors and inspect for wear or age related problems.
Annually, clean and dry motor electrical connections and tighten any loose connections. Inspect and tighten hold-down bolts if applicable.
If motors are variable speed, they require additional maintenance for slip rings and bushes. Refer to manufacturer's recommendations. Failure to perform increased maintenance on variable speed drive motors may cause premature failure.

- Valves

Weekly, manually stop pumps. Check valves should close smoothly and completely without slamming. There should be no leakage in check valve.
Monthly, manually operate all valves to ensure proper range of motion.
Most centrifugal pumps may be started against a closed discharge valve to develop prime. The valve should be slowly opened. **Positive displacement pumps should never operate against a closed discharge valve**. **Do not operate any pump with suction valve closed.**
Annually, inspect valve packing, stems, seals, nuts, seats, and lubricate or replace parts as needed. Clean and paint valves if applicable. If valves are in vaults, clean vaults.

- Electrical controls

Daily, check that motor control is in "Automatic" position.

Weekly, manually check float switch performance. Inspect bubbler, electrode or diaphragm type level controls and clean off scum as needed. Purge bubbler tube if needed.
Weekly, check for appropriate motor response to each level condition.
Weekly activate "stop" switch and motor "lock out" switch if applicable. Motors should wind down slowly. After stopping, check that no back-spinning occurs.
Weekly, check all alarm conditions and autodialer, telemetry or SCADA as applicable.
Quarterly, change lead and lag pump designations if applicable. Quarterly, service and calibrate all instrumentation, such as flow meters, level sensors, and alarms.

- Electrical Systems

  For any modifications, maintenance or repair of electrical systems, a qualified electrician shall be employed. Field staff shall be adequately trained in recognizing electrical hazards and calling on qualified commercial electricians for service.

  Annually, all electrical equipment should be inspected for wear, corrosion, integrity and cleanliness. All control equipment should

  perform as designed. All fuses and circuit breakers should be functional and properly sized. Electrical systems may be damaged by water, dust, heat, cold, humidity and corrosive conditions.
  Enclosures shall be dry-method cleaned.
  Annually, an electrician should inspect the system for integrity, current imbalances, loose contacts, overheating and corrosion. Annually electric safety systems and protective devices shall be inspected.

- Auxiliary Power

  All generators and transfer switches are tested weekly under applicable loads as allowed by Butte County Air Quality
  Management District permit. Keep units clean and check fuel level and freshness. In the case of diesel generators, consider need to replace fuel prior to fuel aging.

D. STEP Systems

1. General - A large number of residences (approximately 304) in the area known as Villa Verona are connected to the LOAPUD collection system through Septic Tank Effluent Pump (STEP) systems. These operate much like standard septic systems, some tanks flow by gravity and others pump partially treated effluent to the sewer collection system rather than to an onsite leach field. While these systems significantly reduce the strength of wastewater entering the collection

system, they require an increased maintenance responsibility for the District and a somewhat higher potential for mechanical failure and spillage. As with standard septic tank systems, STEP systems require regular pumping and occasional inspection for system integrity.

2. Individual STEP System Maintenance - All individual Septic Tank Effluent Pump (STEP) systems are serviced according to the manufacturer's recommendations at least once every 5 years. Specific problems or homeowner requests may increase this frequency to protect the system and to protect public health. Routine (5 year) maintenance procedures of the STEP systems include the following:

   (a) General system inspection;
   (b) Pump and inspect the septic tank; (c) Remove and clean the biofilter;
   (d) Replace the biofilter, if necessary;
   (e) Clean and inspect pump(s) - rebuild, or replace as necessary; and (f) Clean and disinfect the area around the STEP system.

3. Specific STEP Collection System Maintenance - The STEP collection system generally consists of individual service laterals, (most of which are pressure lines, but some are gravity), discharging to a common 3" or 4" main that includes clean-outs and vacuum-air release valves. The mains discharge into gravity sewers at manholes. Due to variable hydraulics in the mains, air is able to enter the system from the discharge points. Ongoing maintenance is required to alleviate hydraulic problems caused by air in the system. This includes air release valve monitoring and maintenance and line valve maintenance.

   Air Release Valve Monitoring/Maintenance
   Monitoring air release valves requires routine visits to the Air Release Valve (ARV) location. All valves, automatic and manual, should be vented manually and the conditions reported using one of the five conditions tabulated below. Depending on the type of valve and elevation relative to the energy grade line, conditions (1) and (5) are ideal.

   1. No air — effluent only
   2. Minor air — small bubbles
   3. Continuous air — large air pockets (1 minute or more)
   4. Vacuum — air drawn into the system
   5. Passive — no air, vacuum, or effluent

   Condition 1, no air — effluent only, is representative of those air release locations below static or energy grade lines (refer to as-built drawing for relative elevations) where no air or gas is accumulating or where the accumulation is being properly released by an automatic ARV.

Condition 2, minor air can usually be expected where an adequately monitored manual ARV is located.

Condition 3, continuous air — large pockets of air, indicates excessive accumulation of gas or air. The problem may indicate (a) insufficient monitoring of a manual ARV, (b) the need to convert the location to an Automatic ARV (AARV), or, (c) if the station has an AARV, a mechanical malfunction of the valve. An AARV should be bled by opening the blowoff valve beneath the AARV body. This process should be repeated for two additional days. If air continues to escape after several days of manual bleeding, the AARV should be replaced or repaired.

Condition 4, vacuum indicates that siphoning is occurring. Locations that are subject to siphoning are those with elevations above the energy grade line (refer to as-built drawings). These are usually at the beginning of gravity sections, e.g. the top of standpipes, and should always be handled with AARVs. Condition 4 may be the result of an AARV with a plugged orifice or mechanical apparatus that is frozen shut. In either case, movement of air back into the system is restricted and repair or cleaning of the mechanism is required. If condition 4 is encountered at a AARV location, it indicates a drop in pressure and the need for a check of downstream hydraulic pressures.

Condition 5, passive, is typical of AARV locations that are above the static or energy grade lines and at which air is being properly expelled.

Valve Maintenance

Valve exercising should not be scheduled when high flows are expected, during heavy rainfall. Avoid exercising valves near the end of the day; if a valve sticks closed, repair is much more convenient in the daylight. Begin the exercising procedure at the most remote locations, so as to gain experience where fewer homes would be affected by a stuck valve. Ensure that all valve locations are accessible and clean of gravel, asphalt, weeds, or brush. During an emergency, quick access is advantageous.

When exercising valves at clean outs, the clean out must be secured to avoid sewage spills. Caution should be used in securing pressure caps, since excessive line pressure may blow an improperly secured cap loose.

Bypass valves located at the standpipes are critical to system hydraulics and should be exercised only when other standpipe repair work is in progress.

To maintain a system's integrity, all valves should be returned to their original position, whether open or closed. Maintenance personnel should make certain that nothing is lodged under a valve that is normally closed. Such an obstruction could cause a drop in the system's normal pressure level that might cause air, siphoning, and other problems.

VI. EQUIPMENT INVENTORIES

LOAPUD keeps current inventories of all major equipment for both maintenance and accounting purposes. A current list of capital equipment (trucks, trailers, backhoes, rodders, trailer mounted pumps, etc.) is provided in Appendix A.2. This list does not include incidental tools and accessories.

The Field Supervisor is responsible for tracking inventories of materials. These include pipes, hoses, spare and replacement mechanical parts, lubricants, fuels, etc. The Field Supervisor is responsible for assuring that critical replacement parts are either available in-house, readily available within a 2 to 4 hour period, or that adequate redundant or bypass facilities can be employed to avoid a sewage overflow during the repair or replacement of a critical system element.

VII. INFORMATION MANAGEMENT

A. Mapping

LOAPUD has a detailed collection system map consisting of a cover and index sheet, the collection system showing parcels, pipes, manholes and lift stations, plotted at a scale of 1" = 200'. The 17 sheet system map also includes a table detailing the lengths and slopes of the main trunk line. In addition to the overall system map, the District maintains files of "as-built" drawings for most of the existing infrastructure. As-built or Record Drawings are required for all new construction and reconstruction in the system.

The District has developed a Geographical Information System (GIS) map of the District's collection system utilizing Global Positioning System (GPS) survey equipment. The GIS map, which is available to view online, includes the District's service area boundary, sphere of influence, and individual parcels, along with collection system pipelines and manholes, sewer lift stations, and STEP system tanks, pumps, and pipelines. The GIS map is constantly being updated and refined as District crews continue surveying activities as part of their normal operation and maintenance activities. The collection system map can be viewed at:

http://maps.loapud.com/

B. Record Keeping

LOAPUD's infrastructure record keeping includes records of Sewer Overflow Reports, maintenance of the collection system map, maintenance logs for lift stations and equipment, Work Orders and Job Reports. Files are maintained for all contracted construction projects, including Record Drawings and information on the infrastructure and equipment installed. Files are also maintained on improvement projects done with in-house resources.

Office staff keeps financial records and accounting records on file as necessary for tax and legal purposes. This includes information on infrastructure and equipment, financial records on improvement projects, records on funding programs, and information to support financial applications. Customer account records are maintained as well.

C. Rehabilitation and Replacement Plan

LOAPUD, as steward of the collection system infrastructure, has continued to reinvest in the system through the systematic rehabilitation, expansion and replacement of infrastructure.

Through a thorough combination of ongoing CCTV (since 1995) and other inspection processes, maintenance records, overflow incident records, and master-planning based on anticipated growth trends, LOAPUD has identified portions of the system that:

- Have insufficient hydraulic capacity to meet present or future flow;
- Are "bottle-necks" in the system, routinely causing up-stream manhole surcharging;
- Include flat, near flat, and sagging portions of pipeline; and
- Have increased maintenance needs due to system hydraulics or geometry.

For every element of the system that has been identified as being problematic, the District has evaluated whether capital improvements are necessary or whether the area in question is to be targeted for increased maintenance. For instance, if a bottleneck in the system causes upstream surcharging and is insufficient for future hydraulic capacity, then a capital improvement project up-sizing this element is necessary. For a relatively flat area with no major structural problems, but higher incidents of clogging, increased cleaning and jetting frequency may be necessary.

Every year the District has allocated capital resources to target problem areas, with a typical annual capital improvement budget of $200,000 - $300,000. The vast majority of identified problems in the system were targeted in a $5,000,000 improvement program in the years 2006 - 2007, funded through USDA's Rural Development Program. The projects included in this program were the Stateline Rehabilitation Project, the Oak Knoll Bypass, and the Kelly Ridge Bypass project. In addition, in acquiring three (3) lift stations previously owned and operated by the State of California, LOAPUD improved the reliability and overflow capacity of these three lift stations to prevent future sewer overflows.

Due to the relatively small size of the District, the identification of projects for each capital improvement cycle is done informally and in-house, taking into account the hydraulic analyses done in master planning, the maintenance requirements of particular areas as identified by the Field Supervisor, and records of sewer overflows or other documented problems.

APPENDIX

Appendix 1 SEWER SYSTEM MAP

LOAPUDs Sewer System Map is a 17 sheet collection of 24" x 36" drawings of the system available at the District Office.

