Appendix A – Notifications to Wholesale Suppliers

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

April 21, 2026

Mr. Drew Lessard, Area Manager
Central California Area Office
7794 Folsom Dam Road
Folsom, CA 95630

RE: City of Roseville 2025 Urban Water Management Plan Demand Projections

Dear Mr. Lessard:

We sent a notice earlier this year to inform you that the City of Roseville (City) Water Utility had begun preparation of the 2025 Urban Water Management Plan. In accordance with California Warter Code Section 10631, as the City is a retail water supplier receiving water from your agency, we have provided you with projected water use through 2045 in the table below. The City plans to make full beneficial use of each year's allotments.

Supply Source	2030	2035	2040	2045
US Bureau of Reclamation	32,000 AF	32,000 AF	32,000 AF	32,000 AF

A complete draft of the 2025 Urban Water Management Plan, which is inclusive of the updated Water Shortage Contingency Plan, can be accessed at www.roseville.ca.gov/UWMP. A public hearing of the Water Shortage Contingency Plan and Urban Water Management Plan will be held on June 17th at 6:00 pm. We encourage you to attend the public hearing which will be held at the first floor of the Electric Building at 116 South Grant Street, Roseville, CA 95678. For information regarding the meeting and providing public comment please visit the City's website at https://www.roseville.ca.gov/administration/city_council/index.php.

Should you wish to contact the City regarding either of the plans, you may do so by writing or emailing to the undersigned below. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

April 21, 2026

Mr. Jeremy Shepard, Director of Technical Services
Placer County Water Agency
PO Box 6570
Auburn, CA 95604-6570

RE: City of Roseville 2025 Urban Water Management Plan Demand Projections

Dear Mr. Shepard:

We sent a notice earlier this year to inform you that the City of Roseville (City) Water Utility had begun preparation of the 2025 Urban Water Management Plan. In accordance with California Warter Code Section 10631, as the City is a retail water supplier receiving water from your agency, we have provided you with projected water use through 2045 in the table below.

Supply Source	2030	2035	2040	2045
Placer County Water Agency Existing Contracts	39,000 AF	44,000 AF	44,000 AF	44,000 AF

A complete draft of the 2025 Urban Water Management Plan, which is inclusive of the updated Water Shortage Contingency Plan, can be accessed at www.roseville.ca.gov/UWMP. A public hearing of the Water Shortage Contingency Plan and Urban Water Management Plan will be held on June 17th at 6:00 pm. We encourage you to attend the public hearing which will be held at the first floor of the Electric Building at 116 South Grant Street, Roseville, CA 95678. For information regarding the meeting and providing public comment please visit the City's website at https://www.roseville.ca.gov/administration/city_council/index.php.

Should you wish to contact the City regarding either of the plans, you may do so by writing or emailing to the undersigned below. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Appendix B – Public and Agency Outreach

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

S. Audie Foster, Director of Northern Operations
California American Water
4701 Beloit Drive
Sacramento, CA 95838

RE: City of Roseville 2025 Urban Water Management Plan

Dear S. Audie Foster:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Hilary Straus, General Manager
Citrus Heights Water District
6230 Sylvan Road
Citrus Heights, CA 95610

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Straus:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Ms. Maraskeshia Smith, City Manager
City of Sacramento
914 I Street
Sacramento, CA 95814

RE: City of Roseville 2025 Urban Water Management Plan

Dear Ms. Smith:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manger
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Jeremy Shepard, Director of Technical Services
Placer County Water Agency
PO Box 6570
Auburn, CA 95604-6570

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Shepard:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process. Additionally, in accordance with California Water Code Section 10631, as we are a retail water supplier receiving water from your agency, we will provide you with projected water use for the next 20 years (up to the year 2045).

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Derek Gade, Director
Placer County Public Works Department
3901 County Center Drive, Suite 220
Auburn, CA 95603

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Gade:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. James Peifer, Executive Director
Regional Water Authority
2295 Gateway Oaks Drive, Suite 100
Sacramento, CA 95833

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Peifer:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Matt Robinson, Public Informant Officer
Sacramento County
827 7th Street, Room 301
Sacramento, CA 95814

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Robinson:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Adam Larsen, General Manager
San Juan Water District
9935 Auburn-Folsom Road
Granite Bay, CA 95746

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Larsen:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Paul Lau, Chief Executive Officer and General Manager
Sacramento Municipal Utility District
6201 S Street
Sacramento, CA 95817

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Lau:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Daniel York, General Manager
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. York:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Drew Lessard, Area Manager
Central California Area Office
7794 Folsom Dam Road
Folsom, CA 95630

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Lessard:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process. Additionally, in accordance with California Water Code Section 10631, as we are a retail water supplier receiving water from your agency, we will provide you with projected water use for the next 20 years (up to the year 2045).

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to sbigley@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Dominick Casey, City Manager
City of Roseville
311 Vernon Street
Roseville, CA 95678

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Casey:

The City of Roseville's (City) Water Utility Division has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway.

Prior to Board adoption of the plan a public hearing will be held, and per the Water Code, we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available for your review in advance of the public hearing.

Please let me know if you have any questions.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Environmental Utilities
Water Division
2005 Hilltop Circle
Roseville, California 95747

February 4, 2026

Mr. Paul Hellman, Director
Placer County Community Development Resource Agency
3091 County Center Drive
Auburn, CA 95603

RE: City of Roseville 2025 Urban Water Management Plan

Dear Mr. Hellman:

The City of Roseville (City) water utility has begun preparing the 2025 Urban Water Management Plan, which must be completed by July 1, 2026. In accordance with California Water Code Section 10642, we are writing to notify you that preparation is underway and to encourage your active input and involvement in the process.

Prior to Board adoption of the plan a public hearing will be held, and we will notify you of the date, time, and location of the meeting. We will also make a draft of the 2025 Urban Water Management Plan available to your agency in advance of the public hearing.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to ghanson@roseville.ca.us. Thank you.

Sincerely,

George Hanson
Water Utility Manager
City of Roseville
Environmental Utilities Department

Appendix C – Land Use Element

The Land Use Element of the City of Roseville's General Plan can be accessed at the link below.

https://www.roseville.ca.gov/development_services/planning/general_plan.php#doc_center_0_panel_0

Appendix D – AWWA Water Loss Audits

AWWA Free Water Audit Software: Worksheet

FWAS v6.0

American Water Works Association.

Water Audit Report for: City of Roseville

Audit Year: 2024 | Jan 01 2024 - Dec 31 2024 | Calendar

Click 'n' to add notes

Click 'g' to determine data validity grade

To edit water system info: go to start page

To access definitions, click the input name

All volumes to be entered as: ACRE-FEET PER YEAR

Water Supplied Error Adjustments

WATER SUPPLIED

choose entry option:

VOS	Volume from Own Sources:	n	g	7	31,245.460	Acre-ft/Yr	n	g	8	volume	462.300	acre-ft/yr	under-registration	VOSEA
WI	Water Imported:	n	g	6	1,698.300	Acre-ft/Yr	n	g		percent				WIEA
WE	Water Exported:	n	g	6	2,245.900	Acre-ft/Yr	n	g		percent				WEEA

WATER SUPPLIED: 31,160.160 Acre-ft/Yr

AUTHORIZED CONSUMPTION

choose entry option:

BMAC	Billed Metered:	n	g	8	28,039.000	Acre-ft/Yr			
BUAC	Billed Unmetered:	n	g	10	117.000	Acre-ft/Yr			
UMAC	Unbilled Metered:	n	g	10	172.150	Acre-ft/Yr			
UUAC	Unbilled Unmetered:	n	g	5	307.540	Acre-ft/Yr	custom	307.540	acre-ft/yr

AUTHORIZED CONSUMPTION: 28,635.690 Acre-ft/Yr

WATER LOSSES

2,524.470 Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

choose entry option:

SDHE	Systematic Data Handling Errors:	n	g	3	70.390	Acre-ft/Yr	0.25%	default	
CMI	Customer Metering Inaccuracies:	n	g	3	284.961	Acre-ft/Yr	1.00%	percent	under-registration
UC	Unauthorized Consumption:	n	g	3	70.390	Acre-ft/Yr	0.25%	default	

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: 425.741 Acre-ft/Yr

Real Losses

Real Losses: 2,098.729 Acre-ft/Yr

WATER LOSSES: 2,524.470 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 3,004.160 Acre-ft/Yr

SYSTEM DATA

Lm	Length of mains:	n	g	10	715.0	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n	g	8	52,102		(active *and* inactive)
	Service connection density:				73	conn./mile main	

Are customer meters typically located at the curbstop/property line? Yes

Lp n g 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP Average Operating Pressure: n g 9 82.8 psi

COST DATA

CRUC	Customer Retail Unit Charge:	n	g	10	$10.90	$/100 cubic feet (ccf)	Total Annual Operating Cost	
VPC	Variable Production Cost:	n	g	8	$138.12	$/acre-ft	$48,238,692	$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

***** The Water Audit Data Validity Score is in Tier IV (71-90). See Dashboard tab for additional outputs. *****

go to dashboard

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

1: Volume from Own Sources (VOS)

2: Customer Metering Inaccuracies (CMI)

3: Billed Metered (BMAC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses[^]:		gal/conn/day
Unit Real Losses[^]:		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

AWWA Free Water Audit Software: Worksheet

FWAS v6.0

American Water Works Association.

Water Audit Report for: City of Roseville

Audit Year: 2023 | Jan 01 2023 - Dec 31 2023 | Calendar

Click 'n' to add notes

Click 'g' to determine data validity grade

To edit water system info: go to start page

To access definitions, click the input name

All volumes to be entered as: ACRE-FEET PER YEAR

Water Supplied Error Adjustments

WATER SUPPLIED

choose entry option:

		n	g				n	g						
VOS	Volume from Own Sources:	n	g	7	29,021.380	Acre-ft/Yr	n	g	8		volume	13.690	acre-ft/yr	under-registration VOSEA
WI	Water Imported:	n	g	6	1,775.800	Acre-ft/Yr	n	g	4		percent			WIEA
WE	Water Exported:	n	g	6	1,803.900	Acre-ft/Yr	n	g	4		percent			WEEA

WATER SUPPLIED: 29,006.970 Acre-ft/Yr

AUTHORIZED CONSUMPTION

choose entry option:

		n	g						
BMAC	Billed Metered:	n	g	8	27,078.020	Acre-ft/Yr			
BUAC	Billed Unmetered:	n	g	10	131.710	Acre-ft/Yr			
UMAC	Unbilled Metered:	n	g	10	133.860	Acre-ft/Yr			
UUAC	Unbilled Unmetered:	n	g	5	312.280	Acre-ft/Yr	custom	312.280	acre-ft/yr

AUTHORIZED CONSUMPTION: 27,655.870 Acre-ft/Yr

WATER LOSSES

1,351.100 Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

choose entry option:

		n	g						
SDHE	Systematic Data Handling Errors:	n	g	3	68.024	Acre-ft/Yr	0.25%	default	
CMI	Customer Metering Inaccuracies:	n	g	3	274.867	Acre-ft/Yr	1.00%	percent	under-registration
UC	Unauthorized Consumption:	n	g	3	68.024	Acre-ft/Yr	0.25%	default	

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: 410.916 Acre-ft/Yr

Real Losses

Real Losses: 940.184 Acre-ft/Yr

WATER LOSSES: 1,351.100 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,797.240 Acre-ft/Yr

SYSTEM DATA

		n	g				
Lm	Length of mains:	n	g	10	704.0	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n	g	8	50,757		(active *and* inactive)
	Service connection density:				72	conn./mile main	

Are customer meters typically located at the curbstop/property line? Yes

Lp n g 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP Average Operating Pressure: n g 9 82.2 psi

COST DATA

		n	g					
CRUC	Customer Retail Unit Charge:	n	g	10	$8.81	$/100 cubic feet (ccf)	Total Annual Operating Cost	
VPC	Variable Production Cost:	n	g	8	$144.27	$/acre-ft		$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

***** The Water Audit Data Validity Score is in Tier IV (71-90). See Dashboard tab for additional outputs. ***** go to dashboard

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

1: Volume from Own Sources (VOS)

2: Customer Metering Inaccuracies (CMI)

3: Billed Metered (BMAC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses[^]:		gal/conn/day
Unit Real Losses[=]:		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

AWWA Free Water Audit Software: Worksheet

FWAS v6.0

American Water Works Association.

Water Audit Report for: City of Roseville

Audit Year: 2022 | Jan 01 2022 - Dec 31 2022 | Calendar

Click 'n' to add notes

Click 'g' to determine data validity grade

To edit water system info: go to start page

To access definitions, click the input name

All volumes to be entered as: ACRE-FEET PER YEAR

Water Supplied Error Adjustments

WATER SUPPLIED

choose entry option:

		n	g				n	g						
VOS	Volume from Own Sources:	n	g	7	29,720.700	Acre-ft/Yr	n	g	8		volume	23.600	acre-ft/yr	under-registration VOSEA
WI	Water Imported:	n	g	6	1,452.600	Acre-ft/Yr	n	g	4		percent			WIEA
WE	Water Exported:	n	g	6	1,648.800	Acre-ft/Yr	n	g	4		percent			WEEA

WATER SUPPLIED: 29,548.100 Acre-ft/Yr

AUTHORIZED CONSUMPTION

choose entry option:

		n	g						
BMAC	Billed Metered:	n	g	8	27,285.000	Acre-ft/Yr			
BUAC	Billed Unmetered:	n	g	10	127.000	Acre-ft/Yr			
UMAC	Unbilled Metered:	n	g	10	153.300	Acre-ft/Yr			
UUAC	Unbilled Unmetered:	n	g	5	320.020	Acre-ft/Yr	custom	320.020	acre-ft/yr

AUTHORIZED CONSUMPTION: 27,885.320 Acre-ft/Yr

WATER LOSSES

1,662.780 Acre-ft/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

choose entry option:

		n	g						
SDHE	Systematic Data Handling Errors:	n	g	3	68.530	Acre-ft/Yr	0.25%	default	
CMI	Customer Metering Inaccuracies:	n	g	3	277.155	Acre-ft/Yr	1.00%	percent	under-registration
UC	Unauthorized Consumption:	n	g	3	68.530	Acre-ft/Yr	0.25%	default	

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: 414.215 Acre-ft/Yr

Real Losses

Real Losses: 1,248.565 Acre-ft/Yr

WATER LOSSES: 1,662.780 Acre-ft/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 2,136.100 Acre-ft/Yr

SYSTEM DATA

		n	g				
Lm	Length of mains:	n	g	10	690.0	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n	g	8	49,482		(active *and* inactive)
	Service connection density:				72	conn./mile main	

Are customer meters typically located at the curbstop/property line? Yes

Lp n g 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP Average Operating Pressure: n g 9 83.5 psi

COST DATA

		n	g					
CRUC	Customer Retail Unit Charge:	n	g	10	$6.68	$/100 cubic feet (ccf)	Total Annual Operating Cost	
VPC	Variable Production Cost:	n	g	8	$118.21	$/acre-ft		$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

***** The Water Audit Data Validity Score is in Tier IV (71-90). See Dashboard tab for additional outputs. ***** go to dashboard

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

1: Volume from Own Sources (VOS)

2: Customer Metering Inaccuracies (CMI)

3: Billed Metered (BMAC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses[^]:		gal/conn/day
Unit Real Losses[=]:		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Roseville (CA3110008)
Reporting Year: 2021 1/2021 - 12/2021

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	7	29,242.520	acre-ft/yr	7	-1.04%		acre-ft/yr
Water imported:	5	1,738.400	acre-ft/yr				acre-ft/yr
Water exported:	4	1,780.600	acre-ft/yr				acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 29,507.638 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	28,541.670	acre-ft/yr			
Billed unmetered:	10	125.260	acre-ft/yr			
Unbilled metered:	7	109.060	acre-ft/yr			
Unbilled unmetered:	8	19.590	acre-ft/yr		19.590	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 28,795.580 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 712.058 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		73.769	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	6	289.401	acre-ft/yr	1.00%		acre-ft/yr
Systematic data handling errors:	5	71.354	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 434.525 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 277.534 acre-ft/yr

WATER LOSSES: 712.058 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 840.708 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	686.0	miles
Number of active AND inactive service connections:	9	47,930	
Service connection density:		70	conn./mile main
Are customer meters typically located at the curbstop or property line?		Yes	
Average length of customer service line:			(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	7	81.9	psi

COST DATA

Total annual cost of operating water system:	10	$42,460,847	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$5.70	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	6	$109.24	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 72 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed metered
3: Customer metering inaccuracies

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Roseville (3110008)
Reporting Year: 2020 1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

						Pcnt:	Value:	
Volume from own sources:	8	29,631.250	acre-ft/yr	7			194.490	acre-ft/yr
Water imported:	5	1,351.500	acre-ft/yr					acre-ft/yr
Water exported:	4	1,450.700	acre-ft/yr					acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 29,337.560 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	28,133.950	acre-ft/yr			
Billed unmetered:	10	114.700	acre-ft/yr			
Unbilled metered:	7	7.560	acre-ft/yr			
Unbilled unmetered:	8	25.080	acre-ft/yr		25.080	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 28,281.290 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 1,056.270 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		73.344	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	6	284.258	acre-ft/yr	1.00%		acre-ft/yr
Systematic data handling errors:		70.335	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 427.936 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 628.334 acre-ft/yr

WATER LOSSES: 1,056.270 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,088.910 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	660.8	miles	
Number of active AND inactive service connections:	9	46,426		
Service connection density:		70	conn./mile main	
Are customer meters typically located at the curbstop or property line?		Yes		
Average length of customer service line:				(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	7	82.2	psi	

COST DATA

Total annual cost of operating water system:	10	$14,545,147	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$3.28	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$116.00	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 75 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Variable production cost (applied to Real Losses)
3: Billed metered

Appendix E – SWRCB Calculated Water Loss Standards

The California State Water Resources Control Board's (SWRCB) calculated water loss standards can be accessed at the link below.

https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.waterboards.ca.gov%2Fconservation%2Fdocs%2Fwaterlosscontrol%2Fstandards-released.xlsx&wdOrigin=BROWSELINK

Appendix F – 2015 SBX7-7 Verification Form

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	34,052	Acre Feet
	2008 total volume of delivered recycled water	2,985	Acre Feet
	2008 recycled water as a percent of total deliveries	8.77%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range[3]	2004	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. *[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

[3] The ending year must be between December 31, 2004 and December 31, 2010.

[4] The ending year must be between December 31, 2007 and December 31, 2010.

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1995	54,602
Year 2	1996	58,424
Year 3	1997	62,619
Year 4	1998	66,761
Year 5	1999	71,824
Year 6	2000	74,562
Year 7	2001	78,420
Year 8	2002	83,167
Year 9	2003	89,289
Year 10	2004	94,561
5 Year Baseline Population		
Year 1	2003	89,289
Year 2	2004	94,561
Year 3	2005	99,295
Year 4	2006	101,641
Year 5	2007	103,693
2015 Compliance Year Population		
2015		123,572
NOTES: Does not include approximately 4,810 person living within City limits, but outside the water service area.		

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	All Sources
This water source is:	
☑	The supplier's own water source
☑	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1995	18,841		18,841
Year 2	1996	21,254		21,254
Year 3	1997	23,001		23,001
Year 4	1998	20,462		20,462
Year 5	1999	24,179		24,179
Year 6	2000	25,646		25,646
Year 7	2001	28,100		28,100
Year 8	2002	29,853		29,853
Year 9	2003	29,714		29,714
Year 10	2004	32,468		32,468
5 Year Baseline - Water into Distribution System				
Year 1	2003	29,714		29,714
Year 2	2004	32,468		32,468
Year 3	2005	31,481		31,481
Year 4	2006	33,637		33,637
Year 5	2007	33,864		33,864
2015 Compliance Year - Water into Distribution System				
2015		22,881		22,881

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year *Fm SB X7-7 Table 3*		Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1995	18,841			-		-	18,841
Year 2	1996	21,254			-		-	21,254
Year 3	1997	23,001			-		-	23,001
Year 4	1998	20,462			-		-	20,462
Year 5	1999	24,179			-		-	24,179
Year 6	2000	25,646			-		-	25,646
Year 7	2001	28,100			-		-	28,100
Year 8	2002	29,853			-		-	29,853
Year 9	2003	29,714			-		-	29,714
Year 10	2004	32,468			-		-	32,468
10 - 15 year baseline average gross water use								**25,352**
5 Year Baseline - Gross Water Use								
Year 1	2003	29,714			-		-	29,714
Year 2	2004	32,468			-		-	32,468
Year 3	2005	31,481			-		-	31,481
Year 4	2006	33,637			-		-	33,637
Year 5	2007	33,864			-		-	33,864
5 year baseline average gross water use								**32,233**
2015 Compliance Year - Gross Water Use								
2015		22,881	-		-		-	**22,881**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES:

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	54,602	18,841	308
Year 2	1996	58,424	21,254	325
Year 3	1997	62,619	23,001	328
Year 4	1998	66,761	20,462	274
Year 5	1999	71,824	24,179	301
Year 6	2000	74,562	25,646	307
Year 7	2001	78,420	28,100	320
Year 8	2002	83,167	29,853	320
Year 9	2003	89,289	29,714	297
Year 10	2004	94,561	32,468	307
10-15 Year Average Baseline GPCD				**309**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	89,289	29,714	297
Year 2	2004	94,561	32,468	307
Year 3	2005	99,295	31,481	283
Year 4	2006	101,641	33,637	295
Year 5	2007	103,693	33,864	292
5 Year Average Baseline GPCD				**295**
2015 Compliance Year GPCD				
2015		123,572	22,881	**165**
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	309
5 Year Baseline GPCD	295
2015 Compliance Year GPCD	165
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
309	**247**
NOTES:	

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
295	280	247	**247**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
247	309	**278**

NOTES:

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)* Enter "0" if Adjustment Not Used: Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
165	278	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	-	165	165	**YES**

NOTES:

Appendix G – 2020 SBX7-7 Compliance Form

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*
NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☑	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☑	**4. Other** DWR recommends pre-review
NOTES: The population for areas in the City of Roseville boundary not served by the City of Roseville Water Utility was subtracted from the total 2020 DOF population.	