The District has also developed a Geographical Information System (GIS) map of the District's collection system utilizing Global Positioning System (GPS) survey equipment. The GIS map includes the District's service area boundary, sphere of influence, and individual parcels, along with collection system pipelines and manholes, sewer lift stations, and STEP system tanks, pumps, and pipelines. The GIS map is constantly being updated and refined as District crews continue surveying activities as part of their normal operation and maintenance activities. The collection system map can be viewed at:

http://maps.loapud.com/

Appendix 2 EQUIPMENT LIST

1. 2008 FORD EXPLORER
2. 2010 FORD F-150
3. 1999 FORD F-450 FLATBED DUMP
4. 1996 FORD F-350 7.5L
5. 1996 FORD F-150 FUEL TRUCK
6. 2004 STERLING JETRODDER
7. 2012 PETERBUILT PUMP TRUCK FORMERLY
8. 1998 BOBCAT X331
9. 1994 FORD ECONOLINE CAMERA VAN
10. 1988 CASE 580 SUPER K BACKHOE
11. 2007 PETERBUILT DUMP
12. 1993 FORD F-800 PUMP TRUCK
13. 1992 ATLAS PORTABLE COMPRESSOR
14. 2002 PORTABLE GODWIN PUMP
15. 1983 JETRODDER (BACK UP)
16. 2000 JOHN DEERE 410 BACKHOE
17. EASMENT MACHINE (DRIVES ITSELF BUT CONNECTS TO JETRODDER FOR WATER SUPPLY)
18. 2003 GORMAN RUPP PORTABLE PUMP
19. RODDING MACHINE (TRAILER MOUNTED SNAKE)
20. 1992 CASE TENCHER
21. 1970 JOHN DEERE 644A LOADER
22. 2006 KABELCO EXCAVATOR
23. 2019 FORD F-350 DUALLY
24. 2019 FORD TRANSIT CCTV VAN
25. ROYAL OAKS GENERATOR
26. HANGING TREE GENERATOR
27. MOORETOWN GENERATOR
28. WINCO PORTABLE GENERATOR
29. ONAN GENERATOR

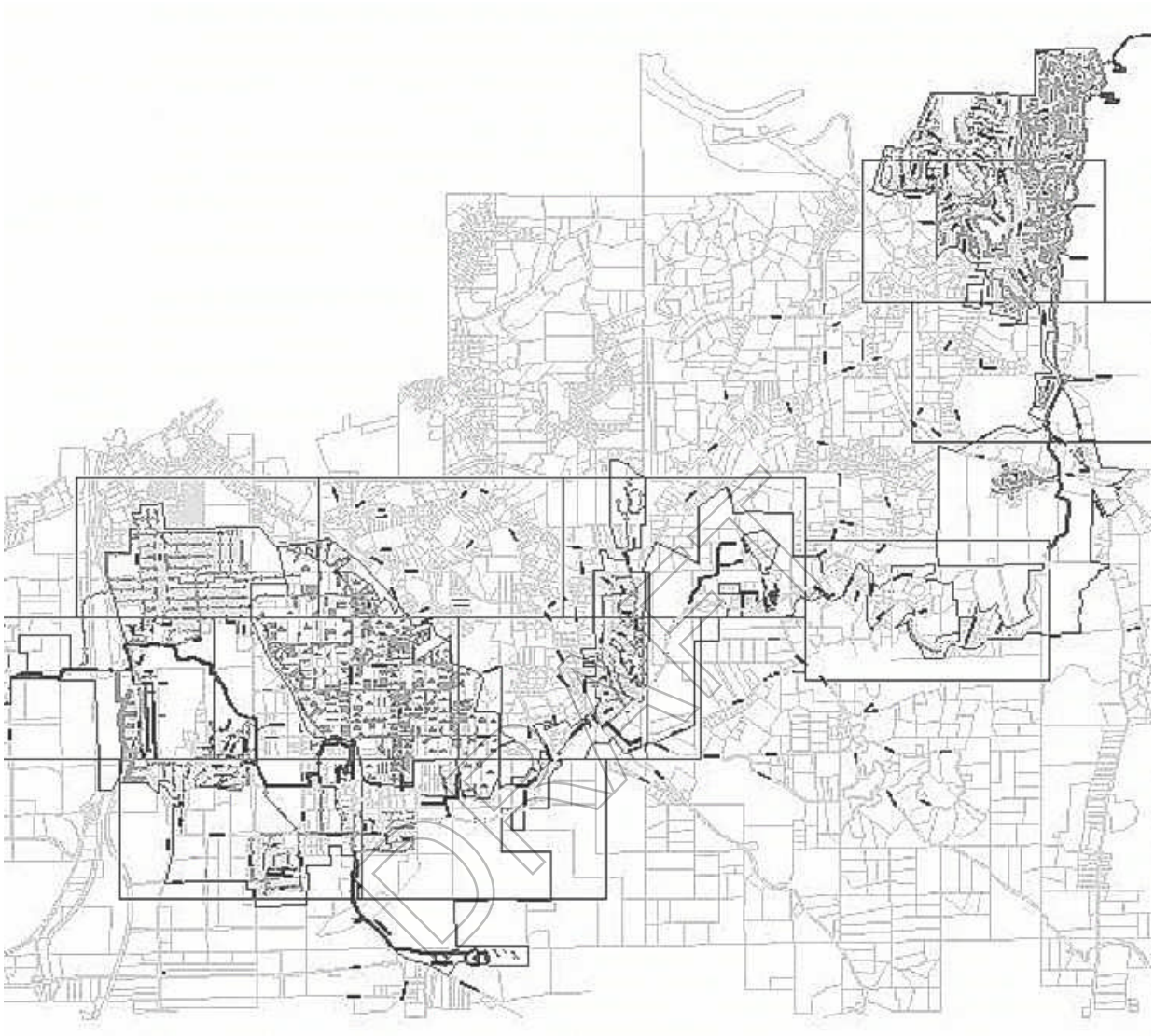
Appendix 3 WORK ORDERS AND JOB REPORTS

Incident Response Work Order (Front)

No.

Time	Date
Incident Location	
Incident Description	
Caller contact information:	
Name	Phone
Address	
Caller observations (e.g., odor, duration, location on property)	
Additional Information	

Incident Response Work Order (Back)



Circle approximate incident location on map.

Additional Information:

Inspection			
AP NUMBER	035-197-004	**Date**	11/24/2020 11:29
Direction	Upstream	**Pipe Type**	ABS
Pipe Size	4	**STREET ADDRESS**	4040 FAUNCE WAY
DISTANCE	123.7	**LATERAL POSTION**	9 O'CLOCK (LEFT)
End ID	E11 TO E12(LAMPHOLE)	**Completed**	Yes
Comments			

Inspection 2	
Length Surveyed	LEVI TOMLINSON

Created with the POSM report generator

AP NUMBER: 035-197-004

Date: 11/24/2020

Asset ID:

11:29:00 AM

Asset Location: Start ID: Length Surveyed: 57.2 **End ID:**

Created with the POSM **report generator**

Severity
Light–1
Moderate–2
Average–3
Heavy–4
Severe–5

Run Number: **Direction:** Upstream

Pipe Size: 4 **Pipe Type:** ABS

ID Number:

(0.0) SI - Start Inspection

(0.0) CM - CONNECTION @ MAIN Remark: CLAY FACTORY WYE

(0.1) MC - Material Change Remark: 4" CLAY TO 4" ABS

PIPE IS IN BAD SHAPE AND NEEDS TO BE REPLACED WITH AN ACCEPTABLE PIPE-DWS

(2.8) COTW - C/O TWO WAY Remark 4" ABS

(38.5) 22 - 22 DEGREE BEND Remark: BENDS TO THE RIGHT

(56.4) 22 - 22 DEGREE BEND Remark: BENDS TO THE LEFT

(57.2) MC - Material Change Remark 4" ABS TO 4" ORANGEBURG

(57.2) R - Roots Remark: CAN NOT GET THROUGH ROOTS

Total Distance: 57.2

ID Number:

LOAPUD DAILY JOB REPORT

DATE: 11-1-20

J.H.A.

TASK	P.S. INSPECTION, LOCATES, LINE CLEANING, FUEL AND OIL EXPOSURE.
HAZARDS	POOR AIR QUALITY, COVID-19, OVERHEATING, DEHYDRATION, SMOKE INHALATION, CONTACT WITH SEWAGE, OPEN CONFINED SPACES (MANHOLES), CHEMICAL CONTACT
CONTROLS	WEAR SURGICAL MASKS WHEN 6' DISTANCE CANT BE KEPT, N95 MASKS AS NEEDED FOR SMOKE, WEAR GLOVES AND EYE PROTECTION AS NEEDED, DRINK PLENTY OF LIQUID, TAKE BREAKS AS NEEDED, MANHOLE COVER SAFETY DEVICE.
P.P.E.	RUBBER GLOVES, SURGICAL MASKS, N95 MASKS, SAFETY GLASSES.

JOB #	JOB DESCRIPTION	HOURS
	ROBERT BRODERSON (UTILITY WORKER 2) D.O.H. 12-17-15	
		4
		4
	SHAWN AINSLIE (UTILITY WORKER I) D.O.H. 10-19-2020	
		0
	TYLER CHRISTENSEN (FOREMAN) D.O.H. 10-1-2020	
		0
	LEVI TOMLINSON (UTILITY WORKER 2) D.O.H. 8-3-2015	
		0
	SANDERS (SUPERVISOR) D.O.H. 3-19-2001	
		0

SECTION V - DESIGN & PERFORMANCE STANDARDS

SECTION V DESIGN AND PERFORMANCE PROVISIONS

Lake Oroville Area Public Utility District has adopted Board Policy No. 6010 DEVELOPMENT IMPROVEMENT STANDARDS (adopted February 1980, amended December 2011) which regulates and guides the design and construction of sanitary sewer facilities within the District by way of Improvement Standards and Standard Details.

The District has adopted the LOAPUD Sewer Improvement Standards and Standard Details including design and construction standards and specifications for installation of new sewer system elements and repair of existing facilities and procedures for inspection and testing of new or repaired facilities.

The District's Improvement Standards are available online at:

https://www.loapud.com/files/d1482b330/improvement_standards_approved_12-132011.pdf

The District's Standard Details are available online at:

https://www.loapud.com/files/6c4b9f667/standard_details_2011.pdf

Additionally, the District has adopted RULES, REGULATIONS, RATES AND CHARGES GOVERNING THE USE, OPERATION AND MANAGEMENT OF THE DISTRICT SEWER SYSTEM FACILITIES (adopted August 9, 2011, amended December 11, 2011) which regulates, among other topics:

- Section 4 Obtaining Sewer Service: Application and Permit Process
- Section 5 Specifications for Sewer Connection: Materials and Methods of Construction
- Section 6 Inspection, Testing and Maintenance Procedures
- Section 7 Discharges into Sewer System
- Section 8 Fats, Oil and Grease Control
- Section 9 Sand, Hydrocarbon-based Oils and Grease Control

The District's Rules, Regulations, Rates and Charges Governing the Use, Operation and Management of the District Sewer System Facilities can be found online at:

https://www.loapud.com/files/47ab24e44/rules_n_regulations_final_adopted_12-132011.pdf

SECTION VI - OVERFLOW EMERGENCY RESPONSE PLAN

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

SEWER OVERFLOW PREVENTION AND RESPONSE PLAN

DECEMBER 2020

Prepared by:

Sauers Engineering, Inc.
105 Providence Mine Road, Suite 202
Nevada City, CA 95959
(530)-265-8021
Lake Oroville Area Public Utility District

SEWER OVERFLOW PREVENTION
AND RESPONSE PLAN

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LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
SEWER OVERFLOW PREVENTION AND
RESPONSE PLAN

DISTRICT DIRECTOR:

Sewer System Owner:
Lake Oroville Area Public Utility District
1960 Elgin Street

Oroville, CA 95966

www.loapud.com

Main Office:
tel. 530-533-2000
fax 530-533-1750

Contact Persons:

Scott McCutcheon	Kelly Hamblin	Dan Sanders
General Manager	Communications Officer	Field Operations Supervisor
Office: 530-533-2000	Office: 530-533-2000	Office: 530-533-2000
Cell: 530-520-2892		Cell: 530-520-7118

Regulatory Agencies:
Governor's Office of Emergency Services 800-852-7550

California Regional Water Quality Control Board, Central Valley Region
415 Knollcrest Drive, Redding, CA 96002
Office: 530-224-4845 Fax 530-224-4857
Contact: Greg Cash
Direct line: 530-224-3208

Online spill reporting system: http://ciwqs.waterboards.ca.gov

Butte County Environmental Health
202 Mira Loma Drive, Oroville, CA 95965
Office: 530-522-3880
Contact: Danette York, Director

I. AUTHORITY

Sauers Engineering, Inc. has been retained to prepare this updated Sewer Overflow Prevention and Response Plan (Plan). The Plan is designed to be consistent with the State Water Resources Control Board Order No. 2006-0003DWQ Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. The Order was adopted by the State Water Resources Control Board on May 2, 2006. This Sewer Overflow Prevention and Response Plan is one element in the overall Sewer System Management Plan that includes the Sewer Operations and Maintenance Plan, the Sewer System Master Plan and the Fats, Oils, and Grease Control Program.

II. GENERAL BACKGROUND

The **prevention** portion of the Plan (Section IV) is designed to minimize the frequency and severity of collection system overflows through effective system management, operation, and maintenance practices. These include: regular system inspection, flow monitoring, and ongoing video surveillance.