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	140,187
NOTES:	

SB X7-7 Table 4: 2020 Gross Water Use							
		2020 Deductions					
Compliance Year 2020	2020 Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use*	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	2020 Gross Water Use
	33,263	1,451	-	-	-	-	**31,813**
* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.							
NOTES:							

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Folsom Lake
This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	31,711	-	31,711

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.*

[2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES: Total volume excludes raw water delivered to Linda Creek.

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s) Meter Error Adjustment

Complete one table for each source.

Name of Source	Ground Water
This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	201	0	201

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.*

[2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Total water delivered from other suppliers to Roseville
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	1,352	0	1,352

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.*

[2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water *Fm SB X7-7 Table 4*	**2020 Population** *Fm SB X7-7 Table 3*	**2020 GPCD**
31,813	140,187	**203**
NOTES:		

SB X7-7 Table 9: 2020 Compliance							
Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD Enter "0" if Adjustment Not Used			TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
	Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]				
203	-	-	-	-	203	247	**YES**
[1] *All values are reported in GPCD*							
[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*							
NOTES:							

Appendix H – Intent to Retain Control of Conserved Water

RESOLUTION NO. 09-64

DECLARING AN INTENT TO RETAIN CONTROL OF CONSERVED WATER

WHEREAS, the City has contractual entitlements to divert water from Folsom Reservoir, under which the City diverts and treats water for distribution to its residents and water users; and

WHEREAS, the City plans to implement a series of water conservation projects and programs for the purpose of eliminating losses of water within its water transmission and distribution system and for reducing consumption of water by its customers through on-site efficiency improvements and curtailment of water waste; and

WHEREAS, Water Code section 1011 provides that water is deemed conserved when less water is used to accomplish the same purposes of use allowed under a water right and that such cessation or reduction in use is deemed a beneficial use of a water right to the extent of such cessation or reduction in use; and

WHEREAS, Water Code section 1011 and the City's CVP water service contract authorizes the City to make water conserved as a result of such water conservation projects and programs available for use, sale, lease, exchange or short- or long-term transfers inside and outside of the City; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville as follows:

1. The foregoing recitals are true and are incorporated into this Resolution by this reference.

2. The City Council finds and determines that: (a) making significant investments in infrastructure and administrative resources protects the City's water supplies for the benefit of all residents and water users in the City; (b) protecting all of the City's water supplies is of paramount importance to the health and welfare of the City's residents and water users; (c) conserving water through reductions in use is intended to promote statewide policies mandating and encouraging beneficial use of water; and (d) preserving conserved water supplies and making those supplies available for use, sale or transfer is in the best interests of the City and its residents and water users.

3. The City Council declares that, by instituting programs to conserve water, it abandons no right, title or interest in or to any City water rights, contractual entitlements or any appurtenant rights necessary to exercise such water rights or entitlements.

4. In accordance with Water Code section 1011 and any contractual rights, the City reserves the right to sell, lease, exchange, or otherwise transfer for use within or outside of the City's boundaries all water that has been conserved as a result of its water conservation projects and programs.

5. The Environmental Utilities Director and staff are directed to take all actions necessary to implement this Resolution, including the filing of annual reports of reductions in water use resulting from any water conservation projects and programs carried out under this Resolution with the State Water Resources Control Board.

PASSED AND ADOPTED by the City Council of the City of Roseville on the 18th day of February 2009, by the following vote:

AYES COUNCILMEMBERS: Allard, Gray, Garcia, Roccucci, Garbolino

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: None

MAYOR

Attest:

City Clerk

Appendix I – Groundwater Sustainability Plan

The North American Subbasin Ground Water Sustainability Plan can be accessed at the link below.

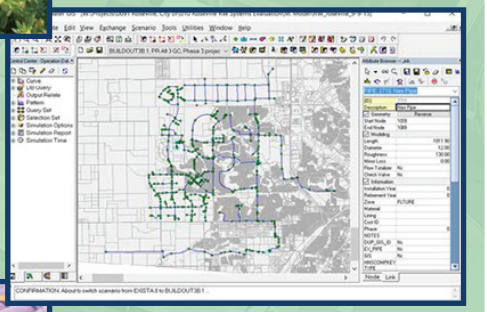
https://sgma.water.ca.gov/portal/gsp/preview/100

Appendix J – 2025 Recycled Water Systems Evaluation Report

CITY OF ROSEVILLE CALIFORNIA

RECYCLED WATER SYSTEMS EVALUATION

MAY 2025



Prepared by:

Woodard & Curran

Recycled Water Systems Evaluation Report

2175 N California Blvd | Suite 315
Walnut Creek, California 94596
800.426.4262

woodardcurran.com

0012204.00

City of Roseville

May 2025

TABLE OF CONTENTS

SECTION **PAGE NO.**

TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

This report presents the findings of the Recycled Water Systems Evaluation (Systems Evaluation) for the City of Roseville (City). The objectives of the Systems Evaluation include documenting an updated assessment of the system's supplies and demands to determine recycled water infrastructure needed to supply potential future customers and UGAs. Additionally, this report details an implementation plan. The document includes recommended improvements for the City's existing system to address anticipated future demands and identifies the location of connections for those future demands. Sizing and alignments of future piping to serve these new demands is not evaluated in this report and is left flexible to accommodate evolving development plans for future service areas

ES-1. Existing System

The City of Roseville operates a recycled water distribution system supplied by two wastewater treatment plants (WWTPs), as shown in **Figure ES- 1**. Future development is anticipated in several Urban Growth Areas (UGAs), which will significantly increase the demand for recycled water; these UGAs are also identified in **Figure ES- 1**.

ES-2. Recycled Water Supplies

The City's recycled water system is supplied by both the Dry Creek Wastewater Treatment Plant (DCWWTP) and the Pleasant Grove Wastewater Treatment Plant (PGWWTP). Existing supply SCADA data provided by the City and future supply projections provided by the City on behalf of SPWA partner agencies were reviewed and compared to existing demands and future demand projections.

ES-2.1 Existing Supplies

Effluent flow data for the Dry Creek WWTP from 2020 through 2022 was assessed as part of the DCWWTP Capacity Capital Analysis Draft TM[1] to estimate an Average Dry Weather Flow (ADWF) of 8.60 mgd. As part of a similar study currently in progress, 2023 effluent flow data for the Pleasant Grove WWTP was assessed to estimate an ADWF of 8.49 mgd. 24-hour diurnal patterns for influent and effluent flow were developed and compared based on the provided SCADA data. A four-hour lag was noted between influent and effluent peaking factors. The hourly influent data was lagged by four hours and used to represent the diurnal pattern for available supply from each treatment plant. Resulting peaking factors are provided in **Figure ES-2.**

[1] Woodard & Curran, Dry Creek Wastewater Treatment Plant Capacity Capital Analysis Draft Technical Memorandum, July 2023.

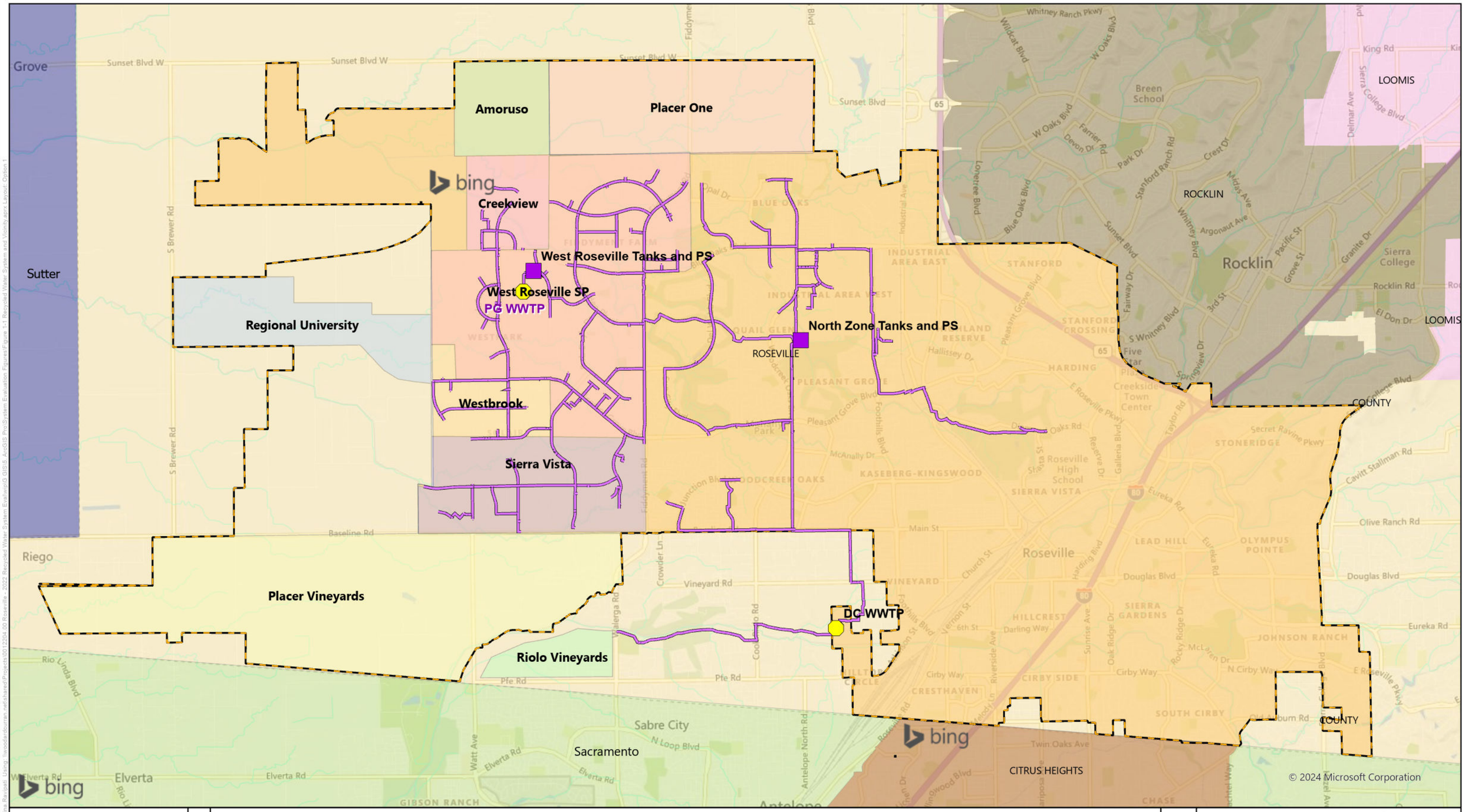


Figure ES-1
Recycled Water System and Vicinity
Roseville Recycled Water Systems Evaluation

Legend

- Existing Recycled Water Pipeline
- Study Area
- City of Rosevillle Limits
- Pump Station
- WWTP

0 0.25 0.5 1 Miles

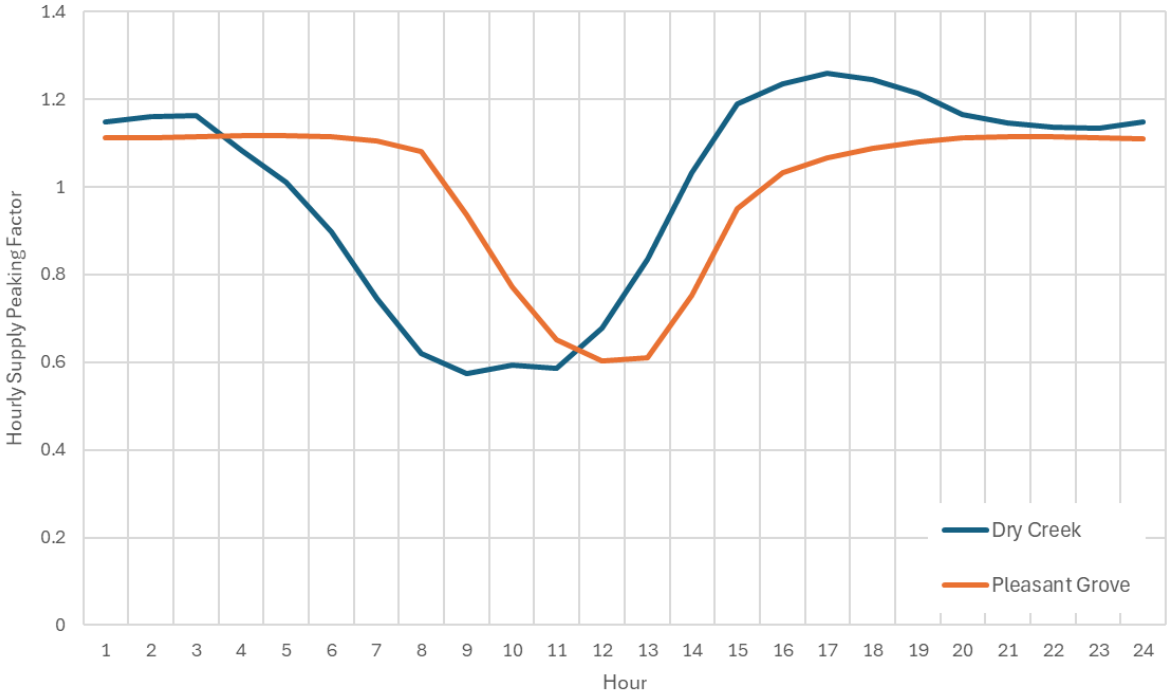
N

CITY OF ROSEVILLE CALIFORNIA

Woodard & Curran

Project #: 0012204.00
Map Created: July 2024

FIGURE ES- 2 PGWWTP AND DCWWTP SUPPLY PATTERNS



ES-2.2 Projected Supplies

Future plant sewage flows were projected to the planning horizon of fiscal year 2059-2060 (FY 59/60)[1] and to ultimate buildout conditions, calculated by multiplying Equivalent Dwelling Unit (EDU) projections by the flow contribution per EDU. EDU projections were prepared by the South Placer Wastewater Authority (SPWA) partners and provided to W&C as part of this study in May 2025; the projections generally assume linear growth. Current flow factors are approximately 144 gpd/EDU for PGWWTP and 150 gpd/EDU for DCWWTP. Projected flow factors are 150 gpd/EDU. Potential future flows are presented in **Table ES- 1**. For this analysis, it has been assumed that all influent sewer flows would be available for use as recycled water.

TABLE ES- 1: EXISTING AND PROJECTED WWTP RECYCLED WATER SUPPLIES

	Existing Supply (mgd)	2060 Projected EDU Growth (EDUs)	2060 Projected Supply @ 150 gpd/EDU (mgd)
PGWWTP	8.49	80,566	19.6
DCWWTP	8.60	46,270	14.2
Total	**17.09**	**126,836**	**33.8**

[1]SPWA's fiscal year runs from July 1 to June 30.

ES-3. Recycled Water Demands

The existing recycled water system customers and associated demands were examined and potential future demands from expected customers within the City and from Urban Growth Areas (UGAs) were identified. Recycled water production data was used to verify peaking previously developed in the 2016 Recycled Water System Evaluation Report. Potential future recycled water demand was compared with projections of future wastewater flows to identify potential recycled water supply issues.

ES-3.1 Existing Demands

Existing recycled water customers were identified through review of prior studies, discussions with City staff, and the City's billing records. Billing data from 2017 to 2022 was collected and analyzed to determine average annual demands for each customer. This data was used to add new customers whose service began after August 2019 (customers added before August 2019 were already included in the model as part the 2020 Model Report model update). Including these additional customers, annual average demands were estimated to be approximately 3.8 mgd.

A summary of the ten largest demand customers is included in **Table ES- 2**. Locations of the existing customers are shown in **Figure ES- 3**. In addition to the customers shown in **Figure ES- 3**, DC WWTP is required to discharge a minimum of 4 mgd to Dry Creek to maintain a year round flow in the creek per California Department of Fish and Wildlife (CDFW) requirements. Note that there is no specific minimum instantaneous flow requirement for this flow into Dry Creek, just a minimum requirement of 4 million gallons over the course of the day.

TABLE ES- 2: SUMMARY OF EXISITNG CUSTOMERS

Customer Name	Customer Type	On-Site Storage (Yes/No)	Zone	Annual Average Demand[a] (AFY)	Average Day Demand (MGD)	Peak Day Demand[b] (gpm)
Sierra Pines (Sun City) Golf Course	Golf Course	Yes	Main	805	0.72	1,248
Morgan Creek Golf Course	Golf Course	Yes	South	377	0.34	584
Roseville Energy Park	Other	No	PGWWTP	355	0.32	550
Woodcreek Oaks Golf Course	Golf Course	Yes	Main	353	0.32	548
Diamond Oaks Golf Course	Golf Course	Yes	North	352	0.31	546
Timber Creek Golf Course	Golf Course	Yes	Main	120	0.11	186
West Park High School	Irrigation	No	Main	92	0.08	142
Other Customers within WRSP Area			Main	971	0.87	1,504
Other Customers within Sierra Vista Area			Main	263	0.23	408
Other Customers within Creekview Area			Main	34	0.03	53
All Other City Customers				498	0.44	772
Total				**4219**	**3.77**	**6540**

Footnotes:

a. Based on average billing data from January 2018 to October 2022
b. Based on peaking factor of 2.5 multiplied by ADD.

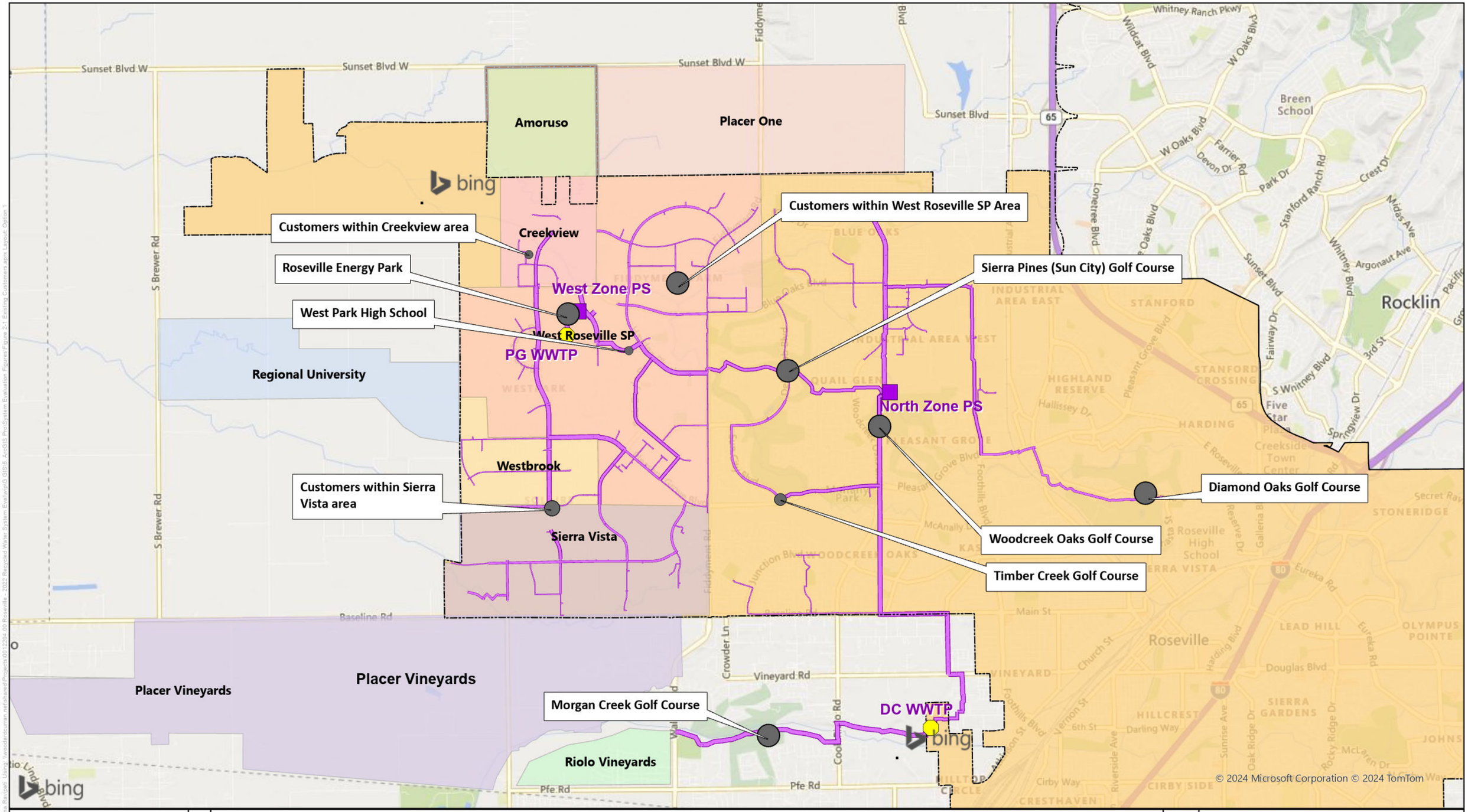


Figure ES-3
Existing Recycled Water Customers
Roseville Recycled Water Systems Evaluation

Legend

- Pump Station
- WWTP
- City Limits
- Potential City limits
- Existing RW Pipeline: < 10 in; 10 - 14 in; 16 - 20 in; > 20 in
- Demand (AFY): 1 - 100; 101 - 250; 251 - 350; 351 - 1000
- City of Roseville Limits

N

0 0.2 0.4 0.8 Miles

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Woodard & Curran

Project #: 0012204.00
Map Created: July 2024

ES-3.2 Future Demands

Potential future customers include near-term potential recycled water customers identified by the City and Urban Growth Areas (UGAs). Potential future customer locations are shown in **Appendix A** and were identified based on the review of existing recycled water study reports, discussions with City staff, and review of development master plans. Peaking factors used for existing customers were also used to calculate peak day demand for potential future customers.

Near-term potential customers were identified through a review of prior studies. The largest near-term potential customers (not including UGAs,) include the Hewlett Packard Enterprise campus and the Campus Oaks Apartments. Once all customers are on-line, the annual demand for near-term potential customers is projected to be 2,360 AFY, with a peak day demand of 5.27 mgd.

The City of Roseville is anticipating the eventual connection of eight UGAs. Four of these UGAs (Sierra Vista/Westbrook, Creekview, Amoruso Ranch and the West Roseville Specific Plan) are within current City limits and are partially developed. Total existing and anticipated buildout demands for these areas are shown in **Table ES- 3**.