The **response** portions of the Plan (Sections V, VI, and VII) are designed to ensure that every report of a confirmed sewage overflow is promptly addressed by the appropriate crews so that negative impacts to beneficial uses of surface waters and customer service can be minimized. The response portion of the plan also spells out the procedure by which spills are reported to regulatory authorities and the public.

The Plan further includes provisions to ensure safety in response and cleanup pursuant to the directions provided by the Butte County Environmental Health Department (BCEHD) and the Regional Water Quality Control Board. For purposes of this Plan, “confirmed sewage spill” is also sometimes referred to as “sewer overflow,” “overflow,” or “SO.”

The procedure to track the frequency and location of overflows by the District is also described in this Plan. Tracking form can be found in Appendix VI. The information collected and recorded through this tracking exercise, in addition to the regular video monitoring of the collection lines will help to modify, focus and improve ongoing maintenance operations.

A. District Description

The Lake Oroville Area Public Utility District provides sanitary sewer collection services for the unincorporated area east and south of the City of Oroville in Butte County, California. The District’s boundary encompasses approximately 8,457 acres (13.2 square miles) ranging in elevation between approximately 200 feet and 1,000 feet above sea level.

The District provides service to approximately 4,500 customers. Customers include single and multiple family residences, a variety of commercial and industrial uses, and public facilities including schools and recreational facilities associated with nearby Lake Oroville. For purposes of record keeping and billing, the District converts non-residential customers to equivalent dwelling units (EDU). This adjusts larger wastewater customers to the equivalent number of residential customers which generate the same quantity of wastewater. The District currently serves approximately 6,160 EDU's and an estimated population of 12,000 people.

The District was known as the North Burbank Public Utility District when it formed in 1938. Until 1977, the District owned and operated a wastewater treatment plant providing treatment and disposal services in addition to collection. Treatment and disposal are now provided at a regional plant operated by the Sewerage Commission - Oroville Region (SCOR) which holds the NPDES permit for discharge to the Feather River.

B. Objectives

The primary objective of the Plan is to clarify and formalize the District's procedures to avoid, prepare for, and respond to collection system spills. This completed plan provides guidance in system maintenance and situation response which will:

1. Protect public health and the quality of surface waters;
2. Satisfy Waste Discharge Requirements for sewage collection agencies; and
3. Minimize the risk of enforcement actions against Lake Oroville Area Public Utility District.

Additional benefits of the Plan are as follows:

- Provide appropriate customer service;
- Protect wastewater treatment plant and collection system personnel;
- Protect the collection system, wastewater treatment facilities, and all related equipment; and
- Protect private and public property beyond the collection and treatment facilities.

This plan shall not supersede existing emergency plans or standard operating procedures unless directed by the General Manager or overseeing regulatory agency.

C. Definitions

1. **Sanitary Sewer Overflow**: A sanitary sewer overflow (SSO, spill, overflow, surcharge) is any overflow, spill, release, discharge or diversion of wastewater from a sanitary sewer system. SSOs include:

a. overflows or releases of wastewater that reach waters of the United States;
b. overflows or releases of wastewater that do not reach waters of the United States; and
c. wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.

2. **Maintenance**: Any reinvestment in an existing collection system in the form of cleaning, monitoring, inspection, rehabilitation, and relief.

3. **Water of the State:** Any surface or ground water, within the boundaries of California.

4. **Major Spill:** A spill greater than 1,000 gallons, or one that occurs where public contact is likely, regardless of size, or in a sensitive environment (e.g. wetlands, waterways, public access areas, or preserves).

5. **Minor Spill:** A spill that is unlikely to cause illness, damage to property, or otherwise impact the environment *and* is less than 1,000 gallons.

III. LOAPUD Sanitary Sewer System Collection System Overview

A. Pipelines and Manholes

LOAPUD is responsible for the following collection system infrastructure:

TABLE 1 - LOAPUD COLLECTION SYSTEM COMPONENTS

Collection System Components	
Gravity Sewer	77 miles
Force Mains	4.5 miles
Pump Stations	9
Manholes	1,550
Individual STEP systems	304

B. Villa Verona - Pumped “STEP” Systems

A large number of residences (approximately 304) in the Villa Verona Assessment District are connected to the LOAPUD collection system through Septic Tank Effluent Pump (STEP) systems. These operate much like standard septic systems, but discharge partially treated effluent to the sewer collection system rather than discharge to an onsite leach field. While these systems significantly reduce the strength of wastewater entering the collection system, they require an increased maintenance responsibility for the District and a somewhat higher potential for mechanical failure and spillage. As with standard septic tank systems, STEP tanks require regular pumping and occasional inspection for system integrity.

C. Lift Stations

The Collection system relies on a series of pump stations to lift wastewater from low lying areas or over hills into the gravity mains that ultimately lead to the SC-OR treatment plant. he nine lift stations currently maintained and operated by LOAPUD are as follows:

- Royal Oaks Lift Station
- Hanging Tree Lift Station
- Heritage Lift Station
- Mooretown Lift Station
- Las Plumas Lift Station
- Vista Del Cerro Lift Station
- L-1 Lift Station
- L-2 Lift Station
- L-3 Lift Station

Table 2 on the following page presents the capacities and vital information for the LOAPUD maintained lift stations.

D. System Map

The District has developed a Geographical Information System (GIS) map of the District’s collection system utilizing Global Positioning System (GPS) survey equipment. The GIS map, which is available to view online, includes the District’s service area boundary, sphere of influence, and individual parcels, along with collection system pipelines and manholes, sewer lift stations, and STEP system tanks, pumps, and pipelines. The GIS map is constantly being updated and refined as District crews continue surveying activities as part of their normal operation and maintenance activities. The collection system map can be viewed at:

http://maps.loapud.com/

TABLE 2 - LOAPUD LIFT STATIONS

Royal Oaks Lift Station	
Location:	Royal Oaks Dr.
Capacity:	200 gpm
Surface Elevation:	920'
Pumps:	2 - Moyno 1GOHS1, 15 hp
Wet Well Size:	1,500 gallon
Lift:	96'
Nearest Surface Water:	50'

Hanging Tree Lift Station	
Location:	Hanging Tree Ct.
Capacity:	350 gpm
Surface Elevation:	985'
Pumps:	2 - Gorman Rupp T6A-B 88 hp
Wet Well Size:	1,500 gallons
Lift:	176'
Nearest Surface Water:	5'

Heritage Lift Station	
Location:	Rachel Drive
Capacity:	130 gpm
Surface Elevation:	840'
Pumps:	2 - Peabody Barnes 4SEH-1002, 15 hp
Wet Well Size:	1,000 gallons
Lift:	22'
Nearest Surface Water:	30'

Mooretown Lift Station	
Location:	Lower Wyandotte Rd.
Capacity:	325 gpm
Surface Elevation:	245'
Pumps:	2 - FLYGT NP3171 submersible 30 hp
Wet Well Size:	1,500 gal + 16,000 O.F.
Lift:	122'
Nearest Surface Water:	10'

Las Plumas Lift Station	
Location:	Las Plumas Ave.
Capacity:	110 gpm
Surface Elevation:	273'
Pumps:	2 - Wemco Torque 3S2 submers.
Wet Well Size:	1,500 gallons
Lift:	11'
Nearest Surface Water:	300'

Vista Del Cerro Lift Station	
Location:	Vista Del Cerro
Capacity:	300 gpm
Surface Elevation:	253’
Pumps:	HYDR-O-MATIC #s RV4B & LV4B, 15 hp
Wet Well Size:	1,500 gallons
Lift:	36'
Nearest Surface Water:	300'

L-1 Lift Station	
Location:	Bidwell Canyon Rd.
Capacity:	335 gpm
Surface Elevation:	938'
Pumps:	2 - Gorman Rupp T3A3S-B/WW, 15 hp
Wet Well Size:	4500 gal+ 11,000 O.F.
Lift:	42'
Nearest Surface Water:	100'

L-2 Lift Station	
Location:	Bidwell Canyon Rd.
Capacity:	447 gpm
Surface Elevation:	936'
Pumps:	2 - Gorman Rupp T6A3S-B/WW, 50 hp
Wet Well Size:	7000 gal + 27000 O.F.
Lift:	92'
Nearest Surface Water:	150'

L-3 Lift Station	
Location:	Bidwell Canyon Rd.
Capacity:	86 gpm
Surface Elevation:	949'
Pumps:	2 - FLYGT submers. NP3102, 6 hp
Wet Well Size:	7050 gal + 7535 O.F.
Lift:	81'
Nearest Surface Water:	150'

IV. SPILL PREVENTION PROCEDURES

The District employs a vigorous preventative maintenance and surveillance program. The efforts are focused to minimize the number, severity and frequency of collection system overflows through the following activities:

A. Video Monitoring Procedure

Closed circuit television inspection identifies defects in the sewer collection lines. Unstable sections caused by roots, cracks, displaced joints and intruding connections can be located before they lead to overflows or damaged infrastructure. The procedure also enables LOAPUD staff to keep accurate records and plan future preventative maintenance activities. The monitoring equipment allows for approximately 1,000 feet of collection system to be viewed and recorded each day surveying is carried out.

B. Video Monitoring Schedule

The initial video survey in 1993 proceeded from the furthest northeast extent of the collection system on Kelly Ridge to the western most portion, where it discharges to SC-OR's collection system. The initial video survey identified a list of sections that needed further attention. Those sections were then prioritized for repair or replacement based on the severity of the problem. Following the replacement and repair of the most crucial areas identified in the first survey, the entire system has been fully videotaped a second time in search of new problem areas and as follow up on repairs made following the first survey. The District continues to conduct ongoing video inspections throughout the year, focusing on older sections of the system and areas known to experience Inflow and Infiltration (I&I).

C. Villa Verona Maintenance Procedure

Each Villa Verona STEP system consists of an individual fiber glass septic tank and a biofilter. Some have pumps to lift effluent into a gravity line. Partially treated septage flows by gravity or is pumped through the biofilter and into small diameter (typically 3") force or larger gravity mains. In some cases, several STEP systems pump into a common force main, eventually discharging to the gravity main collection pipeline. Regular maintenance of the STEP system tanks and pumps include the following general steps:

1. Removal and cleaning of the biofilter;
2. Pumping of the septic tank;
3. Replacement of biofilter if necessary;
4. Clean and inspect pump - rebuild, or replace as necessary;
5. General system checks, provided no specific problems had been previously noted by homeowner; and

6. Cleanup and disinfection of the area around the system.

D. Villa Verona Maintenance Schedule

Current maintenance policy requires the pumping and cleaning of the STEP systems throughout the Villa Verona Area once every five years, or more frequently if problems are reported by homeowners. Currently, maintenance crews are pumping between 25 and 50 tanks per year.

E. Lift Station Maintenance Procedure

Lift stations are inspected daily, weekly, and annually. Field staff visit each lift station daily to check for general conditions including odors, alarm systems, and evidence of overflow or spill. A complete description of lift station maintenance procedures is provided in the LOAPUD Sewer Operations and Maintenance Plan.

F. Lift Station Maintenance Schedule

1. **Daily inspections** include flow and system time recording, pump and motor operation, wet well level, and general electronic system check.
2. **Weekly inspections** include cleaning of the wet well and backup generator check. Pumps are also manually run through a full range of operation.
3. **Quarterly/Annual inspections** include all manufacturer recommended mechanical system maintenance, general lubrication, and station cleaning.

G. Winter Preparedness

Field staff focus efforts in September, October, and November on those portions of the collection system which will be less accessible during the winter months or which have shown signs that higher flows may jeopardize system integrity. These areas include:

1. Overland pipe routes likely to be inaccessible due to mud or snow;
2. Problem areas already identified in prior video monitoring;
3. Areas known to receive high wet weather flows due to Inflow and Infiltration (I&I); and
4. Manholes susceptible to inundation, which are sealed to prevent inflow.

H. Flow Measurement

The District maintains a variety of stationary and portable flow measurement equipment. Sewer flows are recorded in various sections of the system during dry and wet periods to detect any excessive Inflow and Infiltration (I&I). Pump durations can also be used at each lift station to determine contributing flow rates. Once identified, the District investigates upstream pipes and connections more closely for sources of the increased flow.

Dry weather (base) flows are recorded in the summer months (July, August, September) when no inflow and little infiltration is likely to be recorded in the system. Pump records are then used during periods of rain to identify general areas of concern and where more specific flow measurement devices should be placed.