TABLE ES- 3: URBAN GROWTH AREA POTENTIAL DEMANDS

UGA	Potential Service Zone	Within City Limits	Existing Average Day Demand (mgd)	Buildout Average Day Demand (mgd)	Buildout Peak Day Demand (gpm)	Assumed Initial Connection Date[a]
Sierra Vista /Westbrook[b]	West	Yes	0.41	0.96	1,390	2020
Amoruso Ranch[c]	West	Yes	0	0.22	389	2025
Creekview[d]	West	Yes	0.05	0.10	174	2020
West Roseville Specific Plan[e]	West	Yes	1.34	2.02	3,507	2020
Regional University[f]	West	No	0	0.59	1,031	2030
Placer One / Sunset Industrial Area[g]	North	No	0	0.34	1,451	2025
Placer Vineyards[f]	Gravity	No	0	1.44	2,505	2030
Riolo Vineyards[f]	Gravity	No	0	0.37	639	2030

Footnotes:

a. For purposes of phasing, it was assumed that implementation of full demand would occur over 8 years from the initial connection date. Developments with existing demands were assumed to have been connected to the system by 2020. Note that the initial connection date may not represent the beginning of UGA development.
b. Sierra Vista Specific Plan, Amended April 2016
c. Draft Addendum to the Amoruso Ranch Specific Plan Area Recycled Water Master Plan, June 2024
d. Creekview Specific Plan, March 2022
e. Recycled Water Study for West Roseville Specific Plan Area, May 2003
f. Based on estimates provided by City staff, 2025
g. Placer One Recycled Water Master Plan, November 2024

ES-3.3 Comparison of Supply and Demands

A supply and demand comparison was performed over the West Zone, rather than on the individual WWTPs as the system has multiple points of interconnection allowing either WWTP to service the West Zone. Estimated growth in average dry weather flow generated from the entire SPWA sewer service area through 2060 was referenced from updated data provided by the City on behalf of the SPWA partner agencies.

Figure ES- 4 shows the current projections of annual recycled water demand and supply available during maximum day conditions. As shown in the figure, there appears to be sufficient supply to meet anticipated demands. It should be noted, however, that there is significant uncertainty in the timing of growth of both future demands and future supplies. There is also significant uncertainty in the projected demands, as demands for several of the UGAs were based on estimates from several years ago (as indicated in **Table ES- 3**) and likely do not reflect current irrigation practices.

Figure ES- 5 shows anticipated max day buildout demand conditions compared to 2060 supply. While hourly projected supplies are greater than hourly buildout demands, there may still be a need for operational storage (aka daily storage) to shift the available supply of recycled water to the higher evening demand periods when supplies are limited. The City can undertake efforts to manage peak usage and reduce overnight demands, especially with customers that have storage facilities who may be more adept at distributing demands across a day to limit peak hourly usage as much as possible.

FIGURE ES- 4: PROJECTED BUILDOUT MAX DAY SUPPLY AND DEMAND COMPARISON

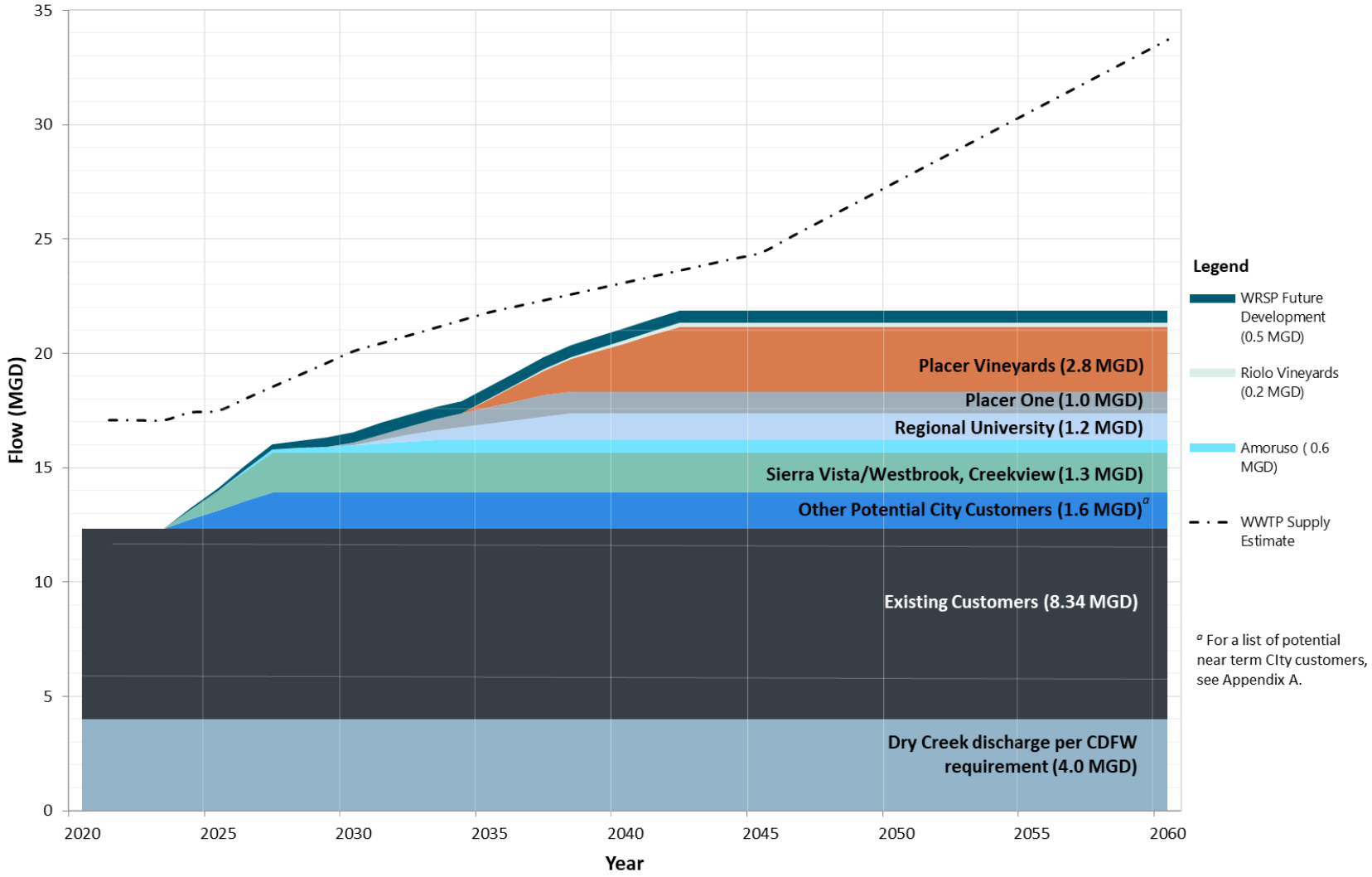
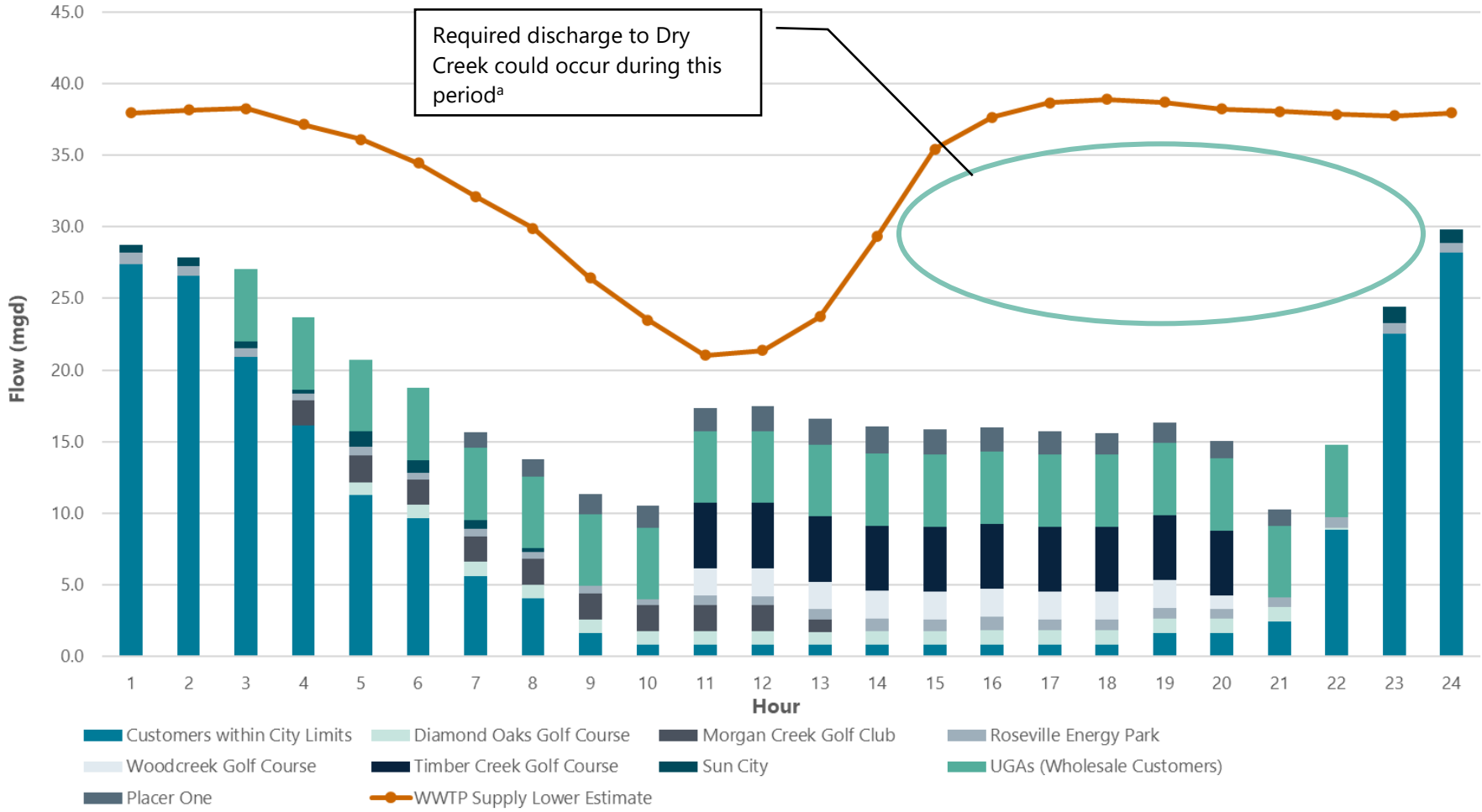


FIGURE ES- 5: HOURLY COMPARISON OF SUPPLY AND DEMANDS BUILDOUT MAX DAY CONDITIONS



Footnote:

a) Discharge to Dry Creek, as required by CDFW, is not included on this plot as City operations staff can elect to discharge the required 4 mgd when it best suits system performance. In the case of the proposed patterns being implemented, this could be between 11am and 11pm.

ES-4. Systems Evaluation

Model scenarios of the City's existing recycled water distribution system were developed. Sizing of new pipes, and evaluation of the capacity of the existing facilities, was performed using the design criteria described in **Section 4.1.1**. Buildout alternatives were evaluated for comparative life cycle costs using the capital and O&M cost criteria described in **Section ES-4.3**.

ES-4.1 Existing System Evaluation

The existing recycled water system was run under existing average day and maximum day demand conditions to assess the system's performance. Node pressures and pipeline velocities were compared to criteria established in **Table 4-1**. **Table ES- 4** summarizes the peak hour operating points of each pump station in the existing system. These peak hour flowrates represent an estimated pump station capacity accounting for pumping against system pressure under design conditions. Pump curves for each pump station are included in **Appendix B**. Based on a comparison of the peak hour flows and pressures against the pump curves shown in **Appendix B**, all existing pump stations have capacity for existing peak flows.

TABLE ES- 4: EXISTING RECYCLED WATER SYSTEM PUMP STATION FLOWRATES AND PRESSURES

Pump Station	Peak Hour Operating Point
Pleasant Grove WWTP	6,585 gpm, 26-ft (11 psi)[a]
West Roseville PS	8 ,725 gpm, 173-ft (75 psi)[a]
Dry Creek WWTP	5,200 gpm, 138-ft (60 psi)[a]

Footnotes:

a. Total Dynamic Head (TDH) modeled directly downstream of the pump station.

Based on these model results, no existing capacity deficiencies have been identified in the West Zone nor the Gravity Zone. However, very little additional demand can be added without resulting in overuse of the West Roseville tanks or inadequate supply from DCWWTP. However, some operational changes can be implemented at low or no cost to increase system capacity. These include: 1) adjusting demand patterns for customers with storage to shift their peak demands off of the system peak demands, 2) increasing the pressure supplied by WRPS, and 3) connecting North Zone tanks and pump station to the system, which are currently offline. Items 1 and 2 provide potential increases in peak day demand as shown in **Table ES- 5**. Item 3 is not presented in **Table ES- 5** as buildout model results discussed in **Section ES-4.2** indicate that the North Zone PS is not required for the buildout system and so is not recommended for rehabilitation at this time.

TABLE ES- 5: EFFECTIVENESS OF OPERATIONAL IMPROVEMENTS

Scenario	Potential Peak Day Demand[a] (MGD)
Existing, No Change	8.7[b]
+ Adjust Demand Patterns	10.4
+ Increase WRPS Supply Pressure	10.9

Footnotes:

a. Represents the maximum peak day demand that could be met while meeting criteria established in **Table 4-1**. Current maximum peak demands are estimated to be 8.34 MGD

b. The model predicts that some customers in the southern part of the system would not meet 40 psi during existing peak day demands at peak hour, due to limitations in available supply at Dry Creek. It is possible that some demand shifting has already occurred to mitigate this deficiency.

ES-4.2 Buildout System Evaluation

Buildout model demands were run with the updated demand patterns as discussed in **Section ES-4.1**. To conservatively determine storage requirement, supply estimates for 2045 were used for modeling purposes to complete the buildout max day model runs. This represents a period of time when anticipated max day demands are closest to projected supplies, projected supplies being approximately 3 MGD. The model was run with North Zone Pump Station offline to determine if the pump station would be required for buildout conditions.

Pipeline Improvements

Under buildout max day demands, existing infrastructure provides system pressures lower than the established criteria. These pressure deficiencies are resolved with improvements to West Roseville Pump Station pumping capacity and "pinch-point" improvements discussed below. Under modeled conditions, North Zone Pump Station could remain offline and system demands could be met at sufficient pressures. However, significant differences between the modeled demand patterns and the actual demand patterns may necessitate the recommissioning of North Zone Pump Station to meet peak demands.

Two projects were identified as "pinch-point" improvements:

1. The existing 24-inch pipeline directly downstream of the WRPS to Westpark Drive. A parallel 24-inch pipeline could be installed to increase the service pressures and capacity throughout the system.

2. The existing 8-inch pipeline on Blue Oaks Blvd between Woodcreek Oaks Blvd and Diamond Creek Blvd. A new 12-inch pipe connecting to the 30-inch main on Woodcreek Oaks Blvd and to the 8-inch main on Prairie Woods Way via Painted Desert Drive would address this deficiency.

Storage Improvements

Storage improvements will also be needed. Operational storage under buildout maximum day conditions is approximately 1.2 million gallons (MG) for the West Zone. **Table ES- 6** presents the storage requirements based on this analysis. **Section ES-5** provides a storage improvement project to enhance buffer storage to accommodate the additional 1.28 MG of required storage based on the analysis below.

TABLE ES- 6: BUILDOUT MAX DAY STORAGE ANALYSIS

Pressure Zone [a]	Customers w/out Storage Buildout MDD (mgd)	Operational Storage Required [b] (MG)	Buffer Storage Required [c] (MG)	Total Storage Required [d] (MG)	Existing Storage (MG)	Potential Required Storage (MG)
West Zone (West Roseville Tanks	8.34	1.19	2.09	3.28	2.0	1.28

Footnotes:

a. The Gravity pressure zone is not included as there are few, if any, customer demands without dedicated storage in this zone.
b. Operational storage requirement is derived from model runs. It is based on assumptions built into the model including pump station controls, PRV settings, and demand patterns presented in this report.
c. Buffer storage required was assumed to be 25% of MDD for customers without dedicated storage for a one-day period.
d. Total required storage = Operational Storage + Buffer Storage.

Pumping Improvements

Before total buildout demands are realized the West Roseville pump station would need to be improved to meet flow and pressure design criteria. Design points for each pump station under buildout max day demand conditions are summarized in **Table ES- 7**. These design points represent the maximum peak hour flowrate and associated total dynamic head under max day conditions with the diurnal patterns applied to the demands. Potential operating points relative to the existing pump curves are shown in **Appendix B**.

TABLE ES- 7: PROPOSED PUMP STATION DESIGN POINTS AT BUILDOUT

Pump Station	Existing MDD Design Point		Buildout MDD Design Point	
	Peak Flowrate (gpm)	Total Dynamic Head (ft)	Peak Flowrate (gpm)	Total Dynamic Head (ft)
PG WWTP PS	6,585	26	10,500	24
West Roseville PS	8,725	173	13,340	162
Dry Creek WWTP PS	5,200	138	6,150	140

ES-4.3 Implementation Plan

Construction cost estimates have been developed to provide planning level estimates of future facility costs. These cost estimates are planning or conceptual level estimates and are considered to have an estimated accuracy range of -30 to +50 percent. This level of accuracy corresponds to a "Class 4" cost estimate as defined by the American Association of Cost Estimators. These estimates are suitable for use for budget forecasting, CIP development, and project evaluations, with the understanding that refinements to the project details and costs would be necessary as projects proceed into the design and construction phases.

Unit capital costs are based on engineering experience and recent bid prices for similar projects. Unit costs are indexed to the March 2025 Engineering News Record Construction Cost Index (CCI). The CCI value used (14,511) was an average of the 20 Cities Average value (13,783) and the San Francisco value (15,239).

ES-5. Project Descriptions

Pipeline improvement projects include projects to alleviate the deficiencies identified in **Section ES-4.2**, as well as projects to improve the reliability of the system through improved interties between pressure zones. Detailed cost estimates can be found in **Appendix C**. The proposed improvements are shown in **Figure ES- 6**.

ES-5.1 Pipeline Improvements

Pipeline improvements are defined below and costs summarized in **Table ES- 8**.

Project B-1 would increase the size of the bypass pipeline from the Pleasant Grove WWTP pumps to the West Zone system from 10-inches to 24-inches. This would improve the City's ability to take the West Roseville Pump Station offline, either to perform maintenance or for efficiency purposes.

Project I-1 would add a 6-inch intertie pipeline between the West Zone and the North Zone at Angus Road and Casa Sedona Drive. This provides two benefits:

- Improves reliability by improving the system's ability to backfeed from the North Zone into the West Zone during low demand periods.
- Improves the City's ability to serve the North Zone directly from either the West Roseville Pump Station or the pumps at the PG WWTP during low demand periods.

Project I-2 would add a 6-inch intertie pipeline between the West Zone and the South Zone at Blue Oaks Boulevard. The intertie provides two benefits:

- Improves reliability by allowing the system to bypass either the West Zone or the North Zone during low demand periods.
- Potentially improves efficiency by improving the City's ability to bypass either the West Roseville Pump Station or DC WWTP pumps during low demand periods.

Project I-3 would add an 8-inch intertie pipeline between the West Zone and the South Zone at Baseline Road and Fiddyment Road. This project would also increase the reliability of the system by improving the system's ability to bypass either the West Roseville PS or the pumps at DC WWTP.

Project I-4 would add a 10-inch intertie pipeline from the end of Project I-3 further south to interconnect the Main Zone with the Gravity System at Walerga Rd and Dry Creek Community Park. This project would increase the reliability of the gravity system by allowing the system to be supplied from the Main Zone if the gravity system supply was limited or taken offline. This intertie will likely not be able to convey max day, peak hour demand conditions to all customers, but under average day conditions it would provide customers with a reasonable level of service pressure for their anticipated demands. However, system performance may vary depending on the season and time of day that the intertie is operated. Under normal operating conditions, this line would be valved out of service.

Project PP-1 would install a parallel 24-inch pipeline between the West Roseville Pump Station (WRPS) and West Park Drive via Phillip Road (approx. 485 LF pipeline). This pipeline would only be needed when velocities in the existing 24-inch pipe exceed design criteria once West Roseville Pump Station improvements are implemented.

Installing the parallel pipeline would improve redundancy for a critical component, as well as allowing greater flexibility for providing system supply during low demand periods directly from the PG WWTP pumps.

Project PP-2 proposes adding a looped pipe in the North Zone pressure zone to relieve a headloss deficiency identified under buildout max day demand conditions. Project PP-2 includes the installation of 1,600 linear feet of a new 12" main from the existing main on Woodcreek Oaks Boulevard, connecting to the existing 8" main on Prairie Woods Way via Painted Desert Drive. This project should be completed before connecting additional customers west of Woodcreek Oaks Boulevard.

Project PP-3 would upsize the existing pipeline from DC WWTP Pumps to the South Zone from a 20-inch to a 30-inch pipe. This project relieves a bottleneck from DC WWTP that contributes to pressure drop in the system. The additional capacity in the system provides necessary pressure improvements under buildout conditions and would allow for greater utilization of the DC CCB recycled water storage.

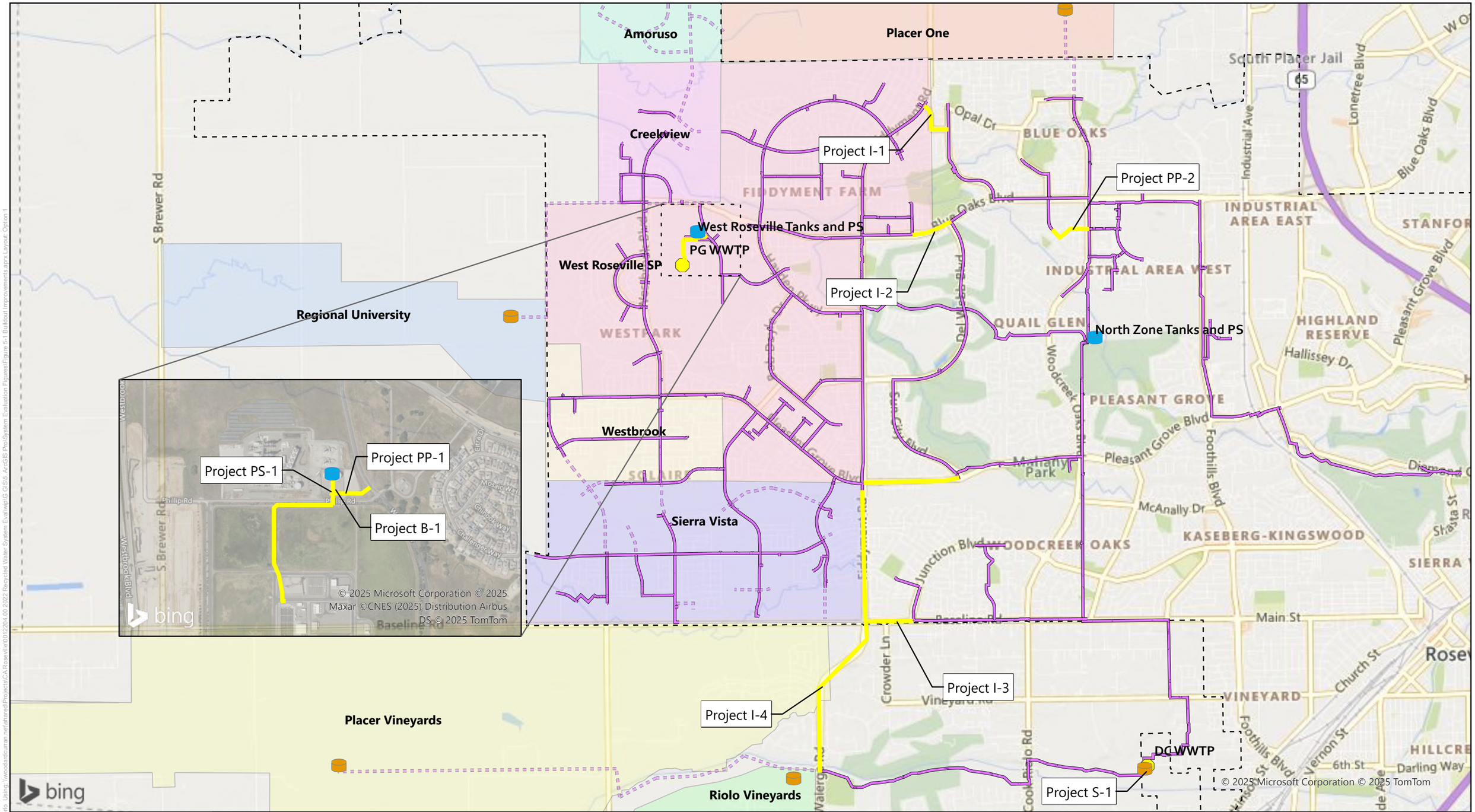


Figure ES-6 Buildout Improvements

Roseville Recycled Water Systems Evaluation

Legend

- WWTP
- Existing Recycled Water Main
- Future Recycled Water Pipeline
- City Limits

FutureStructures

Status

- Existing Storage and PS
- Future Storage and PS
- ProjectPipes

0 0.15 0.3 0.6 Miles

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CITY OF ROSEVILLE CALIFORNIA

Woodard & Curran

Project #: 0012204.00
Map Created: July 2024

Figure Exported: 5/29/2025 By: dmerlo Using: \\woodardcurran.net\shared\Projects\CA Roseville\0012204.00 2022 Recycled Water System Eval\wip\G GIS\5 GIS\wipG GIS\5 ArcGIS Pro\System Evaluation Figures\Figure 5-1 Buildout Improvements aprx Layout: Option 1

TABLE ES- 8: PIPELINE AND SUPPLY PROJECTS SUMMARY

Project Number	Project Description	Location	Size	Quantity	Estimated Raw Construction Cost	Estimated Capital Cost[a, b]
Reliability Projects						
B-1	Upsize bypass at West Roseville PS/Pleasant Grove WWTP from 10" to 24"	West Roseville PS	24-in	50-LF	$66,000	$115,000
I-1	Install an intertie between the West Zone and North Zone	Angus Rd and Casa Sedona Dr	6-in	1640-LF	$431,000	$672,000
I-2	Install an intertie between the West Zone and South Zone	Blue Oaks Blvd	6-in	1520-LF	$400,000	$622,000
I-3	Install an intertie between the West Zone and South Zone	Baseline Rd and Fiddyment Rd	8-in	6,700-LF	$1,985,000	$3,097,000
I-4	Install an intertie between West / South Zone and Gravity Zone	Baseline Rd and Walerga Rd	10-in	6,300-LF	$1,885,000	$2,941,000
Reliability Projects Subtotal					**$4,767,000**	**$7,447,000**
Pinch Point Projects						
PP-1	Install 485 LF of parallel 24” pipeline between West Roseville Pump Station and West Park Drive.	Between the WRPS and West Park Drive	24-in	485-LF	$289,000	$451,000
PP-2	Install 1,600 LF of 12” pipeline along Painted Desert Drive and Prairie Woods Way.	Painted Desert Drive and Prairie Woods Way	12-in	1,600-LF	$628,000	$980,000
PP-3	Install 2,530 ilnear feet of 30” pipe from DC WWTP recycled water pumps	DC WWTP Recycled Water Pumps	30-in	2,530-LF	$1,400,000	$2,184,000
Pinch Point Projects Subtotal					**$2,317,000**	**$3,615,000**
Total					**$7,084,000**	**$11,062,000**

Footnotes:

a. Includes implementation costs as described in Section 5.1.

b. Costs in March 2025 dollars

ES-5.2 Pumping Improvements

At buildout, peak flows at the West Roseville pump station will increase from about 8,725 gpm to 13,950 gpm. To achieve buildout flows, it was assumed pumps at West Roseville would be replaced with larger horsepower pumps. To avoid unnecessary operation and maintenance costs, installation of the replacement pumps should be phased to match the projected flow as service connections are added. To maintain operation of 5 duty pumps and 1 standby, three of the existing 150 hp West Roseville Pumps (2 duty and 1 standby) should be replaced with higher capacity pumps (300 hp motor). Note, it is possible that replacement of these pumps with larger pumps is not possible and instead the pump station would have to be modified, or new pump station constructed. This should be studied further to determine a more accurate cost estimate. Additional funds for a pump station alternatives analysis are included in the cost summary presented in **Table ES- 9.**

TABLE ES- 9: PUMP STATION IMPROVEMENTS SUMMARY

Project ID	Installed Pumps / Capacity	Estimated Raw Construction Cost[a]	Estimated Capital Cost[b]
PS-1[c]	Replace three pumps with 300 hp pumps (two duty, one standby) ~13,950 gpm firm pump station capacity	3 new 300 hp pumps: 3 x $564,000 = $1,692,000 Pump Upgrade Alternatives Analysis: $100,000	$3,145,000

Footnotes:

a. Costs basis is March 2025 average of ENR 20 Cities and San Francisco CCI (14,511)
b. CIP Costs include implementation costs as summarized in Section 5.1.
c. Project cost assumes that pump may be replaced within the pump station. The presented value includes funds to perform a pump station alternatives analysis to determine whether an expansion of WRPS would be required. See Section 5.4.1.

ES-5.3 Potential Additional Storage Improvements

The DC WWTP pump station is currently served directly from treated effluent from the plant. There is currently no effective storage located at DC WWTP. This project proposes modifying the existing Chlorine Contact Basins (CCB) at the DCWWTP for use as RW storage basins. Adding storage at DC WWTP would address the anticipated storage deficiency under buildout demands. This also provides a level of operational resilience in the event the DC WWTP needs to be taken offline, there would be some available supply for the recycled water system to utilize from DC WWTP.

A conceptual diagram of the project is shown in **Figure ES- 7** below. The proposed project cost shown in **Table ES- 10** include costs for piping, slide gate, valves, concrete, demolition, and other modifications to provide an additional 1.1 MG of RW storage capacity.

In addition to the recycled water storage provided by conversion of the Dry Creek CCBs an additional 0.18 MG of storage will be needed to provide the City with the operational and buffer storage for max day conditions. Three alternatives could be pursued to address this, however the City should monitor recycled water supplies and demands as new customers are connected to the system. Changes to supply or demand may change the need for or quantity of additional recycled water storage.

- Connect North Zone Tank and Pump Station
    - Connecting North Zone Pump Station and Tank to the system would provide additional storage, however, demands in North Zone are lower than demands in the West Zone and South Zone, so adding storage here does not provide much hydraulic benefit, and would increase O&M costs. Estimated costs to rehabilitate North Zone Tank and Pump Station are presented in **Table ES- 10** for informational purposes**.**
- Rehabilitate PG CCBs
    - Similar to the Dry Creek CCBs, Pleasant Grove WWTP has CCBs that could be rehabilitated and converted to recycled water storage. It is estimated that conversion of the PG CCBs would result in an additional 2 MG of storage. Hydraulically, storage at this location would be beneficial for system performance, however, costs to rehabilitate the PG CCBs will likely be more expensive than recommissioning North Zone Tank, the PG CCBs are currently uncovered. Costs for this alternative were not developed for this study but should be in subsequent studies if additional storage is required.
- Additional Tank at WRPS
    - The City has previously considered adding a recycled water storage tank at WRPS. Storage at this location would benefit system performance and operation as demands increase as WRPS provides a majority of the West Zone with recycled water. However, costs for an additional tank may be significant. The minimum size of this tank would be 0.2 MG to meet storage requirements, however, the City could consider upsizing this to 1.0 MG so potential future customers not considered as part of this report could be serviced. The cost for a 1.0 MG storage tank is presented in **Table ES- 10**.
- Operate system with less buffer storage
    - Another alternative is to operate the system with less buffer storage than 25% of max day demand for customers without storage. With the DC CCBs converted to recycled water storage, total buffer storage will be approximately 23% of the abovementioned max day demands. While it does not meet the criteria previously presented, the City may find this buffer storage is sufficient for their needs. No project is required for this alternative.

TABLE ES- 10: STORAGE IMPROVEMENTS SUMMARY

Project ID	Project	Estimated Raw Construction Cost[a]	Estimated Capital Cost[b]
S-1	Rehabilitate DC WWTP CCB to utilize as 1.1 MG of RW storage	$925,000	$1,443,000
Alternative S-2A	Rehabilitate NZ Tanks and Pump Station	$610,000	$950,000
Alternative S-2B	Additional 1.0 MG Storage Tank at WRPS	$3,335,00	$5,203,000

Footnotes:

a. Costs basis is March 2025 average of ENR 20 Cities and San Francisco CCI (14,511)

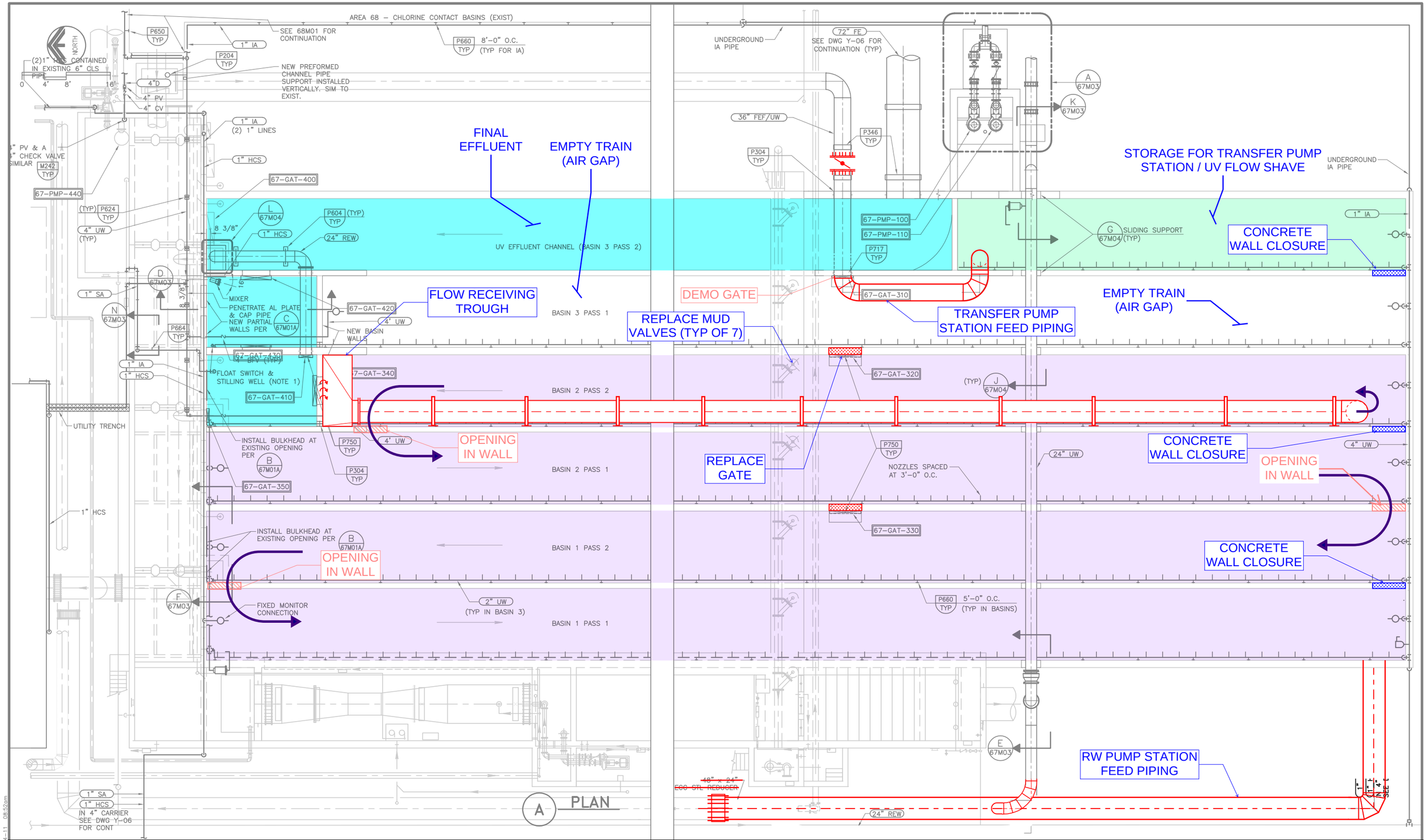


FIGURE ES-7
DCWWTP RECLAIMED WATER STORAGE IMPROVEMENTS CONCEPT FIGURE
RECLAIMED WATER SYSTEM EVALUATION
SCALE: 1/16" = 1'-0"

ES-5.4 Phasing Summary

Many of the projects identified in **Section ES-5** can be phased in as recycled water demand increases. **Table ES-11** below summarizes the potential phases.

TABLE ES- 11: PHASING SUMMARY

Development Phase	Incremental MDD (mgd)	Project Required	Estimated Capital Cost
Existing	8.34	--	--
2025-2030	5.4	PP-2	$980,000
		PS-1	$3,145,000
		S-1	$1,443,000
		PP-1	$451,000
2030-2035	4.18	PP-3	$2,184,000
Total	***17.92***		***$8,203,000***

ES-5.5 Additional Recommendations

The proposed phasing plan and cost estimate identified in this report for the West Roseville Pump Station was prepared at a feasibility study level and are not suitable for more detailed planning. As noted, it may be feasible to replace existing pumps with larger pumps without other significant improvements to the station. If more substantial improvements are required, additional facility planning is recommended to investigate the potential site in more detail, particularly as more information is available on potential future demands. The facility plan would provide a better estimate of the future costs of the pump station, and give more certainty about the future layout and facilities that will need to be constructed as the developers are connected.

This Systems Evaluation anticipates that as recycled water demands grow, operation of the facilities will become more challenging. The City should develop a System Operation Plan to provide an operational approach for challenging conditions.

Several of the UGAs (Regional University, Placer One, and Placer Vineyards), are anticipated to have storage tanks that the City's system will discharge into. The City should work with the UGA operators to maintain control of storage tank fill rates and times, and ensure that recycled water supply agreements with the UGAs provide for City to have the control needed to implement the System Operation Plan.

It is recommended this Systems Evaluation be updated every five to ten years or as significant changes in potential demands are identified to ensure that the Systems Evaluation remains current. This will also provide an opportunity to review observed peaking factors and diurnal patterns, and update the model to enable the model to continue answering operational questions.

1. INTRODUCTION

The City of Roseville has been irrigating landscaped areas throughout the City and planning recycled water implementation as part of new development surrounding the City. This Recycled Water Systems Evaluation has been prepared to position the City for implementing the next phases of recycled water projects as new users within the City come online, and as the various UGAs plan for and install recycled water infrastructure. The overall implementation plan contemplates reliability improvements, pump station improvements and more improvements including storage facilities.

This chapter includes background on the City of Roseville (City) and the Recycled Water Systems Evaluation (Systems Evaluation), documentation of goals, discussion of Systems Evaluation objectives and approach, and a summary of the report organization.

1.1 Background

The City of Roseville is located 20 miles northeast of Sacramento, in the southwestern portion of Placer County. The City is bordered by Rocklin to the northeast, Citrus Heights to the south and unincorporated Placer County to the west. The City operates a recycled water distribution system supplied by two wastewater treatment plants (WWTPs), as shown in **Figure 1-1**. Future development is anticipated in several Urban Growth Areas (UGAs), which will significantly increase the demand for recycled water; these UGAs are also identified in **Figure 1-1**.

An evaluation of the recycled water system was previously completed in 2016[1] (2016 Systems Evaluation). The 2016 Systems Evaluation generally identified that capacity improvements are not needed to serve the current customers, but significant storage and pumping capacity improvements to the West Roseville Pump Station (WRPS) would be needed to serve the future UGA connections. The 2016 Systems Evaluation also identified other (smaller) reliability and capacity improvement projects in other parts of the system.

Since the 2016 Systems Evaluation, new recycled water infrastructure has been installed in the vicinity of WRPS and the City has added new customers including Sierra Vista, Westbrook, and Creekview UGAs. The model was recently updated and re-calibrated to reflect those changes, as documented in the 2020 Model Development Report[2]; the recalibration also included development of demand patterns to allow for extended-period simulations, which can be used to evaluate the system's use of storage. Additionally, development plans for Placer One, a proposed UGA that was not considered in the 2016 Systems Evaluation, have progressed and incorporated a recycled water component. Further, several of the UGAs are nearing development. For all of these reasons, a more detailed review of potential storage requirements was needed to reasonably project future funding needs.

1.2 Project Goals and Approach

The objectives of this report include documenting an updated assessment of the system's supplies and demands to determine recycled water infrastructure needed to supply potential future customers and UGAs. Additionally, this report details an implementation plan. The document includes recommended improvements for the City's existing system to address anticipated future demands and identifies the location of connections for those future demands. Sizing and alignments of future piping to serve these new demands is not evaluated in this report and is left flexible to accommodate evolving development plans for future service areas.

[1] RMC, City of Roseville Recycled Water Systems Evaluation Final Report, July 2016

[2] Brown & Caldwell, 2020 Recycled Water System Model Development Report, August 2020

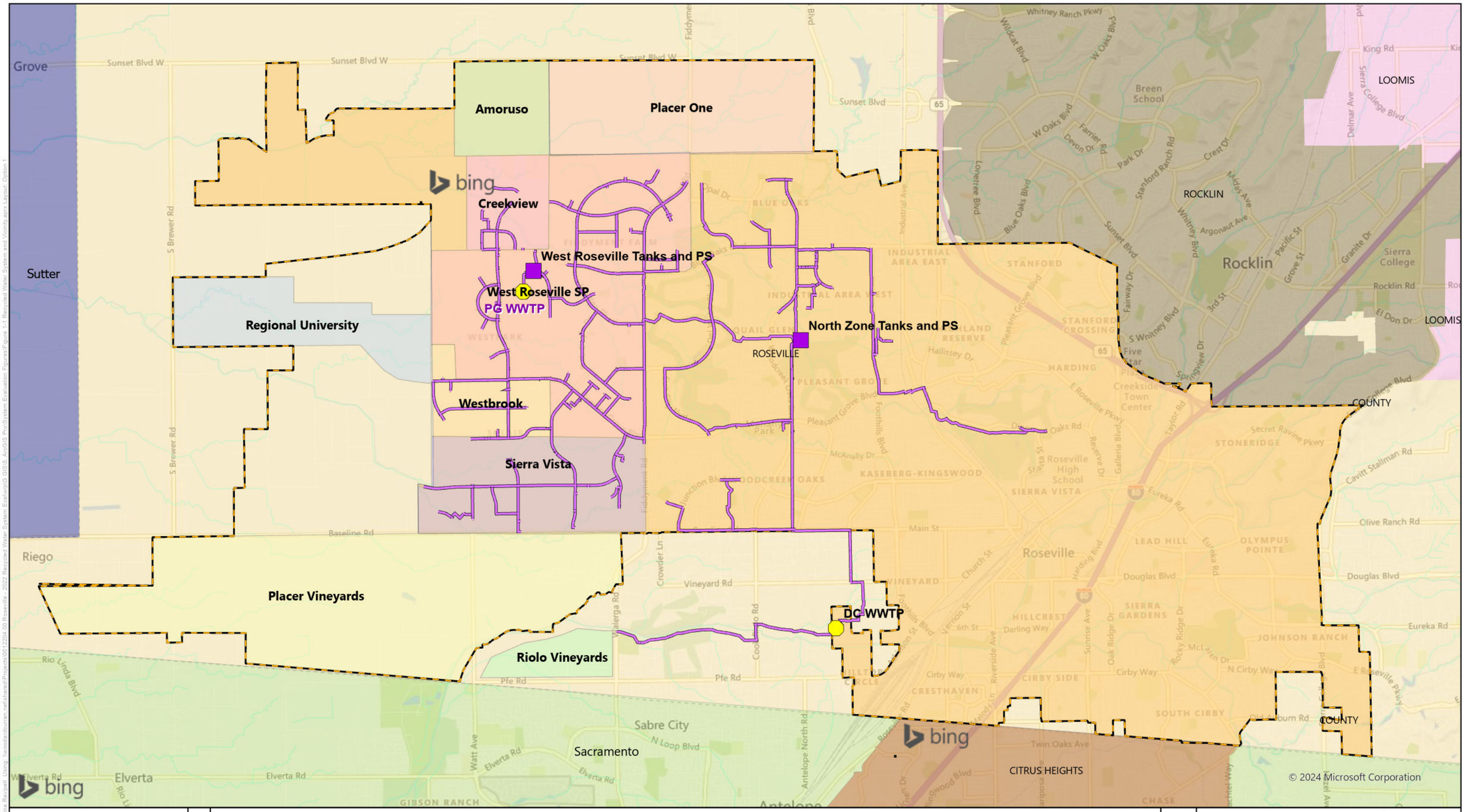


Figure 1-1
Recycled Water System and Vicinity
Roseville Recycled Water Systems Evaluation