V. OVERFLOW RESPONSE PROCEDURE

The Overflow Response Procedure presents the strategy LOAPUD uses to mobilize personnel, materials, tools, and equipment to correct or repair any condition which may cause or contribute to overflows and unpermitted discharge. The plan considers a wide range of potential system failures that could lead to overflows.

A. Sewer Overflow Detection

Report from Public

An overflow may be detected by LOAPUD staff or by the public. LOAPUD is primarily responsible for receiving phone calls from the public regarding possible sewer overflows from the wastewater collection system, and for forwarding work orders to staff and, when necessary, submitting spill reports to the Regional Water Quality Control Board and the Butte County Environmental Health Department.

The telephone operator should obtain all relevant information available regarding the overflow including:

1. Time and date call was received;
2. Specific location;
3. Description of problem;
4. Time possible overflow was noticed by the caller;
5. Caller's name and phone number;
6. Observations of the caller (e.g., odor, duration, back or front of property); and
7. Other relevant information that will enable the responding investigator and crews, if required, to quickly locate, assess and stop the overflow.

The telephone operator then records the incident information and creates an Incident Response Work Order (Appendix II) for assignment to response staff.

Alarms

Lift stations are wired to signal the main office in the event of conditions which may include high and low wet well level alarms, power failure, or unusual pump conditions. When a lift station alarm occurs, field staff will be notified that the system requires attention. All information regarding alarms will be conveyed to the on duty field staff to initiate a preliminary investigation.

Personnel

Sewer overflows detected by any personnel in the course of their normal duties shall be reported immediately to the main office. Dispatching personnel (office staff) should record all relevant overflow information and dispatch additional response personnel as needed. (Until verified, the report of a possible spill will not be referred to as a "sewer overflow".) A Sewage Spill Report form (See Appendix III) should be completed by responding personnel within 24 hours of spill confirmation. The General Manager or other staff with signature authority is responsible for reviewing, updating and signing the final Sewage Spill Report.

B. Sewer Overflow Response

Failure of any element within the wastewater collection system that threatens to cause or causes an overflow will trigger an immediate response to isolate and correct the problem. Field personnel and equipment shall be available at all times to respond to any incident/overflow location. Staff will be dispatched to any site of a reported overflow immediately. Additional maintenance personnel shall be "on call" via cell phone should extra field personnel be needed.

1. Dispatching Field Personnel
   a. Office staff should receive notification of sewer overflows as outlined above in Section A, "Sewer Overflow Detection" and dispatch the appropriate field personnel and resources as required.

   b. Dispatchers shall notify the appropriate manager or supervisor by cell phone regarding sewer overflows and field crew locations.

2. Crew Instructions and Work Orders
   a Responding field personnel are dispatched by cell phone. They should be informed of the appropriate field personnel, materials, supplies, and equipment that might be needed.

3. Responsibilities of Response Crew Upon Arrival
   a. It is the responsibility of the first response personnel who arrive at the site of a sewer overflow to protect the health and safety of the public by mitigating the impact of the overflow to the extent possible. Should the overflow not be the responsibility of LOAPUD but there is imminent danger to public health, public or private property, or to the quality of waters of the State, then prudent emergency action shall be taken until the actual responsible party can provide necessary cleanup actions. Upon arrival at an overflow, the response crew should do the following:

   b. Determine the cause of the overflow, e.g. sewer line blockage, pump station mechanical or electrical failure, sewer line break, etc.;

c. Identify and request, if necessary, assistance or additional resources to correct the overflow or to assist in the determination of its cause;

d. Determine if private property is impacted. If yes, notify office staff so the Butte County Environmental Health Department may be advised;

e. Take immediate steps to stop the overflow, e.g. relieve pipeline blockage, manually operate pump station controls, repair pipe, etc. Extraordinary steps may be considered where overflows from private property threaten public health and safety (e.g., an overflow running off of private property into the public right-of-way); and

f. Request additional personnel, materials, supplies, or equipment that will expedite and minimize the impact of the overflow. Take 'before' cleanup incident photos if possible.

4. Initial Measures for Containment
   a. The response crew will initiate measures to contain the overflowing sewage and recover, where possible, sewage which has already been discharged, minimizing impact to public health and the environment.

   b. Determine the immediate destination of the overflow, e.g. storm drain, street gutter, body of water, creek bed, etc.;

   c Identify and request the necessary materials and equipment to contain or isolate the overflow, if not readily available; and

   d. Take immediate steps to contain the overflow, e.g., block or bag storm drains, divert into downstream/downgradient manhole, recover through vacuum truck, etc.

5. Additional Measures Under Potentially Prolonged Overflow Conditions

In the event of a prolonged sewer line blockage or a sewer line collapse, a determination should be made to set up a portable by-pass pumping operation around the obstruction.

   a. Appropriate measures shall be taken to determine the proper size and number of pumps required to effectively handle the sewage flow.

   b. Continuous or periodic monitoring of the by-pass pumping operation shall be implemented as required.

   c. Regulatory agency issues shall be addressed in conjunction with emergency repairs.

6. Cleanup
    a. Sewer overflow sites are to be thoroughly cleaned after an overflow. No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) is to remain.

    b. Where practical, the area is to be thoroughly flushed and cleaned of any sewage or wash-down water. Solids and debris are to be vacuumed, flushed, swept, raked, picked-up, and transported for proper disposal.

    c. The overflow site is to be secured to prevent contact by members of the public until the site has been thoroughly cleaned. Posting if required should be undertaken pursuant to Section VI.

    d. Where appropriate, the overflow site is to be disinfected and deodorized.

    e. Where sewage has resulted in ponding, the pond should be pumped dry and the residue disposed of in accordance with applicable regulations and policies.

    f. If a ponded area contains sewage which cannot be pumped dry, it may be treated with bleach. If sewage has discharged into a body of water that may contain fish or other aquatic life, bleach or other disinfectant should not be applied and the California Department of Fish and Game should be contacted for specific instructions.

    g. Use of portable aerators may be required where complete recovery of sewage is not practical and where severe oxygen depletion in existing surface water is expected.

C. Water Quality Sampling

In cases where 50,000 gallons or greater of sewage are spilled to surface waters, the receiving waters must be sampled to determine impacts and ensure adequate cleanup. Water quality sampling must be conducted within 48 hours of becoming aware of the SSO. Spills to fresh waters shall be sampled at minimum for ammonia and bacterial indicators. The water quality analysis shall be performed by an accredited or certified laboratory. Sampling shall be conducted in the affected receiving water body upstream, at, and downstream of the spill's point of entry, and as necessary to characterize the spill's impact (and to ensure adequate cleanup). This sampling shall be coordinated with the Butte County Environmental Health Department. All sampling data shall be submitted to the Regional Water Quality Control Board as it becomes available through the Online SSO database.

D. Sewage Spill Report

A Sewage Spill Report (See form in Appendix III) shall be completed by on duty

staff the same day the spill is confirmed. Field staff shall promptly notify office staff when the overflow is eliminated. Field staff should provide estimates of the amount of sewage involved in the overflow. See Appendix IV for guidance on estimating sewer overflow volumes and flow rates. If it is determined that a sewer overflow has occurred, it must be reported to the SWRCB by telephone and using the online reporting system, as per Section VII. The online reporting system generates a spill report for each event in addition to this in-house spill report form.

E. District Efforts to Contain, Control, and Mitigate SSO

In any enforcement action, the Regional Water Board will consider the District's efforts to contain, control and mitigate SSO's. They shall take into consideration whether:

1. The District has complied with requirements for implementing a Sewer System Management Plan (SSMP), including implementing this Sewer Overflow Prevention and Response Plan.

2. The District can identify the cause or likely cause of the SSO event.

3. There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of I&I, use of adequate backup equipment, collecting and hauling sewage to a treatment facility, or an increase in the capacity of the system to accommodate storm events as identified in the SSMP.

4. The SSO was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the District.

5. The SSO could have been prevented by the exercise of reasonable control described in the SSMP for:
   a. Proper system management, operation and maintenance;
   b. Adequate sanitary sewer system facilities with appropriate design capacity to reasonably prevent SSOs;
   c. Preventative maintenance including FOG control;
   d. Installation of adequate backup equipment; and
   e. Infiltration and Inflow (I&I) prevention and control to the extent practical.

6. The District took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.

F. Customer Satisfaction - Follow-up

Field staff shall revisit the incident site once cleanup operation is completed. They shall take 'after' photographs. Field or office staff shall follow-up in person or by telephone with the citizen(s) reporting and / or affected by the overflow. The cause

of the overflow and its resolution shall be explained.

VI. PUBLIC ADVISORY PROCEDURE

A. Internal and Regional Communication

When an overflow has been confirmed to be a threat to public health, the following actions should be taken to notify the public:

- Field personnel verifies overflow and confirms that it indeed could threaten the public and reports back to the main office.
- Office staff shall be the "first-line" of response to the media for any overflow.
- After hours and weekend sewer overflows are reported to the main office at the number(s) listed in Table 3 as follows.

Table 3
LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
Phone Contact List

DISTRICT OFFICE 530-533-2000
Office Staff After- Hours Contact Numbers

NAME	PHONE	CELLULAR	EMAIL
SCOTT McCUTCHEON	514-1641	520-2892	scottm@loapud.com
KELLY HAMBLIN		510-0198	kellyh@loapud.com
DARIN KAHALEKULU		403-6782	darink@loapud.com

Field Staff After-Hours Contact Numbers

NAME	PHONE	CELLULAR	EMAIL
DAN SANDERS	645-2688	520-7188	dsanders@loapud.com
LEVI TOMLINSON	693-2475	353-8065	ltomlinson@loapud.com
ROBERT BRODERSON	533-3845	701-1319	rbroderson@loapud.com

Regional Contacts

Agency	Phone
Governor's Office of Emergency Services	**800-852-7550**
Regional Water Quality Control Board	**530-224-3208 (Greg Cash)**
Butte County Dept. of Environmental Health	**530-538-7281**
SC-OR	530-534-0353
Thermalito Water and Sewer District	530-533-0740
Butte County Office of Emergency Services	530-538-7373
City of Oroville Public Works	530-538-2420
Butte County Dept. Of Public Works	530-538-7681
California Dept. Fish & Game	916-358-2900

Category 1 SSO's greater than or equal to 1,000 gallons must be reported to the Governor's Office of Emergency Services (CalOES). Other contacts shall be made as appropriate given the nature and extent of the SSO.

B. Temporary Signage

The following action should be taken, in cooperation with the Butte County Environmental Health Department, to limit public access to areas potentially impacted by unpermitted discharges of pollutants to surface water bodies from the wastewater collection system.

The Butte County Environmental Health Department has primary responsibility for determining when to post notices of polluted surface water bodies or ground surfaces, however until they can respond to the scene of the overflow, LOAPUD will be responsible for the communication to the public that unsafe conditions may be present. The postings will not necessarily prohibit access or use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination.

C. Other Public Notification

Public notification will be directed by the **Regional Water Quality Control Board** and/or **Butte County Environmental Health Department** once they have been informed of the situation according to Section VII below.

VII. REGULATORY AGENCY NOTIFICATION

This Plan establishes procedures which LOAPUD shall follow to provide formal notice to the:

- Regional Water Quality Control Board,
- Butte County Environmental Health Department, and
- CalEMA

as necessary in the event of a spill. The reporting criteria below explains the reporting limits and to whom various forms of notification should be made, and lists agencies/individuals to be contacted.

A. Regional Water Quality Control Board Notification

Reporting to the Regional Water Quality Control Board shall be in accordance with the State Water Resources Control Board Monitoring and Reporting Program No. 2006-0003-DWQ Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. In accordance with that program, the following reporting through the California Integrated Water Quality System online database is required:

B. Reporting to the Governor's Office Emergency Services

1. Category 1 - All discharges of sewage of any volume resulting from a failure in the sewer collection system that:

A. Result in a discharge to a drainage channel and/or surface water; or

B. Discharge to a storm drainpipe that is not fully captured and returned to the sanitary sewer system.

2. Category 2 - All discharges of sewage of 1,000 gallons or more resulting from a failure in the sewer collection system that do not result in a discharge to a drainage channel and/or surface water, or discharge to a storm drainpipe that is not fully captured and returned to the sanitary sewer system.