Legend

- Existing Recycled Water Pipeline
- Study Area
- City of Rosevillle Limits
- Pump Station
- WWTP

0 0.25 0.5 1 Miles

N

CITY OF ROSEVILLE CALIFORNIA

Woodard & Curran

Project #: 0012204.00
Map Created: July 2024

2. RECYCLED WATER SUPPLIES

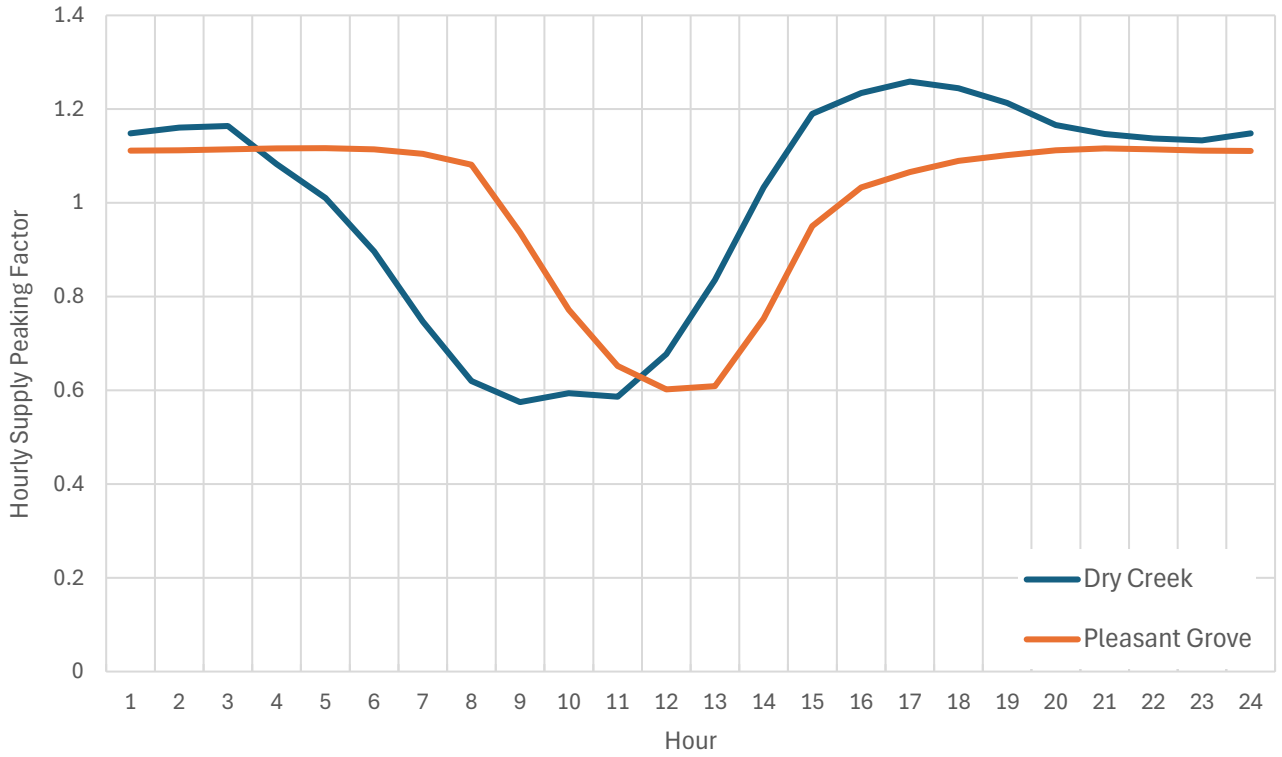
The City's recycled water system is supplied by both the Dry Creek Wastewater Treatment Plant (DCWWTP) and the Pleasant Grove Wastewater Treatment Plant (PGWWTP). Previously, for modeling purposes, the treatment plants had been assumed to have an infinite supply of recycled water available to meet the recycled water demand. To better assess the impact of supply limitations on storage, existing and future supply has been estimated and applied to the model.

2.1 Existing Supply

Effluent flow data for the Dry Creek WWTP from 2020 through 2022 was assessed as part of the DCWWTP Capacity Capital Analysis Draft TM[1] to estimate an Average Dry Weather Flow (ADWF) of 8.60 mgd. As part of a similar study currently in progress, 2023 effluent flow data for the Pleasant Grove WWTP was assessed to estimate an ADWF of 8.49 mgd.

24-hour diurnal patterns for influent and effluent flow were developed and compared based on the provided SCADA data. A four-hour lag was noted between influent and effluent peaking factors. The hourly influent data was lagged by four hours and used to represent the diurnal pattern for available supply from each treatment plant. Resulting peaking factors are provided in **Figure 2-1.**

FIGURE 2-1: PGWWTP AND DCWWTP SUPPLY PATTERNS



[1] Woodard & Curran, Dry Creek Wastewater Treatment Plant Capacity Capital Analysis Draft Technical Memorandum, July 2023.

2.2 Projected Supplies

Future plant sewage flows were projected to the planning horizon of fiscal year 2059-2060 (FY 59/60)[1] and to ultimate buildout conditions, calculated by multiplying Equivalent Dwelling Unit (EDU) projections by the flow contribution per EDU. EDU projections were prepared by the South Placer Wastewater Authority (SPWA) partners and provided to W&C as part of this study in May 2025; the projections generally assume linear growth. Current flow factors are approximately 144 gpd/EDU for PGWWTP and 150 gpd/EDU for DCWWTP. Projected flow factors are at 150 gpd/EDU. Potential future flows are presented in **Table 2-1.** For this analysis, it has been assumed that all influent sewer flows would be available for use as recycled water.

It should be noted that in addition to uncertainties regarding the per EDU flow factor, there is also significant uncertainty regarding the number and timing of future EDUs. As discussed further in **Section 3**, careful monitoring of the City's available recycled water supplies is recommended as additional customers are considered.

TABLE 2-1: EXISTING AND PROJECTED WWTP RECYCLED WATER SUPPLY

	Existing Supply (mgd)	2060 Projected EDU Growth (EDUs)	2060 Projected Supply @ current gpd/EDU (mgd)	2060 Projected Supply @ 190 gpd/EDU (mgd)
PGWWTP	8.49	35,092	13.5	15.2
DCWWTP	8.60	27,942	12.8	13.9
Total	**17.09**	**63,035**	**26.3**	**29.1**

[1]SPWA's fiscal year runs from July 1 to June 30.

3. RECYCLED WATER DEMANDS

This section examines the existing recycled water system customers and associated demands and identifies potential future demands from expected customers within the City and from Urban Growth Areas (UGAs).

The approach to perform this market assessment was to use a combination of customer meter data and planning documents and staff estimates for existing and potential future customer demands respectively. Recycled water production data was used to verify peaking previously developed in the 2016 Recycled Water System Evaluation Report. Potential future recycled water demand was compared with projections of future wastewater flows to identify potential recycled water supply issues.

3.1 Peaking Factors

Previous iterations of the recycled water systems evaluation (including the 2016 Systems Evaluation, as well as the 2009 Systems Evaluation[1]), used a peak month/average day peaking factor of 2.5. To confirm that this peaking factor would be applicable for this assessment, recycled water production data from January 2017 to November 2022 was analyzed to determine typical peaking factors within the existing system.

Average daily recycled water production was compared across months to demonstrate seasonal trends in irrigation use. **Table 3-1** and **Figure 3-1** show the variation in average daily recycled water production with a peak in July corresponding to a peaking factor (average daily production in a given month / average daily production across the analysis period) of 2.23. **Table 3-2** summarizes the calculated peaking factors for each year from 2017 through 2022.

TABLE 3-1: MONTHLY PRODUCTION ANALYSIS

Month	Average Day Production (MGD)	Peaking Factor Average Daily for Month / Average Daily for Year
Jan	0.33	0.11
Feb	0.70	0.24
March	0.79	0.27
April	1.83	0.62
May	4.23	1.44
June	5.67	1.93
July	***6.56***	***2.23***
Aug	5.89	2.00
Sept	4.33	1.47
Oct	2.88	0.98
Nov	1.05	0.36
Dec	0.43	0.15
Annual Average	**2.94**	**1.0**

[1] RMC Water & Environment, South Placer Regional Wastewater and Recycled Water Systems Evaluation, December 2009

FIGURE 3-1: AVERAGE DAILY PRODUCTION FOR EACH MONTH (2017-2022)

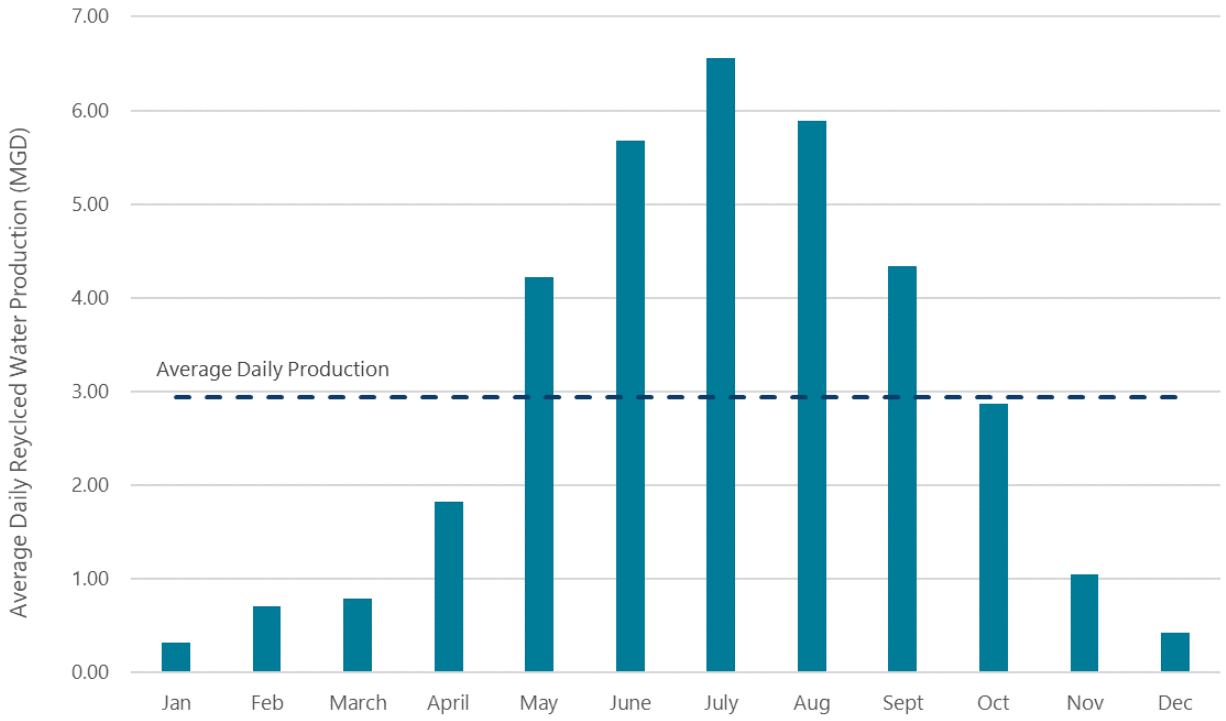


TABLE 3-2: RECYCLED WATER PEAKING FACTORS

Year	Recycled Water Production[1]			Peaking Factors Peak Value/Annual Average	
	Average Day (MGD)	Max Month (MGD)	Max Day (MGD)	Max Month	Max Day
2017	2.28	5.76	7.11	2.53	3.12
2018	2.61	6.18	7.80	2.37	2.99
2019	2.45	5.47	7.14	2.23	2.91
2020	3.07	6.78	7.99	2.21	2.60
2021	3.33	7.40	8.29	2.23	2.49
2022	3.63	7.10	8.67	1.96	2.38
Average	**2.89**	**6.45**	**7.83**	**2.25**	**2.75**

Footnotes:

1. Recycled Water Production Data is based on flows from West Roseville Pump Station and the Dry Creek Gravity and Pump Station pipelines.

As indicated in Table 3-2, the Maximum Day/Annual Average peaking factor is generally slightly above 2.5, while Maximum Month/Annual Average is slightly below 2.5. This suggests that within the peak month there was a

shorter duration period of higher demands, which may coincide with a heat wave, or atypical irrigation patterns. The current recycled water system has sufficient capacity to handle these short durations of higher demands. In the future, as recycled water demands approach system design limits, irrigation during peak demand periods may need to be more tightly managed to meet all demands. As the duration of the higher demands was generally short, it has been assumed that irrigation during these high demand periods can be managed to limit taxing the system significantly beyond typical peak month demands. Therefore, the peak day peaking factor of 2.5 used in previous system planning has been carried forward for the current analysis of buildout system needs.

For modeling purposes, existing maximum day demands were scaled to match the maximum day demand observed on June 24, 2022, of 8.7 mgd, as discussed further in Section 3.3 of this report. As future customers are added, peaking factors should continue to be monitored. Potential mitigations to address supply shortfalls are discussed in Section 3.5.1.

3.2 Diurnal Patterns

Peaking factors for hourly demand patterns were previously developed as part of the 2020 Model Development Report for use in extended period simulations (EPS). Total demands under each pattern were summed, the pattern was applied, and hourly demand values were plotted on **Figure 3-2**, along with the supply patterns discussed in Chapter 2. The demands follow a typical irrigation demand pattern with peak flows occurring overnight and in the morning.

As indicated in **Figure 3-2**, peak recycled water demands occur overnight while peak recycled water supply occurs in the afternoon and stays fairly constant throughout the evening. Low demands occur in the middle of the afternoon while low supply occurs in the middle of the morning. One way to increase the capacity of the recycled water system in the future would be to modify the hourly demand patterns for customers with storage ponds (i.e., golf courses). Aligning the system supply pattern for customers with storage with the system-wide demand pattern would optimize the operation of the system. This modification is included in this evaluation and discussed in Section 4.2.1.2. The proposed modified patterns are shown in **Table 3-3** and the resultant hourly demands compared to supply is shown in **Figure 3-3**. The additional capacity provided by this pattern modification was determined as part of the analysis discussed in Section 4 of this report. Modification of customer demand schedules to off-peak hours would help accommodate additional system demands on the recycled water system.

For future UGA customers with storage (Placer Vineyards, Riolo Vinyards, Placer One, and Regional University), it was assumed that the City could supply recycled water when convenient for the City system to reduce peak demands. For this study this was assumed to be a constant supply over the entire day (peak hour factor equal to 1.0), except for supply to Placer One which was assumed to have a fill time during the middle of the day.

FIGURE 3-2: EXISTING DEMAND AND SUPPLY PATTERNS

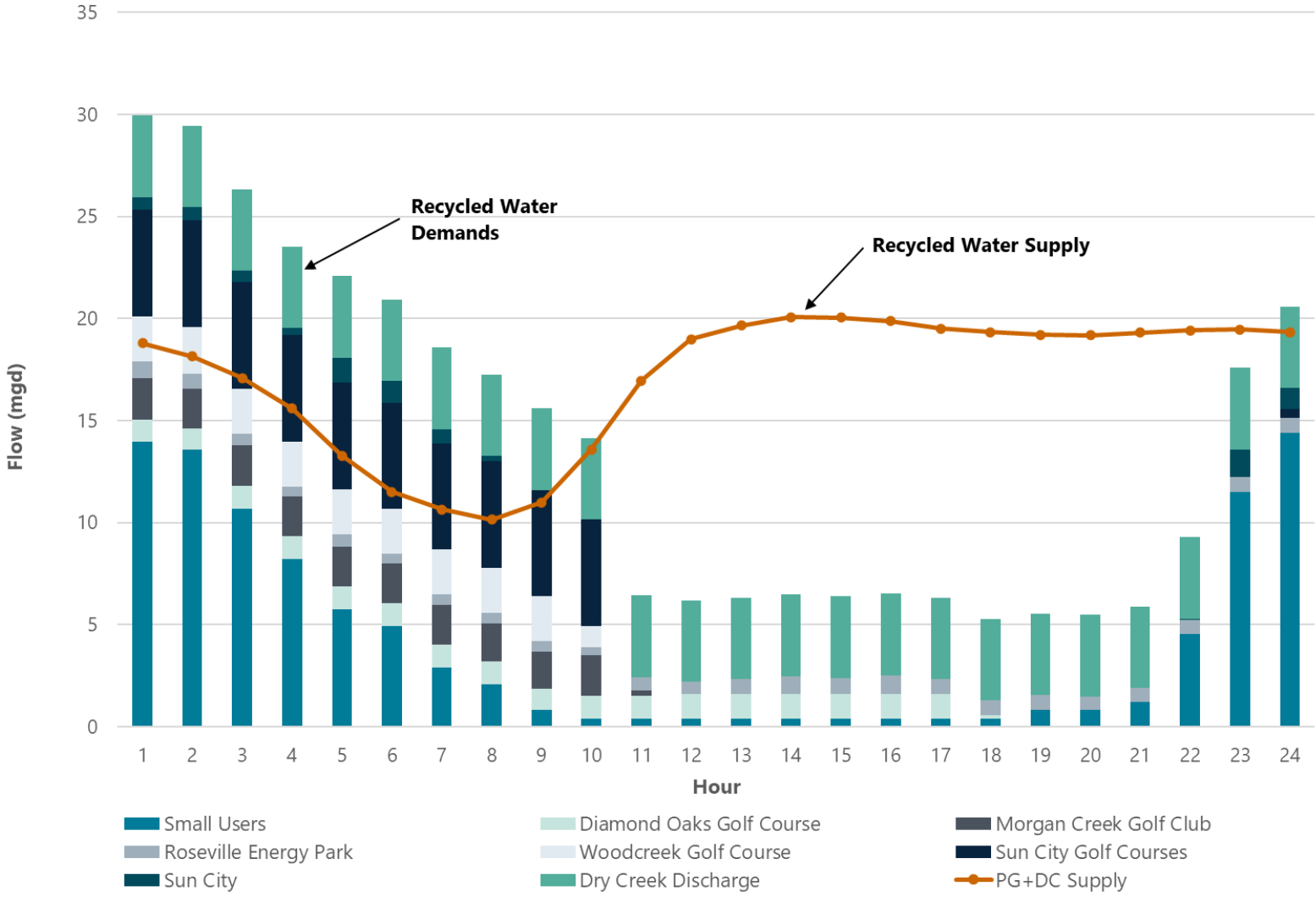
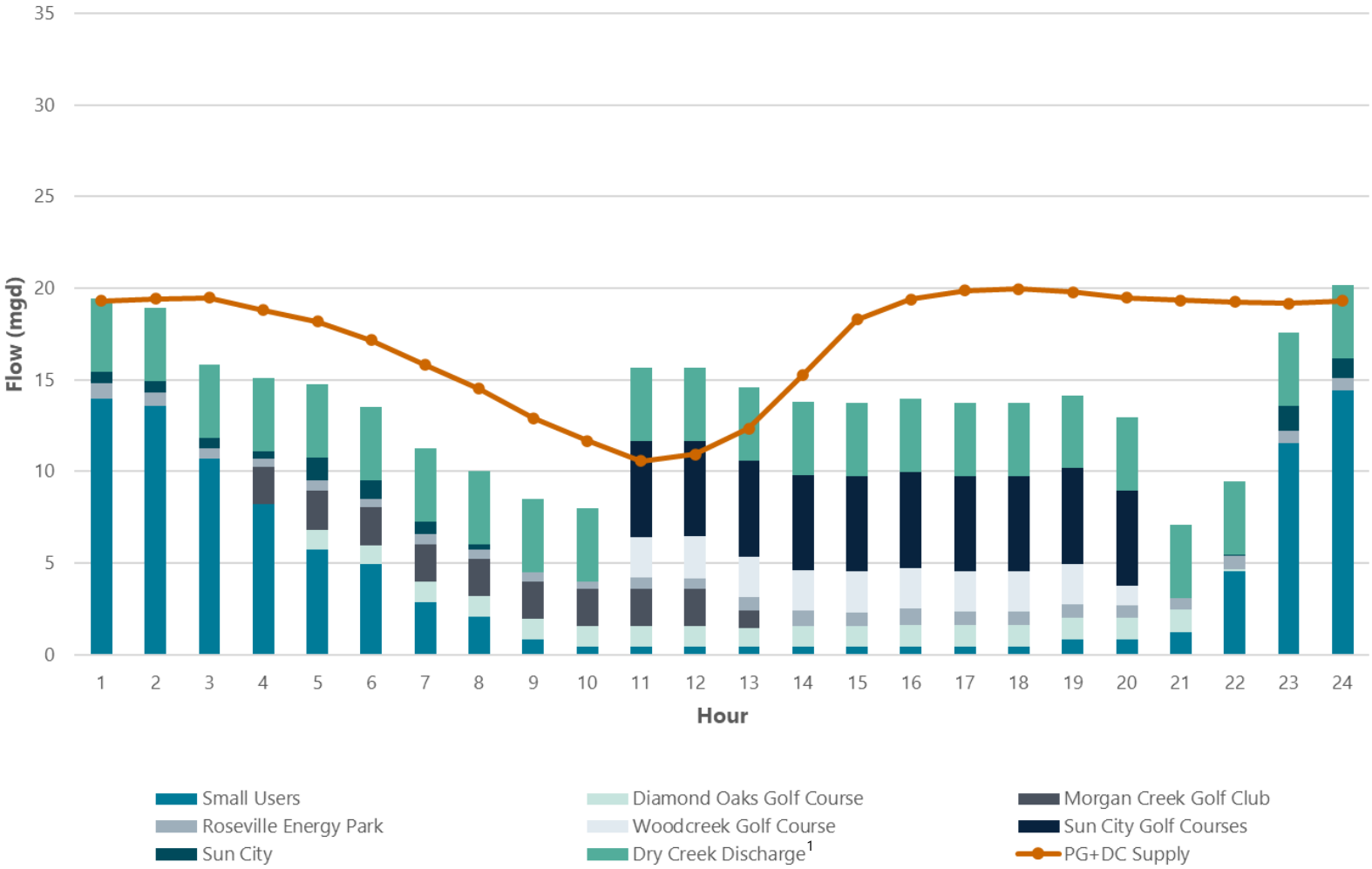


FIGURE 3-3: PROPOSED MODIFICAITONS TO EXISTING DEMAND AND SUPPLY PATTERNS



[1] The diurnal pattern for discharge to Dry Creek is assumed to be constant at 4 mgd over 24 hours, however the pattern can be modified to better match the supply and demand patterns as long as 4 MG is discharged per day.

TABLE 3-3: DIURNAL DEMAND PATTERNS FOR EXISTING CUSTOMERS

Hour	Hourly Demand Pattern Peaking Factors [a]										
	Roseville Energy Park	Sun City Irrigation	(E) Diamond Oaks GC	(P) Diamond Oaks GC	(E) Morgan Creek GC	(P) Morgan Creek GC	(E) Timber Creek GC	(P) Timber Creek GC	(E) Woodcreek GC	(P) Woodcreek GC	Small Users
0	1.3	1.9	1.3	0	2.5	0	2.4	0	2.5	0	3.4
1	1.1	2	1.3	0	2.4	0	2.4	0	2.6	0	3.3
2	0.9	1.7	1.4	0	2.4	0	2.4	0	2.5	0	2.6
3	0.7	1.1	1.4	0	2.4	2.5	2.4	0	2.5	0	2
4	0.9	3.8	1.4	1.3	2.4	2.6	2.4	0	2.5	0	1.4
5	0.7	3.2	1.4	1.3	2.4	2.5	2.4	0	2.5	0	1.2
6	0.8	2.1	1.4	1.4	2.4	2.5	2.4	0	2.5	0	0.7
7	0.8	0.8	1.4	1.4	2.3	2.5	2.4	0	2.5	0	0.5
8	0.8	0	1.3	1.4	2.2	2.5	2.4	0	2.5	0	0.2
9	0.6	0	1.4	1.4	2.4	2.5	2.4	0	1.2	0	0.1
10	1	0	1.4	1.4	0.3	2.5	0	2.4	0	2.5	0.1
11	0.9	0	1.5	1.4	0	2.5	0	2.4	0	2.6	0.1
12	1.1	0	1.5	1.3	0	1.2	0	2.4	0	2.5	0.1
13	1.3	0	1.5	1.4	0	0	0	2.4	0	2.5	0.1
14	1.2	0	1.5	1.4	0	0	0	2.4	0	2.5	0.1
15	1.4	0	1.5	1.5	0	0	0	2.4	0	2.5	0.1
16	1.1	0	1.5	1.5	0	0	0	2.4	0	2.5	0.1
17	1.1	0	0.2	1.5	0	0	0	2.4	0	2.5	0.1
18	1.1	0	0	1.5	0	0	0	2.4	0	2.5	0.2
19	1	0	0	1.5	0	0	0	2.4	0	1.2	0.2
20	1	0	0	1.5	0	0	0	0	0	0	0.3
21	1.1	0.1	0	0.2	0	0	0	0	0	0	1.1
22	1.1	4.1	0	0	0	0	0	0	0	0	2.8
23	1.1	3.2	0	0	0	0	0.2	0	0	0	3.5

Footnotes:

a) "(E)" indicates current demand pattern derived in the 2020 Model Development Report. "(P)" indicates a proposed pattern with a shift in hourly demands to align system demand patterns with system supply patterns.

3.3 Existing Customer Demand

Existing recycled water customers were identified through review of prior studies, discussions with City staff, and the City's billing records. Billing data from 2017 to 2022 was collected and analyzed to determine average annual demands for each customer. This data was used to add new customers whose service began after August 2019 (customers added before August 2019 were already included in the model as part the 2020 Model Report model update). Including these additional customers, annual average demands were estimated to be approximately 3.5 mgd.

As indicated in **Table 3-2**, the highest peak day demand observed was 8.7 mgd, which occurred on June 24, 2022. Modeled demands were scaled such that the total max day modeled demands matched the observed peak day demand of 8.7 mgd.

A summary of the largest demand customers is included in **Table 3-4**. Locations of the existing customers are shown in **Figure 3-4**. In addition to the customers shown in **Figure 3-4**, DC WWTP is required to discharge a minimum of 4 mgd to Dry Creek to maintain a year round flow in the creek per California Department of Fish and Wildlife (CDFW) requirements. Note that there is no specific minimum instantaneous flow requirement for this flow into Dry Creek, just a minimum requirement of 4 million gallons over the course of the day.

TABLE 3-4: SUMMARY OF EXISTING CUSTOMERS

Customer Name	Customer Type	On-Site Storage (Yes/No)	Zone	Annual Average Demand[a] (AFY)	Average Day Demand (MGD)	Peak Day Demand[b] (MGD)
Sun City Golf Courses	Golf Course	Yes	Main	851	0.76	1.9
Morgan Creek Golf Course	Golf Course	Yes	South	320	0.29	0.71
Roseville Energy Park	Other	No	Main	293	0.26	0.65
Woodcreek Oaks Golf Course	Golf Course	Yes	Main	345	0.31	0.77
Diamond Oaks Golf Course	Golf Course	Yes	North	315	0.28	0.70
Sun City Irrigation	Irrigation	No	Main	129	0.11	0.29
West Park High School	Irrigation	No	Main	79	0.07	0.18
Other Customers within WRSP Area			Main	836	0.75	1.87
Other Customers within Creekview Area			Main	33	0.03	0.07
All Other City Customers				534	0.48	1.2
Total				**3735**	**3.34**	**8.34**

Footnotes:

a. Based on average billing data from January 2018 to October 2022

b. Based on peaking factor of 2.5 multiplied by ADD.

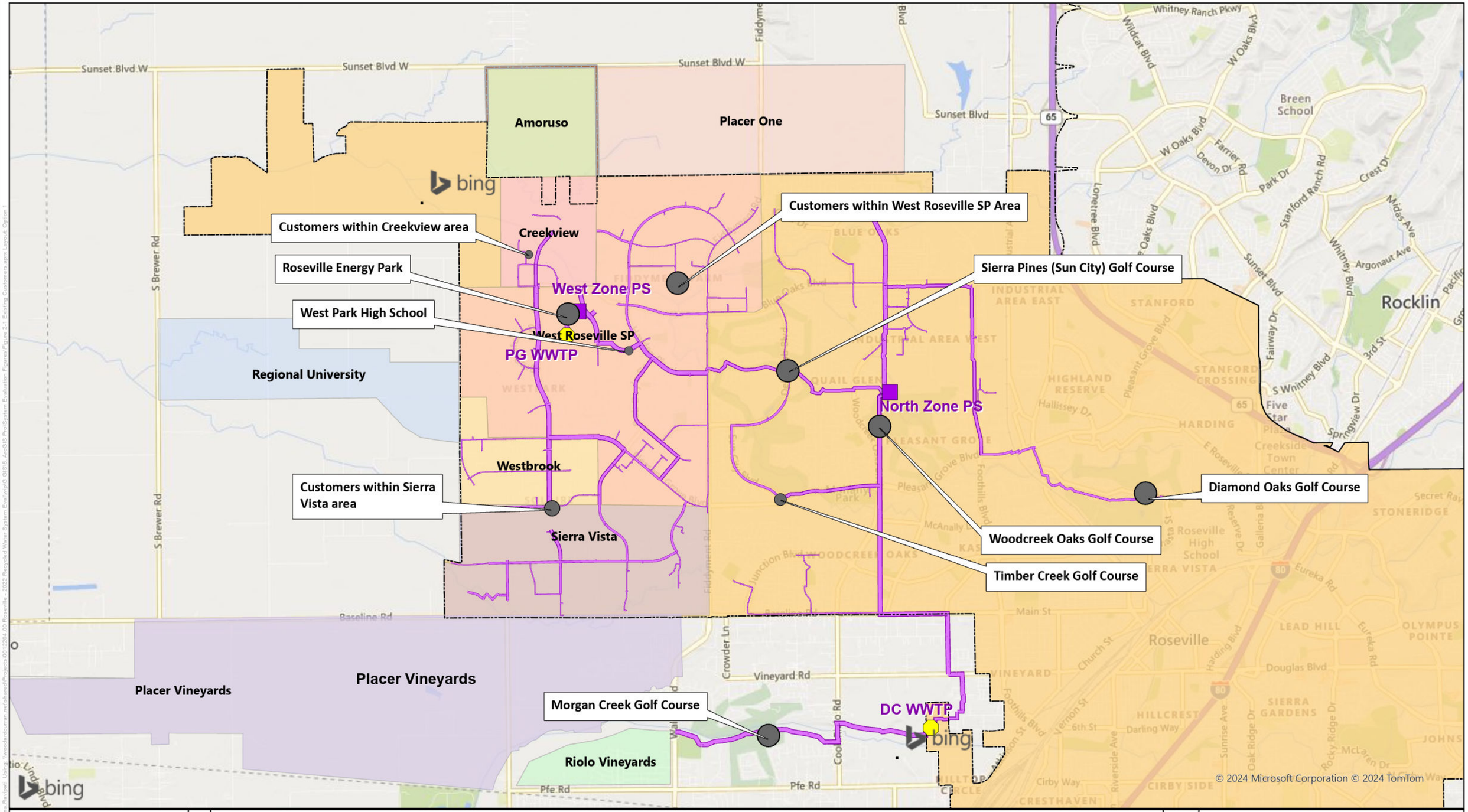


Figure 3-4
Existing Recycled Water Customers
Roseville Recycled Water Systems Evaluation

Legend

- Pump Station
- WWTP
- City Limits
- Potential City limits
- Existing RW Pipeline: < 10 in; 10 - 14 in; 16 - 20 in; > 20 in
- Demand (AFY): 1 - 100; 101 - 250; 251 - 350; 351 - 1000
- City of Roseville Limits

N

0 0.2 0.4 0.8 Miles

CITY OF ROSEVILLE CALIFORNIA

Woodard & Curran

Project #: 0012204.00
Map Created: July 2024

3.4 Potential Future Customer Demand

Potential future customers include near-term potential recycled water customers identified by the City and Urban Growth Areas (UGAs). Potential future customer locations are shown in **Appendix A** and were identified based on review of existing recycled water study reports, discussions with City staff, and review of development master plans. Peaking factors used for existing customers were also used to calculate peak day demand for potential future customers.

3.4.1 Near-Term Potential Customers

Near-term potential customers were identified through a review of prior studies and estimated demands for potential customers were updated where service had begun since the last update to the future customer dataset. The largest near-term potential customers (not including UGAs, discussed in Section 3.4.2) include the Hewlett Packard Enterprise campus and the Campus Oaks Apartments.

For the purposes of the supply and demand evaluation, it has been assumed that connection of new customers would begin in 2024 with growing participation occurring over the following four years. Once all customers are on-line, the annual demand for near-term potential customers is projected to be 2,360 AFY, with a peak day demand of 5.27 mgd. Potential near-term customers are identified in **Appendix A**.

3.4.2 UGA Demand

The City of Roseville is anticipating the eventual connection of eight UGAs. Four of these UGAs (Sierra Vista/Westbrook, Creekview, Amoruso Ranch and the West Roseville Specific Plan) are within current City limits and are partially developed. Regional University, Placer Vineyards, Riolo Vineyards, and Placer One/Sunset Industrial Area are outside of the City limits with currently no plans for annexation. Curry Creek is not included in this analysis because the City has not agreed to provide recycled water to the UGA, and due to supply limitations, as discussed in **Section 3.5**, supply may not be available.

Note that the Creekview and the West Roseville Specific Plan area UGAs (discussed further below) have already been partially developed; recycled water use is therefore listed as both an existing and potential future customer. Total existing and anticipated buildout demands for these areas are shown in **Table 3-5**.

Recycled water service to UGAs is limited by supply; customers within the City limits will have priority and potential customers outside the City will have agreements signed that allow service on a first-come, first-served basis. Regional University, Placer Vineyards, Riolo Vineyards, and Placer One / Sunset Industrial Area would be served as wholesale customers with recycled water delivered to an on-site storage tank and distributed within the UGA by another retailer. Other UGAs (Sierra Vista, Creekview and Amoruso) would have storage located at the West Roseville pump station site.

Estimated demands for the UGAs are shown in **Table 3-5**. Demands were derived from previous studies and a review of planning documents. The assumed connection date indicated in **Table 3-5** is the initial connection; it was assumed for this analysis that the entire demand will not be realized until eight years after the initial connection date. For UGAs with existing demands, it was assumed the initial connection date occurred in 2020 and that the entire demand would be realized in 2028. The peaking factor described in **Section 3.1** was used to estimate potential max day demands. The supply window for Regional University, Placer Vineyards, and Riolo Vineyards was assumed to be constant between the hours of 3am and 10pm;

the supply window for Placer One was assumed to be between 7am and 9pm. For other UGAs the "Small Users Pattern" from **Table 3-3** was used.

TABLE 3-5: URBAN GROWTH AREA POTENTIAL DEMANDS

UGA	Potential Service Zone	Within City Limits	Existing Average Day Demand (mgd)	Buildout Average Day Demand (mgd)	Buildout Peak Day Demand (gpm)	Assumed Initial Connection Date[a]
Sierra Vista / Westbrook[b]	West	Yes	0	0.62	1,078	2025
Amoruso Ranch[c]	West	Yes	0	0.22	389	2025
Creekview[d]	West	Yes	0.03	0.10	174	2020
West Roseville Specific Plan[e]	West	Yes	0.75	2.02	3,507	2020
Regional University[f]	West	No	0	0.47	812	2030
Placer One / Sunset Industrial Area[g]	North	No	0	0.38	660	2025
Placer Vineyards[f]	Gravity	No	0	1.13	1,966	2030
Riolo Vineyards[f]	Gravity	No	0	0.07	127	2030

Footnotes:

a. For purposes of phasing, it was assumed that implementation of full demand would occur over 8 years from the initial connection date. Developments with existing demands were assumed to have been connected to the system by 2020. Note that the initial connection date may not represent the beginning of UGA development.
b. Sierra Vista Specific Plan, Amended April 2016
c. Draft Addendum to the Amoruso Ranch Specific Plan Area Recycled Water Master Plan, June 2024
d. Creekview Specific Plan, March 2022
e. Recycled Water Study for West Roseville Specific Plan Area, May 2003
f. Based on estimates provided by City staff, 2025
g. Placer One Recycled Water Master Plan, November 2024

3.5 Supply versus Demand Comparison

Recycled water supply is provided from two WWTPs owned and operated by the City of Roseville, on behalf of the SPWA: Dry Creek WWTP and Pleasant Grove WWTP. These two WWTPs collect and treat all wastewater generated within the SPWA service area. The recycled water distribution system has interconnection points that allow significant flexibility for deliveries. In particular, there are existing interconnections to allow either treatment plant to serve the North Zone system and the Sun City Golf Course. Because of this flexibility, a supply and demand comparison was performed over the entire system, rather than on the individual WWTPs. Estimated growth in average dry weather flow generated from the entire SPWA sewer service area through 2060 was referenced from the 2020 SPWA Systems Evaluation Report[1].

[1] South Placer Regional Wastewater 2020 Systems Evaluation Report.

3.5.1 Supply versus Maximum Day Demand Comparison

Figure 3-5 shows the current projections of annual recycled water demand and supply available during maximum day conditions. As shown in the figure, there appears to be sufficient supply to meet anticipated demands. It should be noted, however, that there is significant uncertainty in the timing of growth of both future demands and future supplies. There is also significant uncertainty in the projected demands, as demands for several of the UGAs was based on estimates from several years ago (as indicated in **Table 3-5**) and likely do not reflect current irrigation practices. If demand begins to increase faster than supply, the City can address a potential shortfall in supply with the following methods:

- Encourage water-efficient landscaping.
- Encourage reduction in peak usage for future recycled water customers.
- Consider limiting recycled water demands to customers on the hottest days of the year (i.e., capping demands).
- Work with customers with storage to determine if demands could be spread across days to reduce a single-day peak demand.
- Continue monitoring summer peak demands and creek discharges as demands are added to identify potential supply limitations.
- Prepare to have supplemental potable water supplies available in the event of a shortfall or source other local raw wastewater supplies to increase available recycled water supply during summer months.

3.5.2 Peak Hourly Demand Versus Supply Comparison

Although supplies are anticipated to continue increasing beyond 2060, the projected 2060 has been used for modeling purposes to estimate the potential storage requirements. **Figure 3-6** shows anticipated max day buildout demand conditions compared to 2060 supply. While hourly projected supplies are greater than hourly buildout demands, there may still be a need for operational storage (aka daily storage) to shift the available supply of recycled water to the higher evening demand periods when supplies are limited. The City can undertake efforts to manage peak usage and reduce overnight demands, especially with customers that have storage facilities who may be more adept to distribute demands across a day to limit peak hourly usage as much as possible. Note that **Figure 3-6** was developed using proposed peaking factors as presented in **Table 3-3**.

FIGURE 3-5: PROJECTED BUILDOUT MAX DAY SUPPLY AND DEMAND COMPARISON

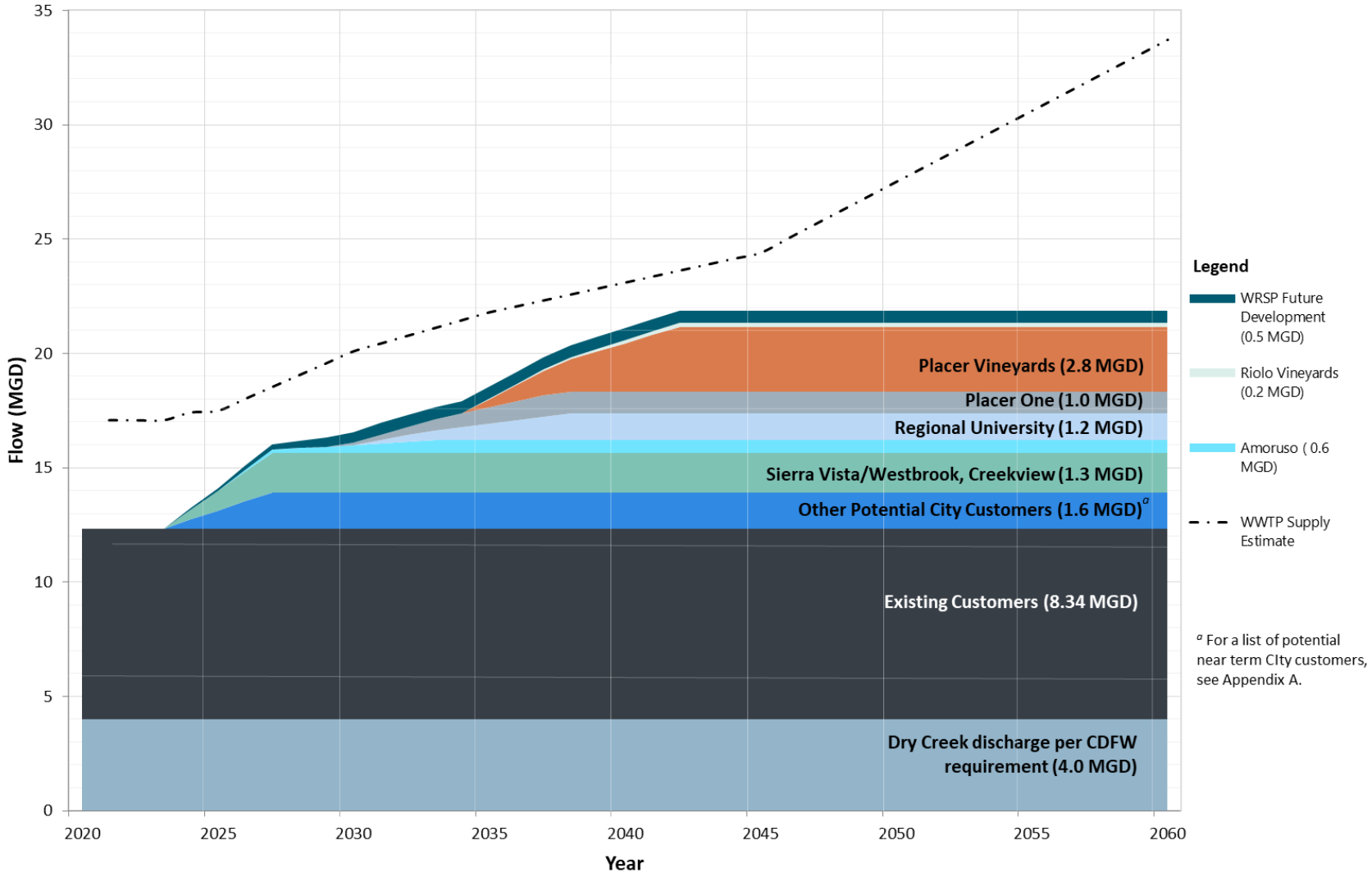
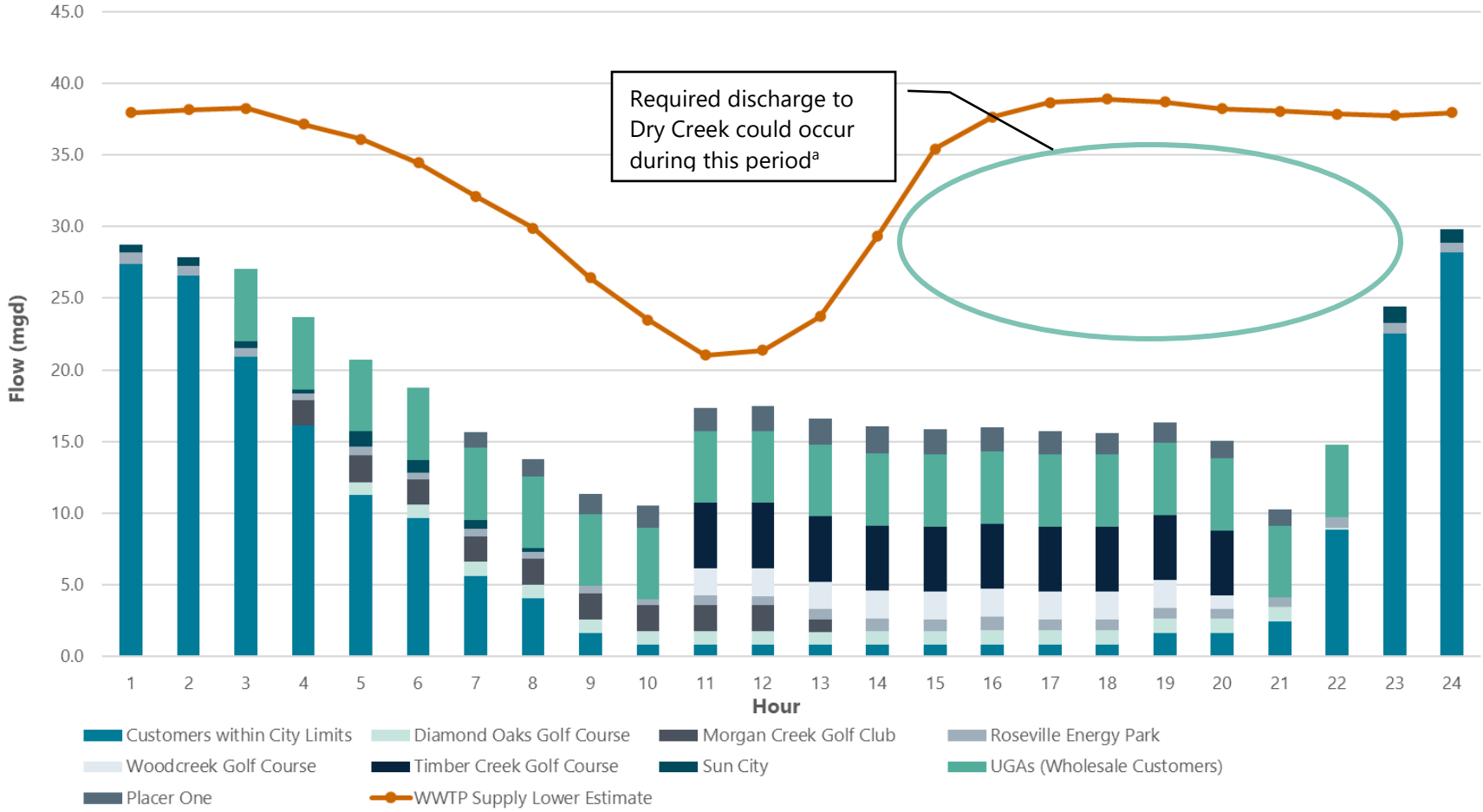


FIGURE 3-6: HOURLY COMPARISION OF SUPPLY AND DEMANDS BUILDOUT MAX DAY CONDITIONS



Footnote:

a) Discharge to Dry Creek, as required by CDFW, is not included on this plot as City operations staff can elect to discharge the required 4 mgd when it best suits system performance. In the case of the proposed patterns being implemented, this could be between 1pm and 11pm.