3. Category 3 - All other discharges of sewage resulting from a failure in the sewer collection system.

4. Private Lateral Sewage Discharges (PLSD) - Discharges of untreated or partially treated wastewater resulting from blockages or other problems **within a privately owned sewer lateral** connected to LOAPUD's sanitary sewer system or from other private sewer assets. PLSDs that LOAPUD becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

C. SSO Notification Requirements

1. Within 2 hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (CalOES) and obtain a notification control number.

CalOES 800-852-7550

2. To satisfy notification requirements for each applicable SSO, LOAPUD shall provide the information requested by CalOES before receiving a control number. Spill information requested by CalOES may include:

i. Name of person notifying CalOES and direct return phone number.

ii. Estimated SSO volume discharged (gallons).

iii. If ongoing, estimated SSO discharge rate (gallons per minute).

iv. SSO Incident Description:

a. Brief narrative.

b. On-scene point of contact for additional information (name and cell phone number).

c. Date and time enrollee became aware of the SSO.

d. Name of sanitary sewer system agency causing the SSO.

e. SSO cause (if known).

v. Indication of whether the SSO has been contained.

vi. Indication of whether surface water is impacted.

vii. Name of surface water impacted by the SSO, if applicable.

viii. Indication of whether a drinking water supply is or may be impacted by the SSO.

ix. Any other known SSO impacts.

x. SSO incident location (address, city, state, and zip code).

3. Following the initial notification to CalOES and until such time that LOAPUD certifies the SSO report in the CIWQS Online SSO Database, LOAPUD shall provide updates to CalOES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).

4. PLSD's: LOAPUD is strongly encouraged to notify CalOES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if LOAPUD becomes aware of the PLSD.

D. SSO Reporting Time Frames

1. Category 1 SSO: Submit draft report within three (3) business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. Enter data into the CIWQS Online SSO Database.

2. Category 2 SSO: Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. Enter data into the CIWQS Online SSO Database.

3. Category 3 SSO: Submit certified report within 30 calendar days of the end of month in which the SSO occurred. Enter data into the CIWQS Online SSO Database.

4. SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. Enter data into the CIWQS Online SSO Database.

5. "No Spill" Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. Enter data into the CIWQS Online SSO Database.

6. Collection System Questionnaire: Update and certify every 12 months. Enter data into the CIWQS Online SSO Database.

E. SSO Technical Report

1. For any SSO in which 50,000 gallons or greater are spilled to surface waters, an SSO Technical Report shall be submitted in the CIWQS Online SSO Database within 45 calendar days of the SSO end date. This report shall include at a minimum, the following:

Causes and Circumstances of the SSO:

a. Complete and detailed explanation of how and when the SSO was discovered.

b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).

c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.

d. Detailed description of the cause(s) of the SSO.

e. Copies of original field crew records used to document the SSO.

f. Historical maintenance records for the failure location.ii. Enrollee's

Response to SSO:

a. Chronological narrative description of all actions taken by enrollee to terminate the spill.

b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed. iii.

Water Quality Monitoring:

a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.

b. Detailed location map illustrating all water quality sampling points.

F. Private Lateral Sewer Discharges

1. Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the LOAPUD sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

G. CIWQS Online SSO Database Unavailability

1. In the event that the Online SSO Database is not available, LOAPUD must fax all required information to:

Regional Water Quality Control Board
Central Valley Region
C/O Greg Cash Direct line: (530) 224-3208
415 Knollcrest Drive, Suite 100,
Redding, California 96002
Main Office 530-224-4845 **Fax: (530) 224-4857**

In accordance with the time schedules identified above. In such an event, LOAPUD must also enter all required information into the Online SSO Database as soon as it is possible to do so.

H. Mandatory Information to be Included in Online SSO Reporting

1. At a minimum, the following mandatory information must be included prior to finalizing and certifying an SSO report for each category of SSO:

a. Draft Category 1 SSOs: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:

i. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
ii. SSO Location Name.
iii. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.

iv. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.

v. Whether or not the SSO reached a municipal separate storm drain system.

vi. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.

vii. Estimate of the SSO volume, inclusive of all discharge point(s).

viii. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.

ix. Estimate of the SSO volume recovered (if applicable).

x. Number of SSO appearance point(s).

xi. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.

xii. SSO start date and time.

xiii. Date and time the enrollee was notified of, or self-discovered, the SSO.

xiv. Estimated operator arrival time.

xv. For spills greater than or equal to 1,000 gallons, the date and time CalOES was called.

xvi. For spills greater than or equal to 1,000 gallons, the Cal OES control number.

b. Certified Category 1 SSOs: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a:

i. Description of SSO destination(s).

ii. SSO end date and time.

iii. SSO causes (mainline blockage, roots, etc.).

iv. SSO failure point (main, lateral, etc.).

v. Whether or not the spill was associated with a storm event.

vi. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.

vii. Description of spill response activities.

viii. Spill response completion date.

ix. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

x. Whether or not a beach closure occurred or may have occurred as a result of the SSO.

xi. Whether or not health warnings were posted as a result of the SSO.

xii. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.

xiii. Name of surface water(s) impacted.

xiv. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.

xv. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.

xvi. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.

xvii. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.

c. Draft Category 2 SSO's: At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:

i. Items 1-14 in section H.1.a above for Draft Category 1 SSO.

d. Certified Category 2 SSOs: At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:

i. Items 1-14 in section H.1.a above for Draft Category 1 SSO and Items1-9, and 17 in section H.1.b above for Certified Category 1 SSO.

ii.

e. Certified Category 3 SSOs: At a minimum, the following mandatory information shall be reported for a Certified Category 3 SSO report:

   i. Items 1-14 in section H.1.a above for Draft Category 1 SSO and items1-5, and 17 in section H.1.b above for Certified Category 1 SSO

f. Private Lateral Sewage Discharges:

   i. If a PLSD is recorded in the CIWQS Online SSO Database, identify these wage discharge as occurring and caused by a private sanitary sewer system asset and identify a responsible party (other than LOAPUD), if known. Certification of PLSD reports is not required.

I. Reporting to the Governor's Office of Emergency Services

Official guidance is located in Appendix IV**. Immediate telephone reporting of a verified SSO to the Governor's Office of Emergency Services (OES) is required.**

California Water Code Section 13271 requires any person, without regard to intent or negligence, who causes or permits **1,000 gallons or more** of sewage to be discharged or deposited in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (1) that person has knowledge of the discharge, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify by telephone the

Governor's Office of Emergency Services
at 1-800-852-7550

OES will immediately notify the appropriate Butte County Environmental Health Officer of the discharge. Upon receiving notification of the discharge, the local health officer and administrator of environmental health will determine whether notification of the public is required to safeguard public health and safety. If so, the local health officer and administrator of environmental health will immediately notify the public of the discharge by posting notices or other appropriate means.

OES Reporting Exceptions - Notification to OES of an unauthorized discharge of sewage is **not** required if:

1) the discharge occurs on land only and does not affect state waters; or
2) the discharge is in compliance with applicable waste discharge requirements.

These exceptions apply only to the responsibility to report to OES, and *do not* alter the Regional Board's reporting policies or waste discharge requirements.

J. Notification of Butte County Department of Environmental Health

Upon verification that a SSO has occurred, the District shall notify by telephone the
Butte County Environmental Health Department:
Main Office: 530-522-3880
Danette York, Director

The Butte County Environmental Health Department will take primary responsibility for determining the extent of danger to the public, appropriate public notification and posting, and working with the District to establish appropriate receiving water quality testing if applicable.

VIII. DISTRIBUTION AND MAINTENANCE OF PLAN

Annual updates to this Sewer Overflow Prevention and Response Plan should be made to reflect all changes in policies and procedures as may be required to achieve its objectives.

A. Submittal and Availability of Plan
Copies of the Plan and any amendments should be distributed to all field personnel and be made immediately available to office staff.

All other personnel who may become incidentally involved in responding to overflows should be familiar with the Plan.

B. Review and Update of Plan
The Plan should be reviewed annually and amended as appropriate. LOAPUD should:

1. Update this Plan with the issuance of a revised or new NPDES discharge permit;

2. Conduct annual training sessions with appropriate personnel if necessary; and

3. Review and update, as needed, the various contact person lists included in the Plan.

APPENDIX

Appendix I	Equipment Inventory
Appendix II	Incident Response Work Order
Appendix III	Spill Report Form
Appendix IV	Spill Size Estimation Guidelines
Appendix V	Response Flow Chart

Appendix I

Equipment Inventory

1. 2008 FORD EXPLORER
2. 2010 FORD F-150
3. 1999 FORD F-450 FLATBED DUMP
4. 1996 FORD F-350 7.5L
5. 1996 FORD F-150 FUEL TRUCK
6. 2004 STERLING JETRODDER
7. 2012 PETERBUILT PUMP TRUCK
8. 1998 BOBCAT X331
9. 1994 FORD ECONOLINE CAMERA VAN
10. 1988 CASE 580 SUPER K BACKHOE
11. 2007 PETERBUILT DUMP
12. 1993 FORD F-800 PUMP TRUCK
13. 1992 ATLAS PORTABLE COMPRESSOR
14. 2002 PORTABLE GODWIN PUMP
15. 1983 JETRODDER (BACK UP)
16. 2000 JOHN DEERE 410 BACKHOE
17. EASMENT MACHINE (DRIVES ITSELF BUT CONNECTS TO JETRODDER FOR WATER SUPPLY)
18. 2003 GORMAN RUPP PORTABLE PUMP
19. RODDING MACHINE (TRAILER MOUNTED SNAKE)
20. 1992 CASE TENCHER
21. 1970 JOHN DEERE 644A LOADER
22. 2006 KABELCO EXCAVATOR
23. 2019 FORD F-350 DUALLY
24. 2019 FORD TRANSIT CCTV VAN
25. ROYAL OAKS GENERATOR
26. HANGING TREE GENERATOR
27. MOORETOWN GENERATOR
28. WINCO PORTABLE GENERATOR
29. ONAN GENERATOR

Appendix II

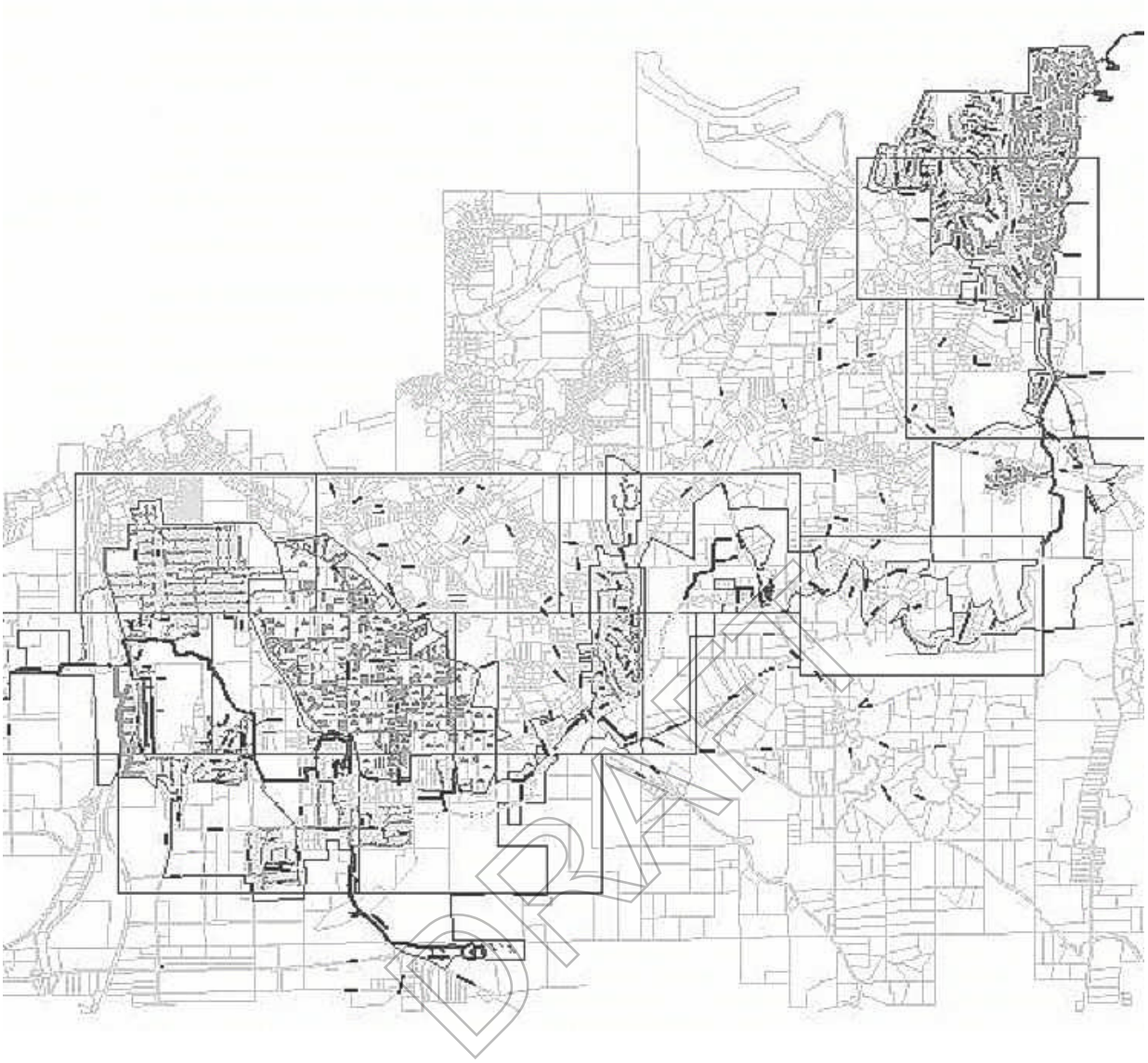
Incident Response Work Order (Front)

No.

Time	Date
Incident Location	
Incident Description	
Caller contact information:	
Name	Phone
Address	
Caller observations (e.g., odor, duration, location on property)	
Additional Information	

Appendix IIb

Incident Response Work Order (Back)



Circle approximate incident location on map.

Additional Information:

Appendix III

Lake Oroville Area Public Utility District

SEWER OVERFLOW REPORT

GENERAL INFORMATION

1. This report is: PRELIMINARY ____ FINAL _____
2. Sanitary Sewer Overflow Sequential Tracking Number: _____
3. SSO Occurrence: Start Date _____ Start Time _____ Stop Date _____
   Stop Time _____
4. Reported by: Name:_____ Contact #:_____
5. Reported to: Name:_____ Contact #: _____

LOCATION & DESCRIPTION

6. SSO Location: Street Address: _____
   Coordinates: Latitude:_____ Longitude:_____
7. Estimated Volume: _____
8. Volume Recovered: _____
9. Estimated Volume Released to Environment:
10. Path of SSO: (Storm drain release, Storm drain recovered, ponded, street curb & gutter, etc.)

RECEIVING WATER AFFECTED

11. Surface Water Impacted: Yes_____ No_____
12. If Yes, initial receiving surface water identification: _____
13. Affected secondary receiving water or groundwater identification, if applicable: _____
14. Estimated amount of sewage reaching waters of State: _____
    Details: _____
15. Were any fish killed? _____ If yes, was Fish & Game notified?_____
16. Were signs posted to warn of contamination? ____ Details: _____

SSO CAUSE

14. Sanitary Sewer Structure ID (manhole #, pipe ID, Lift Station name) :_____
15. Identified Cause of SSO (Blockage, pipe failure, electrical failure, capacity deficiency, I&I, etc.):
    _____
16. If Blockage, identify cause (roots, grease, debris, vandalism, etc.):
    _____
17. Number and dates of SSOs within 1000 feet of this SSO within past 12 months:
    _____
18. Precipitation in 72 hour period preceding SSO: _____
19. Other causative or influencing conditions: _____

CORRECTIVE ACTION

20. Time and Date of Response initiation: _____
21. Description of Response and Corrective Actions Taken: _____
22. Description of Cleanup: _____

_____

23. Description of Disinfection, if applicable: _____

_____

23. Were water quality samples taken? ☐ YES ☐ NO If so, what parameters? _____

_____

25. Were photos taken? _____
26. Is there an on-going investigation of this SSO? _____
27. What steps will be taken to prevent a reoccurrence of this SSO?

---

28. What scheduling milestones apply to preventive steps in 27?

---

29. Was a follow-up contact made with the incident reporter / customer if applicable? _____

NOTIFICATIONS

30. Time and Date of OES notification_____ OES #:_____
31. Time and Date of Butte County Environmental Health Department notification: _____
32. Time of entry of SSO into CIWQS Online SSO Database: _____SSO# _____
33. List any other agency notifications & details: _____

_____

_____

CERTIFICATION

I swear under penalty of perjury that the information submitted in this document is true and correct to the best of my knowledge. I certify that I have personally examined and am familiar with the information submitted herein and that based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

APPENDIX IV
Spill Volume Estimating

A variety of approaches exist for the estimation of the volume of a Sanitary Sewer Overflow (SOS). The person preparing the estimate should use the method most appropriate to the sewer overflow in question using the best information available. Every effort should be made to make the best possible estimate of the volume.

Method 1 Visual Estimate - The volume of very small spills can be estimated using an "eyeball estimate." To use this method, imagine the amount of water that would spill from a bucket or a barrel. A bucket contains 5 gallons and a barrel contains 50 gallons. If the spill is larger than 50 gallons, try to break the standing water into barrels and then multiply by 50 gallons. This method is useful for contained spills up to 100 gallons.

Method 2 Measured Volume - The volume of most small spills can be estimated using this method if rainfall or other extraneous sources are not contributing to the volume. The shape, dimensions, and the depth of the spilled wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume.

Step 1	Sketch the shape of the contained sewage
Step 2	Measure or pace off the dimensions.
Step 3	Measure the depth at several locations
Step 4	Convert the dimensions, including depth to feet.
Step 5	Calculate the area using the following formulas: Rectangle Area = length x width Circle Area = $0.785 \times D^2$ (where D is diameter of the area) Triangle Area = base x height x 0.5
Step 6	Multiply the area times the depth
Step 7	Multiply the volume by 7.5 to convert it to gallons.

Method 3 Duration and Flow Rate - Calculating the volume of spills where it is difficult or impossible to measure the area and depth requires a different approach. In this method a separate estimate is made of the duration of the spill and the flow rate. The methods of estimating duration and flow rate are:

Duration: The duration is the elapsed time from the start time of the spill to the time the spill stopped.

Start time is sometimes difficult to establish. Here are some approaches:

- Local residents can be used to establish start time. Inquire as to their observations. Spills that occur in right-of-way are usually observed and reported in short order. Spills that occur out of the public view can go on longer.
- Sometimes observations like odors or sounds (e.g. water running in a normally dry creek bed) can be used to estimate the start time.
- Changes in flow on a downstream flowmeter can be used to establish the start time. Typically, the daily flow peaks are "cut off" or flattened by the loss of flow. This can be identified by comparing hourly flow data, when available.

- Conditions at the spill site change with time. Initially there will be limited deposits of grease and toilet paper. After a few days to a week, the grease forms a light colored residue. After a few weeks to a month the grease turns dark. In both cases the quantity of toilet paper and other materials of sewage origin increase in amount. These changes with time can be used to estimate the start time in the absence of other information.

End time is usually much easier to establish. Field crews on-site observe the “blow down” that occurs when the blockage has been removed. The “blow down” can also be observed in downstream flowmeters.

Flow Rate: The flow rate is the average flow that left the sewer system during the time of the spill. There are three ways to estimate the flow rate:

- San Diego Manhole Flow Rate Chart (see next page): This chart shows the sewage flowing from a manhole cover for a variety of flow rates. The observations of the field crew are used to select the approximate flow rate from the chart.
- Flowmeter: Changes in flows in the downstream flowmeters can be used to estimate the flow rate during the spill.
- Estimate based on up-stream connections: Once the location of the spill is known, the number of upstream connections can be determined from the field books. Multiply the number of connection by 200 to 250 gallons per day per connection or 8-10 gallons per hour per connection. If very wet conditions may be contributing to Infiltration and Inflow (I&I), add an allowance for I&I. The allowance may be based on a measurable peaking factor in the system or estimated based on judgement.

Once duration and flow rate have been estimated, the volume of the spill is the product of the duration in hours or days times the flow rate in gallons per hour or gallons per day.

Volume = (Duration) x (Flow Rate)

Collection System Collaborative Benchmarking Group
Best Practices for Sanitary Sewer Overflow (SSO) Prevention and Response Plan

City of San Diego
Metropolitan Wastewater Department

Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes

*All estimates are calculated in **gallons per minute (gpm)***

Wastewater Collection Division
(619) 654-4160

5 gpm

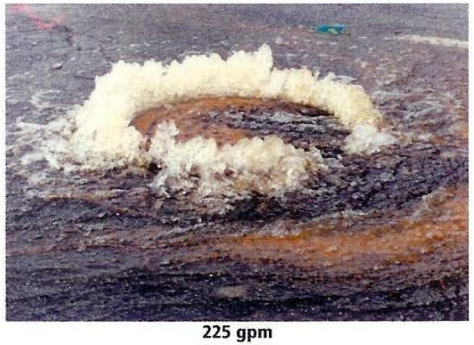
25 gpm

50 gpm

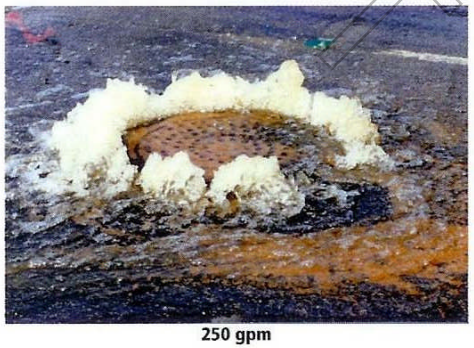
100 gpm

150 gpm

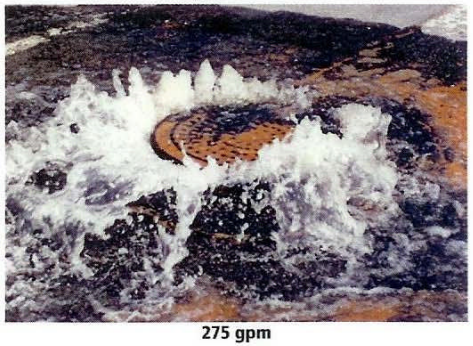
200 gpm



225 gpm



250 gpm



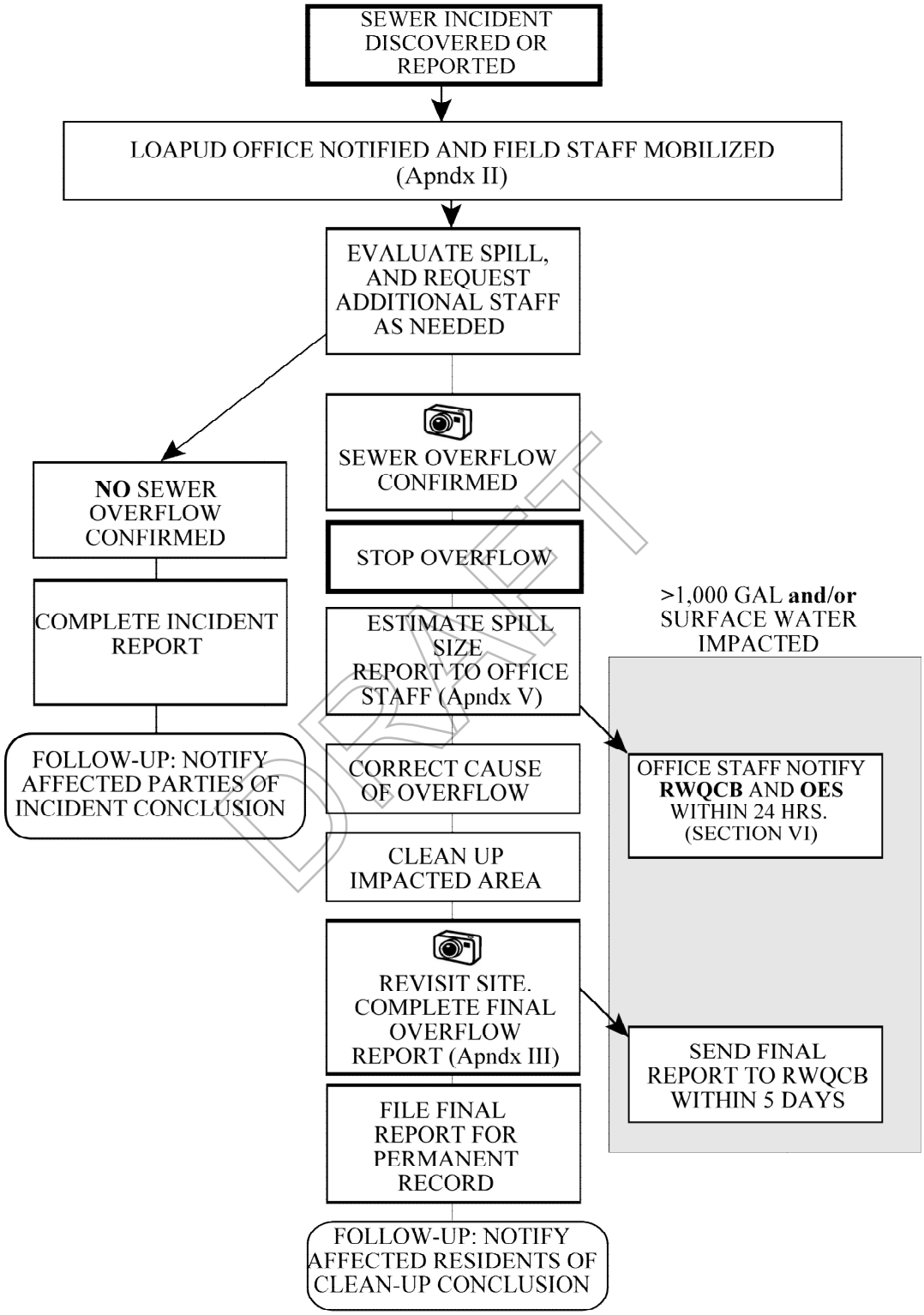
275 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

rev. 4/99

Flow Estimation Pictures

Appendix V
Response Flow Chart



Photodocumentation Advised

SECTION VII - FOG CONTROL PROGRAM

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

FATS, OILS AND GREASE (FOG) CONTROL PLAN

DECEMBER 2020

Prepared by:

Sauers Engineering, Inc.
105 Providence Mine Road, Suite 202
Nevada City, CA 95959
(530)-265-8021

Lake Oroville Area Public Utility District
FOG Control Program

Table of Contents

Lake Oroville Area Public Utility District
FOG Control Plan

I. INTRODUCTION

A. Purpose of FOG Control Program

Lake Oroville Area Public Utility District has directed Sauers Engineering to assist in preparing a FOG Control Program to prevent the occurrence of problems such as pipeline blockages, reduced capacity and sewer overflows in the collection system caused by the occurrence of Fats, Oils, and Grease (FOG), and to reduce the need for extra collection system maintenance caused by the presence of FOG in the system. This FOG Control Plan is in accordance with California State Water Resources Control Board Order No. 2006-0003-DWQ Statewide General WDR for Wastewater Collection Agencies. It is a required element of the overall Sewer System Management Plan.

B. Applicability to LOAPUD

In addition to about 5,031 residential customers, LOAPUD presently serves 702 commercial connections totaling approximately 1,129 commercial EDUs. The existing commercial services include business offices, schools, cabinet shops, sales offices, churches, domestic waste, grocery stores, liquor stores, pet sales, gas stations, wrecking yard, restaurants, laundromats, bars, industrial services and two casinos. In addition, there is undeveloped acreage zoned commercial and planned unit development that may include any of these uses in the future.

Due to the potential for fats, oils, and grease in the waste stream from some of these commercial customers, LOAPUD must formulate a FOG Source Control Program as an element of the Sewer System Management Plan. In particular, it is known that Food Service Establishments (FSEs), which may include but are not limited to restaurants, delicatessens, coffee shops, bakeries, drive-ins, fast food, take-out, doughnut shops, hospitals, markets, schools, churches, motels/hotels, recreation or reception halls, and conference centers may have the potential to generate fats, oils, and greases in quantities that may cause problems in the collection system. These problems primarily consist of pipeline blockages that restrict system capacity, may cause sewer overflows, and require increased system maintenance.

Due to this potential for FOG related collection system problems, LOAPUD has developed and will enforce this FOG Control Plan.

C. Legal Authority to Adopt and Enforce FOG Control Program

Lake Oroville Area Public Utility District was formed and operates under the Public Utility District Act, Statutes of 1921 of the California Public Utility Code. A five-member Board of Directors, elected at large by the District's voters, is responsible for setting policy and general administrative procedures for the District. The policies and procedures set by the Board are administered by the District General Manager.

The LOAPUD Board of Directors has adopted numerous policies and ordinances governing the operation of this utility.The LOAPUD Manual of Board Policies includes adopted Policy No.7065, SEWER USE REGULATIONS, (adopted January 11, 1989 and amended March 9, 2010) regarding the use of public sewers within Lake Oroville Area Public Utility District. This Policy specifically: (a) prohibits illicit discharges to the system (Section 5.1 - 5.8); (b) requires that the system is properly constructed (Section 4.1 - 4.8); (c) ensures access to system elements for inspection and maintenance (Section 4.4); (d) limits the discharge of fats, oils, and grease (Section 5.2 - 5.4); and, (e) enforces any violation of these elements (Section 7.1 - 7.5)

Section 8 of the LOAPUD Sewer Ordinance specifically addresses the District's rules and regulations related to Fats, Oils and Grease Control. The stated purpose of this section is to stop sanitary system overflow and reduce grease accumulation in the sanitary sewer mainlines resulting from the introduction of fats, oils, and grease from food service establishments.

Section 8.04 of the Sewer Ordinance addresses legal and administrative action for noncompliance with District and California Plumbing Code regulations related to the control of fats, oils, and grease.

LOAPUD has adopted and may continue to adopt additional ordinances, policies, agreements, and procedures that further define their legal authority in these areas and provide more detailed guidelines and/or requirements specific to these issues.

II. STATE REQUIREMENTS OF THE FOG CONTROL PROGRAM

As per the requirements of the California State Water Resources Control Board Order No. 2006-0003-DWQ Statewide General WDR for Wastewater Collection Agencies, this program shall specifically include elements A through G. The verbiage from the WDR requirements are in italics. For each required element, the relevant sections of this FOG Control Plan are identified.

A. Public Education Plan

An implementation plan and schedule for a public education outreach program that promotes proper disposal for FOG. Public education for FSEs can be found in Section II-A.

B. FOG Disposal Plan

A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area. This can be found in Section II-B.

C. Legal Authority to Control FOG

The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG. LOAPUD's authority to control FOG is described in Section I-C.

D. Grease Interceptor Requirements

Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements. These elements can be found in Sections III-A, Section IV, and Section V.

E. Inspection and Enforcement

Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance. This element is addressed in Sections I-C, V-B, and V-D.

F. Identification of Sewer System Components Vulnerable to FOG Problems

An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section. Section VI details LOAPUDs procedures for tracking and responding to FOG related problems.

G. Source Control Measures

Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (F).

Section VI details the source control measures LOAPUD takes in response to FOG related problems.

III. BEST MANAGEMENT PRACTICES FOR FOOD SERVICE ESTABLISHMENTS

As per Section 8.03 of LOAPUD's Sewer Ordinance, some form of grease control is required at all food service establishments. All FSE's must comply with kitchen Best Management Practices (BMP) as a first measure to control grease.

A. Best Management Practices (BMP)

Best Management Practices (BMP) are standard operating procedures that sewer system customers and dischargers can use to greatly reduce or eliminate the fats, oils and greases entering the sanitary sewer system. The food service industry can provide FSEs with BMPs tailored to their specific type of establishment.

Following are general **BMP** that apply to most FSE's:

- **Spill Prevention** - Preventing spills reduces the amount of FOG that may reach a sewer system. Spills can be prevented by keeping clean and dry work surfaces and floors, preventing slipping and tripping, emptying containers before they are too full, covering grease and other containers during transport, and providing employees with proper tools (ladles, covered containers, etc.) for safe transport of FOG materials.
- **Dry Cleanup** - Remove food waste with dry-cleanup methods such as scraping, wiping and sweeping prior to using wet methods such as water. All food waste shall be scraped into garbage receptacles, never washed down drains. Never pour fats, oils or grease down sink drains.
- **Absorb FOG** - Use food grade paper to soak up oil under fryers, and use paper towels to wipe down work surfaces. Properly dispose of used papers in garbage receptacles. Do not rinse them in the sink.
- **Recycle** - Fryer grease and oils may be recycled by rendering companies. It may be a resource rather than a waste if handled properly.
- **Reduce** - Instruct kitchen staff to be conservative in their use of fats, oils and grease in food preparation and serving.
- **Clean** - Keep sink traps and work surfaces clean. Empty them frequently into appropriate refuse containers. Do not allow food waste to accumulate in sinks or on surfaces.
- **Maintain Grease Interceptors** - Proper cleaning and maintenance of grease interceptors is critical to their performance. Grease interceptors must be properly sized and utilized in order to be effective.

As per LOAPUD's Sewer Ordinance Exhibit 8.01A, waste discharged into a grease interceptor shall not exceed 140° F (60°C), and the use of chemical and/or biological agents that could be used to dissolve fats, oils and grease are not allowed. Many additional BMP's are listed on various web sites that may be useful to sewer system dischargers.

B. Public Education Plan and Schedule

LOAPUD has developed an implementation plan and schedule for a public education outreach program that promotes proper disposal for fats, oils and greases within the service area that is protective of the sewer collection system. The following table outlines the Public Education Plan and Schedule.

Table III.B.1
Public Education Outreach and Schedule

Customer Category	Education and Outreach	Schedule
Food Service Establishments (FSEs)	Through the District's licensing program each identified FSE within the service area will be educated on the importance of proper FOG disposal, on the BMP's for commercial kitchens and on the consequences of improper FOG control. FSE's will be given copies of BMP's (as in Section III.A) and a poster to be posted in each FSE kitchen facility. (See attached poster)	This is an on-going program to identify and license each FSE within the District. This inventory and licensing program for existing FSE's shall be completed by December 31, 2009. As new FSE's apply for service in the coming years, each will be required to obtain a license through this program.
All Other Wastewater Customers	The District will provide all customers with information on proper disposal of FOG and other inappropriate material by way of billing inserts.	The District will make this information available to all wastewater customers in the system.

NO GREASE DOWN THE DRAIN!

KEEP DRAINS FLOWING

WIPE FOOD AND GREASE OUT OF POTS BEFORE WASHING AND DISCARD WASTE INTO THE TRASH

COLLECT AND RECYCLE USED COOKING OIL

HAVE GREASE INTERCEPTORS AND TRAPS CLEANED ON A ROUTINE SCHEDULE

USE ABSORBENTS TO CLEAN UP GREASY SPILLS BEFORE MOPPING

WHEN KITCHEN DRAINS ARE FLOWING, BUSINESS KEEPS FLOWING TOO.

EBMUD • Bay Area Pollution Prevention Group (BAPPG) • The California Fats, Oils, and Grease Work Group (Cal FOG) • The California Restaurant Association (CRA)

IV. LOAPUD REQUIREMENTS FOR GREASE INTERCEPTORS

As per Section 8.03 of the District Sewer Ordinance, some form of grease control is required at all food service establishments.

A. Installation

In accordance with Section 8.02 of the LOAPUD Sewer Ordinance, a **Food Service Establishment Wastewater Discharge License** is required for all businesses and individuals who operate or intend to operate a Food Service Establishment (FSE) and/or industrial-commercial food manufacturing facility within the district. These facilities include but are not limited to:

Restaurants, delicatessens, coffee shops, bakeries, drive-in, fast food, take-out, doughnut shops, hospitals, markets, schools, churches, motels/hotels, recreation or reception halls and conference centers.

This License allows the District to determine specific grease control needs for each establishment, provide them with guidance on grease control methods, help them improve Best Management Practices and meet the discharge requirements and ensure compliance with the California Plumbing Code (CPC).

All new or remodeled FSE's and any industrial-commercial facility where any grease may be discharged into a public or private sanitary sewer system must install an appropriately sized grease interceptor as specified by Chapter 10 of the CPC. For existing facilities, they must comply with this program within a 180 day period after the first occurrence of a transfer of ownership or issuance of a County Building Permit for the premises, and within 60 days of a wastewater backup or discharge due to grease buildup if caused in whole or in part from a discharge from the premises, or if the discharge exceeds the limits (300 mg/l grease) on three occasions in a twelve month period or after receiving written notice from the District of the necessity for installation of such facilities.

Design Standards:
Section 8.05 of the District Sewer Ordinance requires that grease control facilities must be designed, constructed and installed at the expense of the FSE/Owner. They must be designed by a California Licensed engineer, and plans including the size, type and location of each grease interceptor, trap or alternative pretreatment method, together with supporting calculations must be submitted to the District for review and approval. The type and size of grease control method employed by a FSE will be based upon the method identified in Chapter 10 of the CPC.