4. SYSTEM EVALUATION

4.1 Evaluation Methodology and Criteria

Model scenarios of the City's existing recycled water distribution system were developed. Sizing of new pipes, and evaluation of the capacity of the existing facilities, was performed using the design criteria described in **Section 4.1.1**. Buildout alternatives were evaluated for comparative life cycle costs using the capital and O&M cost criteria described in **Section 5**.

4.1.1 Design Criteria

Design criteria were compiled to reflect current City standards for recycled water distribution. These criteria, found in **Table 4-1**, were used to assess any deficiencies in the existing facilities and to appropriately size pipelines, pump stations, and storage tanks at buildout.

TABLE 4-1: HYDRAULIC DESIGN CRITERIA FOR MODEL DEVELOPMENT

System Component	Unit	Value
Demand Nodes		
Minimum Pressure at Peak Day for Customers without Storage	psi	40
Minimum Pressure at Peak Day for Customers with Storage	psi	5
Maximum Pressure in system	psi	100
Distribution Pipes		
Minimum Pipe Size (including laterals)	inches	6
Allowable Pipe Sizes [a]	inches	6, 8, 12, 16, 24, 30
Maximum Head Loss (existing pipe)	feet per 1,000 feet	10
Maximum Head Loss (new pipe)	feet per 1,000 feet	5
Maximum Velocity (existing pipe)	feet per second	8
Maximum Velocity (new pipe)	feet per second	5
Hazen-Williams Coefficient for Head Loss Calculation	n/a	130
Storage Tanks		
Minimum Tank Storage	MG	Operational Storage + Buffer Storage
Operational Storage	MG	As Modeled
Buffer Storage[b]	MG	0.25 * MDD

a. Per Roseville Standards for Recycled Water.
b. Buffer storage is intended to allow the system to operate in the event of unforeseen conditions (e.g. a brief supply limitation).

4.2 Existing System Evaluation

The recycled water system includes approximately 40 miles of recycled water pipelines, recycled water pumping facilities at the two WWTPs (Pleasant Grove and Dry Creek), and two booster pump stations and storage facilities. The recycled water system, including facility locations and pressure zones, is shown in **Figure 4-1**. Pleasant Grove WWTP recycled water pumps supply water to the West Roseville storage tanks located near the treatment plant. The West Roseville pump station draws from that storage and supplies pressure to customers in West Roseville and others. The Dry Creek WWTP recycled water pumps supply portions of the main pressure zone, primarily in eastern Roseville. The Dry Creek WWTP pumps also supply the North Zone storage tank with recycled water, when connected to the system. The North Zone Pump station is located adjacent to the North Zone storage tank and although the tank and pump station were constructed, the City has operated the system without the North Zone storage tanks and pump station for several years (i.e. these facilities are currently disconnected from the recycled water system).

The City's recycled water model, as documented in the 2020 Model Development Report and updated based on the current supply and demand data described in **Section 2** and **Section 3**, was used for this evaluation. Two demand scenarios were evaluated: average day demand (ADD) and maximum day demand (MDD). Each demand scenario has diurnal patterns applied so that peak hour conditions could be evaluated based on patterns discussed in **Section 3.2**. Results from both demand scenarios indicate that sufficient pressure could be provided throughout the network to meet the established design criteria, as shown in **Figure 4-2**. Under the MDD scenario, the West Roseville Pump Station storage tanks combined modeled operational storage is 0.8 MG (each tank cycles approximately 0.4 MG).

The City's existing recycled water system is best analyzed as two distinct systems under current operating conditions: the main pressure zone, termed West Zone, servicing a majority of the systems' demands, supplied by West Roseville Pump Station and Dry Creek WWTP, and the gravity system, termed Gravity Zone, servicing a portion of the City's customers south of Baseline Road, including Morgan Creek Golf Club, supplied by the Dry Creek WWTP.

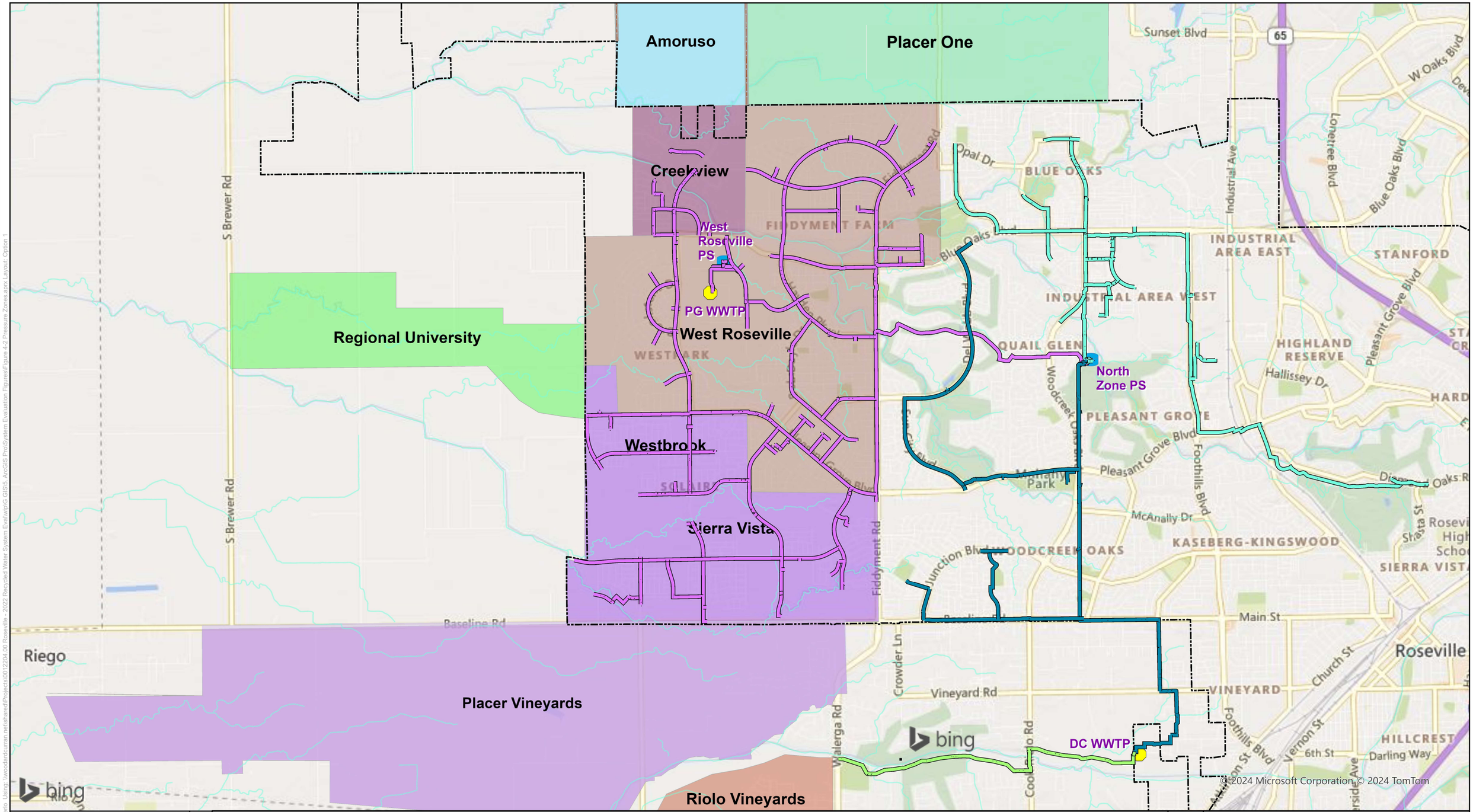


Figure 4-1
Recycled Water System Pressure Zones
Roseville Recycled Water Systems Evaluation

Legend

- City Limits
- Potential City limits
- WWTP
- Storage and Pump Station

Pipeline Pressure Zone

- PG WWTP
- West Roseville PS Zone
- North Zone
- South Zone
- Gravity

Note: The West Roseville PS Zone, North Zone, and South Zone, are all supplied by both DC and PG WWTPs. These zones are jointly referred to as the West Zone.

N

0 0.17 0.35 0.7 Miles

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Woodard & Curran

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Map Created: July 2024

4.2.1 West Zone Evaluation

Node pressures and pipeline velocities were compared to criteria established in **Table 4-1**. **Table 4-2** summarizes the peak hour operating points of each pump station in the existing system. These peak hour flowrates represent an estimated pump station capacity accounting for pumping against system pressure under design conditions. Pump curves for each pump station are included in **Appendix B**. Based on a comparison of the peak hour flows and pressures against the pump curves shown in **Appendix B**, all existing pump stations have capacity for existing peak flows.

TABLE 4-2: EXISTING RECYCLED WATER SYSTEM PUMP STATION FLOWRATES AND PRESSURES

Pump Station	Peak Hour Operating Point
Pleasant Grove WWTP	6,585 gpm, 26-ft (11 psi)[a]
West Roseville PS	8 ,725 gpm, 173-ft (75 psi)[a]
Dry Creek WWTP	5,200 gpm, 138-ft (60 psi)[a]

Footnotes:

a. Total Dynamic Head (TDH) modeled directly downstream of the pump station.

Based on these model results, no existing capacity deficiencies have been identified. However, very little additional demand can be added without resulting in overuse of the West Roseville tanks or inadequate supply from DCWWTP. However, some operational changes can be implemented at low or no cost to increase system capacity. These changes are discussed further in **Section 4.2.1.2**.

Figure 4-2
Existing MDD Model Results

Roseville Recycled Water Systems Evaluation

Legend

Tank & PS
WWTP
City Limits

Max Velocity	Minimum Pressure
< 4 fps	< 30 psi
4 - 6 fps	30 - 40 psi
6 - 8 fps	40 - 60 psi
> 8 fps	60 - 80 psi
	> 80 psi

52 Minimum Node Pressure (psi)

0 0.15 0.3 0.6 Miles

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4.2.1.1 Reliability and Efficiency Improvements

Several projects have been identified that would improve the City's ability to convey recycled water between zones. These projects would improve the ability of the City to serve multiple zones from a single pump station during low demand periods, potentially reducing electrical costs. The projects would also allow the City to better manage operations during maintenance shutdowns. These projects are described in **Section 5.2.3.**

4.2.1.2 Existing System Operational Capacity Improvements

While analyzing the existing system performance, it was recognized that there are several opportunities for system operational changes that provide the City with additional capacity to service near-term potential demands without constructing new infrastructure. The operational changes included adjusting demand patterns for customers with storage and adjusting the PRV settings at West Roseville PS and DC WWTP PS. These changes were modeled with increasing demands until a hydraulic deficiency was identified. The increases to system capacity correlating to the adjustments are summarized in **Table 4-3**. Specific adjustments are discussed in detail below.

TABLE 4-3: EFFECTIVENESS OF NEAR-TERM OPERATIONAL IMPROVEMENTS

Scenario	Potential Peak Day Demand[a] (MGD)
Existing, No Change	8.7[b]
+ Adjust Demand Patterns	10.4
+ Increase WRPS Supply Pressure	10.9

Footnotes:

a. Represents the maximum peak day demand that could be met while meeting criteria established in **Table 4-1**. Current maximum peak demands are estimated to be 8.34 MGD

b. The model predicts that some customers in the southern part of the system would not meet 40 psi during existing peak day demands at peak hour, due to limitations in available supply at Dry Creek. It is possible that some demand shifting has already occurred to mitigate this deficiency.

Demand Pattern Shift

As discussed in Section 3.2, aligning the system demand pattern with the system supply pattern will maximize the available capacity of the system. One way this could be facilitated would be by shifting demand patterns for customers that have storage ponds. There are five customers with storage ponds to accommodate the demand pattern shifts proposed in Section 3.2. Shifting high demand customers with storage to an "off-peak" demand pattern would provide approximately an additional 0.7 mgd of average day demand (1.7 mgd of MDD with the "Small Users" pattern applied) before storage requirements as presented in **Table 4-1** would be exceeded.

Increase WRPS Supply Pressure

If Dry Creek WWTP appears to be running low on supply, an increase in pressure from the Pleasant Grove WWTP can be used to supplement the customers served by Dry Creek and increase capacity to the system. However, this may increase operational storage requirements at West Roseville. Balancing the two supplies can help mitigate storage requirements at West Roseville while meeting max day demands. An estimated additional 0.5 mgd of capacity could be realized through optimization of the supplies, however this could

vary depending on how the system is operated such as where the City sets the VFDs at the pumps at West Roseville and Dry Creek. However, based on modeled results, the system has capacity to adjust supply pressures leaving West Roseville and Dry Creek to increase available peak demands while maintaining minimum service pressures presented in **Table 4-1**.

Connection of North Zone Tank and Pump Station

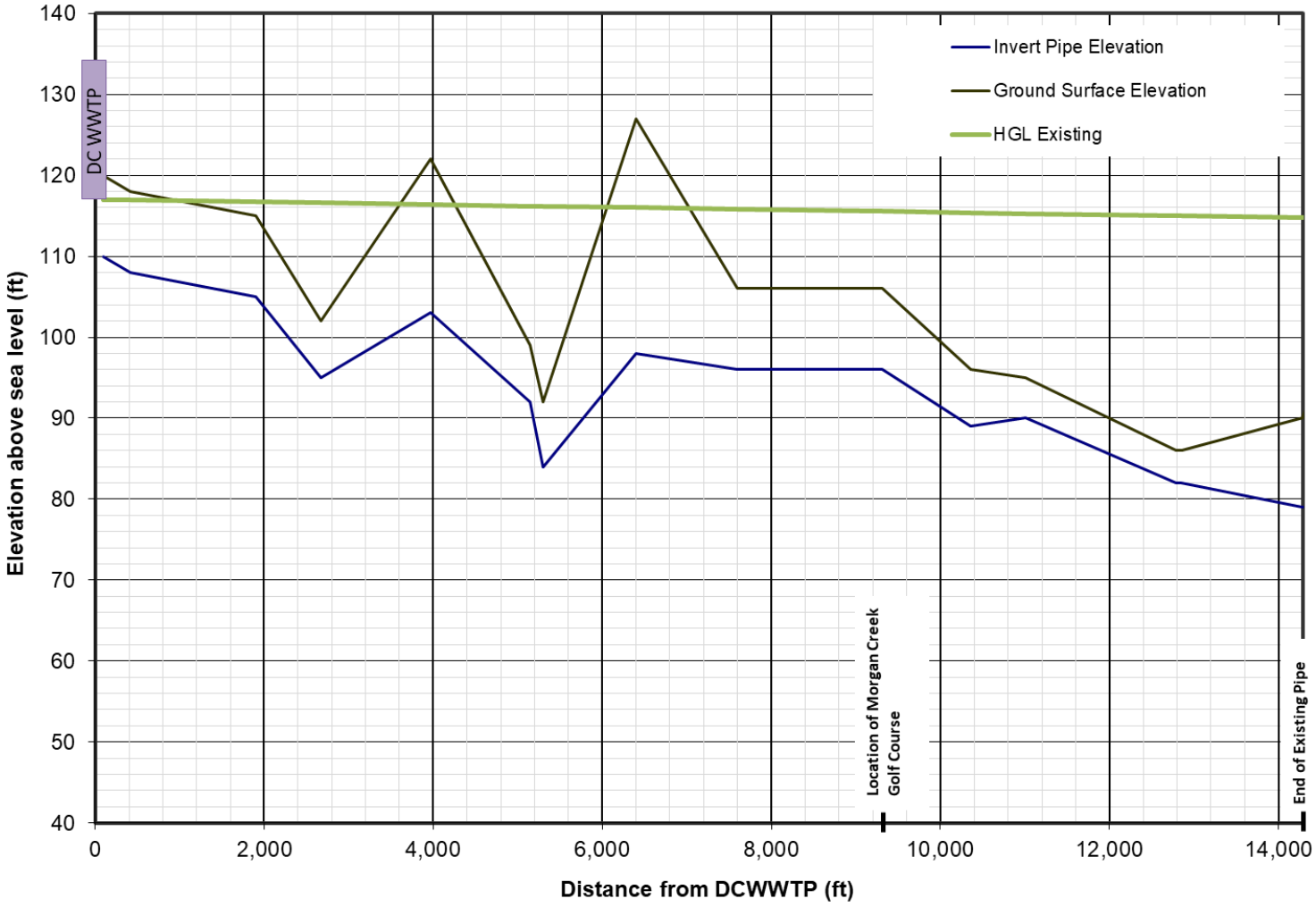
The North Zone Tank and Pump Station are currently not being operated in the system. Connecting the North Zone Tank and Pump Station back into the system would provide additional capacity to the North Zone, as well as relieve West Roseville Pump Station of servicing demands in this part of the system. However, significant rehabilitation would be needed to operate the North Zone PS. As discussed in later sections of this report, the buildout system does not require the North Zone PS, so rehabilitation is not recommended at this time

4.2.2 Gravity Zone Evaluation

The City serves customers south of Baseline Road directly from Dry Creek WWTP with 14,000 linear feet of 24-inch diameter pipe that is pressurized by gravity. The Gravity Zone is shown in **Figure 4-1**. Existing average day and max day demands for the gravity system are 0.8 mgd and 2.0 mgd, respectively. Due to this portion of the system being supplied directly from DCWWTP effluent storage, the pressures in the system are lower than recommended in **Table 4-1**, however the largest customer connected to the gravity system, Morgan Creek Golf Club, utilizes storage and their own irrigation system, reducing the required service pressure. City staff report that the system currently operates well. **Figure 4-3** shows the hydraulic profile of the existing system based on peak hour demand.

Currently, the gravity system is independent from the West Zone, and there are no interconnections between the two. This means that if DCWWTP were to be taken offline for maintenance, customers on the gravity system would be without recycled water. A reliability project is proposed in **Section 5.2.3** to connect the gravity system to the West Zone, to ensure a consistent supply of recycled water in the event that DCWWTP is temporarily taken offline or if future supplies or pressures are inadequate under buildout conditions.

FIGURE 4-3: HYDRAULIC ANALYSIS OF EXISTING GRAVITY SYSTEM FROM DCWWTP



4.3 Buildout System Evaluation

The existing recycled water model was evaluated under buildout demand conditions, as described in Section 3.4. Demands for potential future customers were assigned to model nodes as indicated in Table 3-5. This section discusses build out demand scenario model results and improvements identified to ensure system operability under buildout conditions.

4.3.1 Buildout Model Results

Modeling results for buildout max day demands are shown in **Figure 4-4**. Buildout model demands were run with the updated demand patterns presented in **Section 3.2**. To conservatively determine storage requirement, supply estimates for 2045 were used for modeling purposes to complete the buildout max day model runs. This represents a period of time when anticipated max day demands are closest to projected supplies. The model was run with North Zone Pump Station offline to determine if the pump station would be required for buildout conditions.

Under buildout max day demands, existing infrastructure provides system pressures lower than criteria established in **Table 4-1**. These pressure deficiencies are resolved with improvements to West Roseville Pump Station pumping capacity and "pinch-point" improvements discussed below. Under modeled conditions, North Zone Pump Station could remain offline and system demands could be met at sufficient pressures. Note that this analysis assumes that water usage patterns can be adjusted as described in **Section 4.2.1.2**, and Placer One demands can be met off-peak; significant differences from this assumption may necessitate the recommissioning of North Zone Pump Station to meet peak demands.