As per Sewer Ordinance Exhibit 8.01A, each grease interceptor shall be plumbed such that only kitchen waste shall flow through the interceptor. All other

wastewater including fecal and non-fecal sources shall be plumbed downstream of the interceptor. Interceptors shall be installed in such a manner that surface drainage may not enter, and they will not become air-bound. The cover and access ports shall be gas-tight and the interceptors shall be properly vented. No water-jacketed grease interceptor shall be approved or installed. Interceptors located in vehicle traffic areas shall be capable of withstanding an H-20 axle load or greater, depending upon location.

Sewer Ordinance Exhibit 8.01B provides specific design and installation requirements for the limited use of grease traps, but only if a variance to grease interceptors is granted by the District. Any such variance may be rescinded by the District if they determine that the grease trap is not providing adequate grease removal based on visual inspection and/or sample collection. Specific design and installation requirements for grease traps (when allowed) are described in Exhibit 8.01B. No more than four separate fixtures shall be discharged to any one grease trap.

The Ordinance requires that material for and construction of grease control systems must be in accordance with the requirements of the most recent edition of the California Plumbing Code (CPC), the codes of the State of California, regulations of the County of Butte, and Ordinances and Construction Standards of the District.

Sewer Ordinance section 8.06 and Exhibit 8.01A prohibit the installation of food waste disposal grinders at FSE's and provide a time-line for the removal of existing food waste disposal grinders at FSE's that discharge into the District's sanitary sewer system. Exhibits 8A and 8B of the Sewer Ordinance provide details for design, construction, installation and testing for grease interceptors, traps and devices.

B. Operation and Maintenance

Section 8.08 of the District's Sewer Ordinance requires that all FSE/Owners of grease interceptors and grease traps shall maintain the devices per the manufacturers' recommendations and in an efficient operating condition by periodic removal and proper disposal of the accumulated grease.

Specific maintenance requirements for grease interceptors are defined in Exhibit 8.01-A and for grease traps in Exhibit 8.01-B. As per Exhibit 8.01-A.F, grease interceptors shall be pumped by a State licensed waste hauler to a site or landfill facility designated to handle kitchen grease. All grease interceptors shall be cleaned a minimum of every 12 months or when the total volume of captured grease and solid materials displaces more than 25% of the wetted capacity of the primary interceptor compartment. Undersized interceptors may require more frequent pumping. When the grease interceptor is being pumped and cleaned, a

District inspector will witness the cleaning, if the inspector is available. The FSE is to give 24 hours' notice to the District before the scheduled cleaning.

Malfunctioning grease interceptor equipment must be pumped or cleaned within five (5) working days or repaired within 30 working days, unless immediate cleaning and repair is necessary as determined by the District. Malfunctioning grease traps or other alternative equipment must be pumped within 2 working days and repaired within 10 working days, or immediately at the Districts discretion.

All passive and automatic grease traps and other alternative pre-treatment devices shall be opened, inspected, cleaned and maintained a minimum of once per week, (every 7 days) or when the total volume of the captured grease and solid material displaces more than 20% of the capacity of the trap.

C. Disposal of FOG

LOAPUD requires FSE's and other regulated dischargers to contract with a licensed hauler to clean grease interceptors and traps on a regular basis as per the maintenance requirements of LOAPUD Sewer Ordinance Chapter 8. Sewer Ordinance Exhibit 8.01 includes specifics of the requirements. The haulers shall have a valid registration certification for the transport of inedible kitchen grease as specified in California Food and Agriculture Code 19310-19317.

V. PERMITS AND ENFORCEMENT

A. Permits

In accordance with Section 8.02 of the LOAPUD Sewer Ordinance, a **Food Service Establishment Wastewater Discharge License** is required for all businesses and individuals who operate or intend to operate a food service establishment (FSE) and/or industrial-commercial food manufacturing facility within the district. These facilities include but are not limited to:

Restaurants, delicatessens, coffee shops, bakeries, drive-in, fast food, take-out, doughnut shops, hospitals, markets, schools, churches, motels/hotels, recreation or reception halls and conference centers.

Section 8.02 provides specific details for obtaining the Food Service Establishment Wastewater Discharge License.

B. Inspection

Section 8.02.1 designates that the District will perform one visual inspection of the establishment's business sewer service lateral per year via closed-circuit

television, (or more frequently if deemed necessary by the District) to identify whether excess grease is entering the sewer lateral from the establishment.

Section 8.05.5 of the Sewer Ordinance requires all existing FSEs to install a sample port as per Figures 8.01 and 8.02 on sewer service laterals entering the District's sewer collection system. Sample ports must be accessible to the

District at all times. They must be located downstream of the interceptor and upstream of the non-kitchen waste flow tie-in. A clean-out shall be installed immediately downstream of the sample port for cleaning purposes and to allow for the introduction of a closed-circuit camera into the sewer service lateral for visual inspections. As per Section 8.09 of the Sewer Ordinance, the District ~~will~~ may obtain random samples from sample ports for the purpose of determining whether a FSE is meeting discharge requirements. District personnel will periodically inspect grease interceptors and food preparation areas. Internal inspections may be made at any time during normal business hand operation hours with or without prior notice. (8.01A.G.1)

Should the District's monitoring program indicate that grease control measures employed by a FSE are inadequate, either by way of visual inspection of the sewer, increased maintenance frequency by the District, or through samples taken from the sample port, the FSE will be notified that they must review their kitchen practices to ensure that best management practices (BMP's) are being followed and that grease control facilities are being properly maintained. As per Section 8.09 of the Sewer Ordinance the District will monitor these FSEs more frequently. If subsequent monitoring indicates that the problem persists and that grease continues to accumulate in the sewer lateral, the District will give written notice of non-compliance. Following notice of non-compliance, internal inspections may be made at any time during normal business and maintenance hours.

C. Record Keeping

As per Exhibit 8.01-A.F, the FSE or discharger shall post and maintain a current grease interceptor and/or grease trap cleaning and maintenance log on the premises and shall have the log available for review by District personnel at all times. Receipts and bills of lading from the pumper/hauler and/or rendering service companies shall be retained for a minimum of 3 years. Grease reduction equipment that is either not functioning properly or has ceased to function must be reported to the District within 24 hours.

D. Enforcement

Section 8.04 of the Sewer Ordinance addresses legal and administrative action for noncompliance with District and CPC regulations related to the control of fats,

oils, and grease. Action may include, but is not limited to the assessment of fees for investigation and follow up action. In addition, if it is determined that a sewage overflow or spill was caused by negligent discharge of fats, oils, or greases to the sanitary sewer system in a manner prohibited by the District, the discharger may face criminal penalties.

VI. LOAPUD TRACKING OF FOG RELATED COLLECTION SYSTEM PROBLEMS

A. Tracking FOG Related Problems

FOG related problems may be identified by any of the following methods:

- Through an onsite inspection of an FSE;
- Through random sampling of FSE sample ports for fats, grease and oil;
- Through a visual or CCTV inspection of the sewer;
- Through increased maintenance requirements attributable to FOG problems;
- Through a Sanitary Sewer Overflow attributed to FOG in the sewer.

Upon the District discerning that a FOG related problem exists, the District shall determine any and all upstream suspect sources of FOG and shall investigate further to pinpoint the origin of the problem. Following the identification of the problem source, the following source control response shall be implemented. A record shall be kept of the location, source, and resolution of all FOG related collection system problems.

B. Source Control Response

As per Section 8.09.2 and 8.09.3 of the District's Sewer Ordinance:

Should the District monitoring program indicate that grease control measures employed by a FSE are inadequate, either by way of visual inspection of the sewer, increased maintenance frequency by the District, or through samples taken from the sample port, the FSE will be notified that they must review their kitchen practices to ensure that Best Management Practices (BMP) are being followed and that grease control facilities are being properly maintained.

To ensure that the FSE has resolved any problems and to achieve what is in the best interest of the FSE and the general public, the District will monitor these FSE's more frequently. If subsequent monitoring indicates that the problem persists and that grease continues to accumulate in the sewer lateral, the District will give written notice of non-compliance. Following notice of non-compliance, internal inspections may be made at any time during normal business and maintenance hours. District personnel may at any time inspect external facilities.

The District will obtain random samples from sample ports for the purpose of determining whether a FSE is meeting discharge requirements. Samples may also be taken when conditions reveal that grease may be entering the District's collection system by way of the FSE's sewer service lateral. Initial samples will be analyzed at no charge to the FSE. Should the discharge exceed the limits prescribed, follow up samples will be taken once corrective measures by the FSE are completed in accordance with the Sewer Ordinance, or as deemed necessary by the District, and all repeat analyses shall be billed to the FSE until the discharge limits are met.

SECTION VIII - SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

SECTION VIII SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

The District has adopted the LOAPUD Sewer System Master Plan which includes an evaluation of the system's ability to meet current flow capacity requirements and forecasted future flow capacity requirements. Based on hydraulic modeling of the District's collection system and future flow projections based on the Butte County General Plan, the master plan identifies expansions and upgrades to existing facilities as well as proposed new facilities needed to assure capacity will be available for current customers and new development.

The District's Sewer System Master Plan is available online at:

https://www.loapud.com/files/eb06dee1f/masterplancompleteadopted.pdf

SECTION IX - MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

SECTION IX – MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

Since 2007, the District has only had four reportable SSO's which averages less than one spill every three years. None of the spills were at repeat locations. Of the four, three resulted in 100% recovery of the volume spilled. The relative infrequency of events and corresponding lack of data does not lend itself to meaningful statistical analysis.

To effectively keep the SSMP up to date the District will monitor, measure, and modify the SSMP by doing the following:

- The District will maintain relevant information that can be used to establish and prioritize appropriate SSMP activities. Through educational training, trade journals and networking with others in the industry, the district will collect and maintain relevant information appropriate to SSMP activities.

- The District will monitor the program implementation and, where appropriate, measure the effectiveness of each element of the SSMP. This will be done as needed and reviewed annually, making any necessary revisions or modifications to enhance the program.

- The District will assess the success of the preventive maintenance program annually.

- The District will update the program elements as appropriate. This will be done by monitoring or performance evaluations and will be done as needed and reviewed annually.

- The District will identify SSO trends, including frequency, location, and volume. This will be done as needed and reviewed annually.

Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update shall be kept. These records shall be attached to the SSMP.

SECTION X - SSMP PROGRAM AUDITS

SECTION X – SSMP PROGRAM AUDITS

The District will conduct internal audits of the SSMP Program. Since the District has less than 5,000 customers, and averages less than one (1) SSO per year, the audits will be done bi-annually. The audit will consist of a review of the SSMP Program to evaluate its effectiveness and District compliance with the SSMP requirements identified in this subsection. Also included will be identification of any deficiencies in the SSMP and steps to correct any deficiencies found. A report of the audit will be prepared and kept on file.

Upon completion of the first audit, the bi-annual auditing cycle will be evaluated and revised if necessary.

SECTION XI - COMMUNICATION PROGRAM

SECTION XI – COMMUNICATION PROGRAM

The District will communicate with the public on the development, implementation, and performance of the SSMP. Notice of SSMP Program evaluations and meetings, will be posted on the District Message Center or on the District's web site. These notices will invite the public to participate in the program development and participation.

The District shall also maintain open communications with SC-OR, the Regional Sewerage Treatment Plant, inviting their participation in the SSMP Program development and implementation.

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 11 – SC-OR Commissioner's Report

Included in your packet, if available, are the July 2021 Minutes of the Regular Meeting of the Sewerage Commission – Oroville Region. Directors Mastelotto and Fairbanks will present the SC-OR report if any information is available for reporting.

Attachment Included

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 12 – BCSDA Representatives' and LAFCo Report

12.1 BCSDA

No Report

12.2 LAFCo

The Butte LAFCO meeting for August 5, 2021 was cancelled.

Attachment Included

Manager's Report

To: Board of Directors

From: Scott McCutcheon, General Manager

Date: August 10, 2021

RE: Item No. 13 – Board Members', Manager and Staff Comments

13.1 Field Operations Report

Foreman Vincent Victorino will join the Board of Directors meeting to give a verbal report to update the Board on field operations

13.2 Personnel Committee Update

Members of the Personnel Committee will give an update on Committee business