As future demands are connected and the West Roseville Pump Station pumping capacity is increased (described in **Section 4.3.1.2**), the existing 24-inch pipeline directly downstream of the pump station to Westpark Drive is deficient under the velocity and headloss design criteria. A parallel 24-inch pipe could be installed to relieve this deficiency and increase service pressures and capacity throughout the system. It is recommended that this improvement be implemented in parallel to pumping capacity improvements at West Roseville Pump Station (See **Figure 5-2**).

The existing 8-inch pipe on Blue Oaks Boulevard between Woodcreek Oaks Boulevard and Diamond Creek Boulevard is deficient in the headloss design criteria. This deficiency could be improved by installing a new 12-inch pipe connecting to the 30-inch main on Woodcreek Oaks Boulevard and the 8-inch main on Prairie Woods Way via Painted Desert Drive. Alternatively, the existing main on Blue Oaks Boulevard could be upsized to a 16-inch main, however construction on Blue Oaks Drive may be expensive and difficult.

The above deficiencies are proposed "pinch-point" improvements, or improvements that increase the service capacity of the system. Both projects are discussed in further detail in **Section 5.2**.

As noted above, this evaluation is based on supply projections provided by the City and SPWA partner agencies. Depending on the trajectory of supply and demand growth, supply may be more constrained in earlier years. This would increase the use of storage, and may trigger the need to implement some of the mitigation measures identified in **Section 3.5.1**.

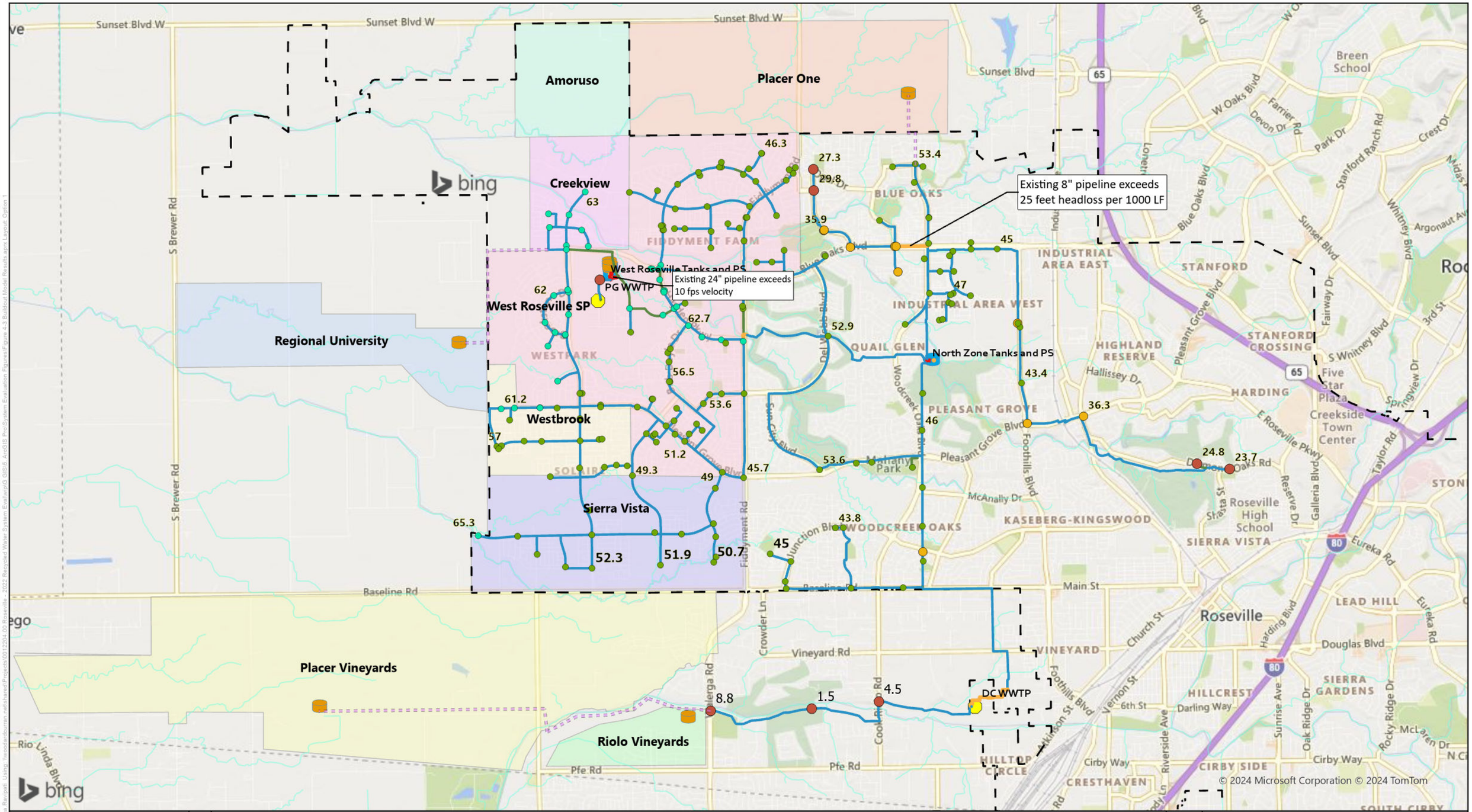


Figure 4-4
Buildout Model Results

Roseville Recycled Water Systems Evaluation

Legend

Max Velocity
- < 4 fps
- 4 - 6 fps
- 6 - 8 fps
- > 8 fps

Minimum Pressure
- < 30 psi
- 30 - 40 psi
- 40 - 60 psi
- 60 - 80 psi
- > 80 psi

- City Limits
- Future Recycled Water Pipeline
- Existing Storage and PS
- Future Storage and PS
- WWTP
- 52 Minimum Junction Pressure (psi)

0 0.2 0.4 0.8 Miles

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Project #: 0012204.00
Map Created: July 2024

4.3.1.1 Potential Storage Requirements

Storage improvements will also be needed. **Table 4-1** presents criteria for determining storage requirements. Operational storage under buildout maximum day conditions is approximately 1.0 million gallons (MG) for the West Zone. **Table 4-4** presents the storage requirements based on this analysis. Section 5.2.2 provides a storage improvement project to enhance buffer storage to accommodate the additional 1.0 MG of required storage based on the analysis below.

TABLE 4-4: BUILDOUT MAX DAY STORAGE ANALYSIS

Pressure Zone [a]	Customers w/out Storage Buildout MDD (mgd)	Operational Storage Required [b] (MG)	Buffer Storage Required [c] (MG)	Total Storage Required [d] (MG)	Existing Storage (MG)	Potential Required Storage (MG)
West Zone (West Roseville Tanks	8.34	1.19	2.09	3.28	2.0	1.28

Footnotes:

e. The Gravity pressure zone is not included as there are few, if any, customer demands without dedicated storage in this zone.
f. Operational storage requirement is derived from model runs. It is based on assumptions built into the model including pump station controls, PRV settings, and demand patterns presented in this report.
g. Buffer storage required was assumed to be 25% of MDD for customers without dedicated storage for a one-day period.
h. Total required storage = Operational Storage + Buffer Storage.

4.3.1.2 Pump Station Flow Requirements at Buildout

Before total buildout demands are realized the West Roseville pump station would need to be improved to meet flow and pressure design criteria. Design points for each pump station under buildout max day demand conditions are summarized in **Table 4-5**. These design points represent the maximum peak hour flowrate and associated total dynamic head under max day conditions with the diurnal patterns applied to the demands. Potential operating points relative to the existing pump curves are shown in **Appendix B**. The table assumes that under peak demand conditions the PG WWTP pumps would deliver flow to the tanks at the West Roseville Pump Station, which would then deliver flow to a tank in Regional University during the off-peak period. Alternatively, the PG WWTP could deliver flow directly to a tank in Regional University, but this would require a parallel pump station and piping to provide acceptable head at peak flowrates.

Upgrade recommendations to achieve buildout flows at each pump station are described in more detail in **Section 5**.

TABLE 4-5: PROPOSED PUMP STATION DESIGN POINTS AT BUILDOUT

Pump Station	Existing MDD Design Point		Buildout MDD Design Point	
	Peak Flowrate (gpm)	Total Dynamic Head (ft)	Peak Flowrate (gpm)	Total Dynamic Head (ft)
PG WWTP PS	6,585	26	10,500	24
West Roseville PS	8,725	173	13,340	162
Dry Creek WWTP PS	5,200	138	6,150	140

4.3.2 Hydraulic Analysis of Placer Vineyards UGA Pipeline

The proposed Placer Vineyards development is located southeast of City boundaries and is proposed to be served through an extension of the existing gravity pipeline serving customers east of Dry Creek WWTP (see **Figure 4-5**). A previous study (**Appendix D**) evaluated the existing gravity pipeline that will be extended to serve Placer Vineyards. The study proposed locating the Placer Vineyards recycled water storage tank on the southwest corner of West Dyer Lane and 16th Street, which is in the center of the UGA. The alignment used in this study through Placer Vineyards was along West Dyer Lane. Since this study was performed, project demands for Placer Vineyards have changed and so a similar analysis was performed to determine if the existing 24" gravity pipe could remain a gravity pipe at the updated buildout demands.

The analysis was conducted for peak day demands, without consideration for peak hour demands. During peak days, the 24" pipe can remain gravity while re-filling the Placer Vineyards storage tank within 15 hours. The results of the analysis conclude that during a peak day, the 24" pipe can remain gravity flow if Placer Vineyards storage tank is placed at the proposed storage tank location (southwest corner of West Dyer Lane and 16th Street). The hydraulic grade line of this pipeline under gravity flow is shown in **Figure 4-6.** To fill the tank in under 15 hours under peak conditions, a new pump station would need to be constructed. Sizing the pump station would depend on the desired time to fill the Placer Vineyards recycled water storage tank. **Figure 4-6** shows an option to decrease the fill time of the tank to 12 hours by installing a 30 HP pump station. An alternative to a new pump station is to augment the recycled water supply with one or more irrigation wells pumping into the storage tank or to locate and partially bury the storage tank at a lower elevation near Dry Creek. These alternatives could increase the fill time of the tank while maintaining the existing 24" pipe as a gravity pipe.

FIGURE 4-5: PROPOSED PLACER VINEYARDS PIPELINE

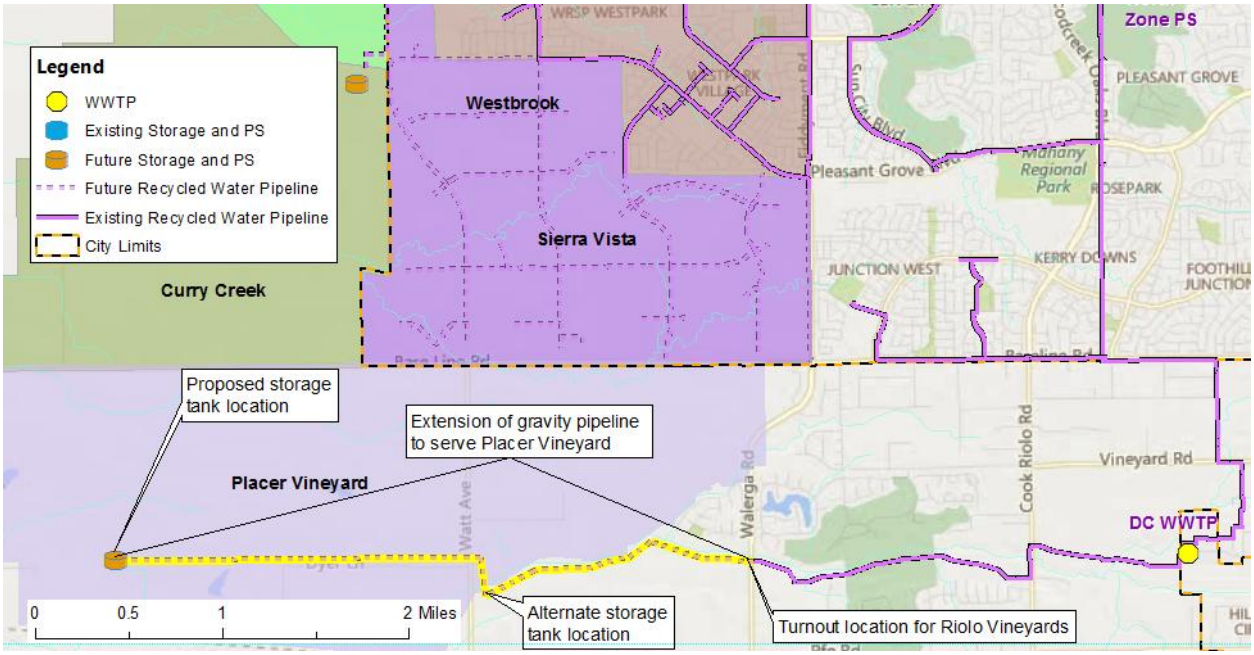
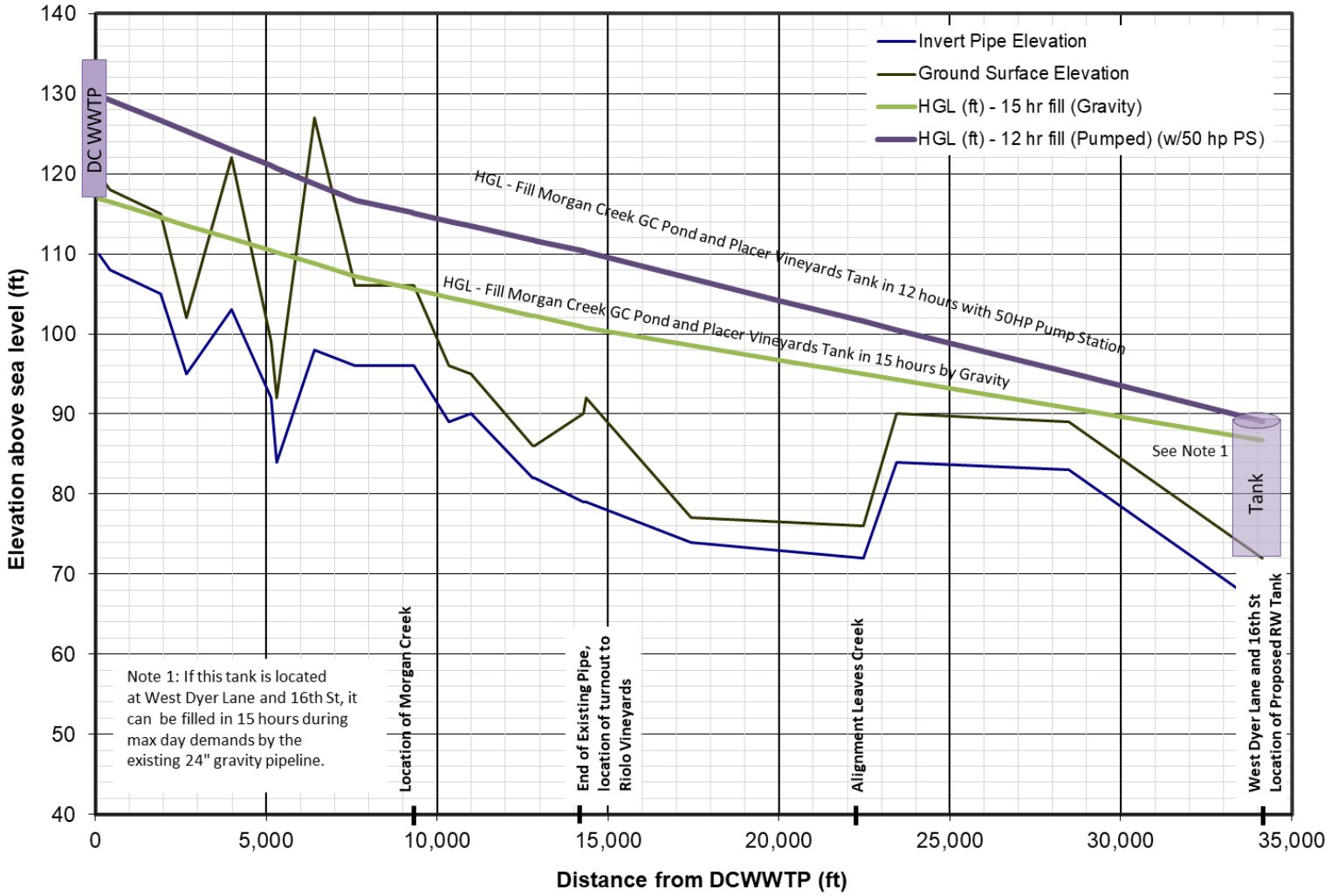


FIGURE 4-6: HYDRAULIC ANALYSIS OF 24" GRAVITY PIPELINE TO PLACER VINEYARDS



5. IMPLEMENTATION PLAN

5.1 Cost Estimating Assumptions

Construction cost estimates have been developed to provide planning level estimates of future facility costs. These cost estimates are planning or conceptual level estimates and are considered to have an estimated accuracy range of -30 to +50 percent. This level of accuracy corresponds to a "Class 4" cost estimate as defined by the American Association of Cost Estimators. These estimates are suitable for use for budget forecasting, CIP development, and project evaluations, with the understanding that refinements to the project details and costs would be necessary as projects proceed into the design and construction phases.

5.1.1.1 Capital Cost Criteria

A planning-level construction cost estimate for each distribution system component has been developed. Unit capital costs are based on engineering experience and recent bid prices for similar projects. Unit costs are indexed to the March 2025 Engineering News Record Construction Cost Index (CCI). The CCI value used (14,511) was an average of the 20 Cities Average value (13,783) and the San Francisco value (15,239).

Pipeline construction cost estimates utilize a raw construction cost based on the size of the pipe and the location of construction. Construction costs for proposed pipelines were based on recent bids received by Woodard & Curran for PVC pressure pipe projects in northern California. Average bid unit costs were plotted and a trendline developed to estimate unit cost of pipe per inch diameter. These align with Woodard & Curran's typical planning estimates for pipes. Contractor markups, taxes, overhead, profit, other miscellaneous costs and a contingency were added to the raw construction cost to generate a total cost of construction

Costs for increasing the capacity of pump stations were developed based on additional required horsepower and a calculated cost per unit horsepower developed from recent bid data. Required brake horsepower for pump stations was calculated based on the total dynamic head and peak flowrate modeled in the Buildout MDD scenario, with an assumed conservative pumping wire-to-water efficiency of 70 percent. Standard NEMA motor sizes were selected based on this configuration and at least 110% of the calculated brake horsepower. Total pump station horsepower was calculated from the number of duty plus standby pumps times the selected motor size. Each pump station was assumed to have one standby pump.

Existing maximum pump station capacity was calculated based on pump curves minus the standby pump capacity. Pump curves are provided as **Appendix B** of this report. Additional capacity required by each pump station was calculated as the difference between the required capacity at buildout and the existing capacity minus the standby pump. The additional pumping capacity required was divided among an appropriate number of pump upgrades using engineering judgement. Due to assumed site constraints, pumps were selected for replacement rather than additional pumps added to the pump stations.

Costs for backup power systems (sized to keep the entire pump station operational) and surge tanks were developed based on recently bid projects.

Raw construction costs for new storage tanks is estimated at $2.3 million per 1 MG of storage capacity. This cost includes all site work for the storage tank, but does not include land acquisition as it is assumed the

tanks will be located on land just north of the existing West Roseville Tanks and Roseville Energy Park on land already owned by the City.

5.1.1.2 Implementation Costs and Allowances

Implementation costs are defined as those non-construction costs associated with a project. These costs can include the following:

- Environmental, Legal, and Administrative (ELA) Allowance
  - Owner's administration costs
  - Owner's legal costs associated with contracting and related issues
  - Environmental documentation (CEQA and NEPA compliance)
- Engineering/Construction Management (CM) Allowance
  - Permitting
  - Engineering
  - Construction management and inspection
- Project Contingency
  - For unknown cost items, based on the level of engineering development of the project facilities.

Implementation allowances were applied as summarized in **Table 5-1**. Note that large new storage tanks can have significant engineering costs; engineering/CM allowance has been increased to 20% for these facilities to account for potential unknowns.

TABLE 5-1: IMPLEMENTATION ALLOWANCES

Element	Values for New Storage Tanks	Values for Other Facilities
1. Raw Construction Cost	Raw Cost	Raw Cost
Environmental, Legal, and Administrative (ELA) Allowance	10%	10%
Engineering/Construction Management (CM) Allowance	20%	10%
2. Raw Cost + Engineering + Implementation Allowances	1.3 x Raw Cost	1.2 x Raw Cost
Project Contingency (Uncertainty in project facilities)	30%	30%
3. Final (Fully Loaded) Cost	1.69 x Raw Cost	1.56 x Raw Cost

5.2 Project Descriptions

This section presents the project component descriptions, a summary of the deficiency each project will address, potential phasing options, and any implementation issues that have been identified.

5.2.1 Pump Station Improvements

5.2.1.1 West Roseville Pump Station

At buildout, peak flows at the West Roseville pump station will increase from about 8,725 gpm to 13,950 gpm. To achieve buildout flows, it was assumed pumps at West Roseville would be replaced with larger horsepower pumps. To avoid unnecessary operation and maintenance costs, installation of the replacement pumps should be phased to match the projected flow as service connections are added. Construction can be broken into two phases as described in **Table 5-2**. To maintain operation of 5 duty pumps and 1 standby, three of the existing 150 hp West Roseville Pumps (2 duty and 1 standby) should be replaced with higher capacity pumps (300 hp motor). Note, it is possible that replacement of these pumps with larger pumps is not possible and instead the pump station would have to be modified or new pump station constructed. This should be studied further to determine a more accurate cost estimate as recommended in **Section 5.4.1**. Additional funds for a pump station alternatives analysis are included in the cost summary presented in **Table 5-2.**

TABLE 5-2: WEST ROSEVILLE PUMP STATION PHASING

Development Phase	Incremental Flowrate for Phase[a] (gpm)	Project ID	Installed Pumps / Capacity	Estimated Raw Construction Cost[b]	Estimated Capital Cost[c]
Existing	8,500	--	--	--	--
2025-2030	4,473	PS-1[d]	Replace three pumps with 300 hp pumps (two duty, one standby)[d] ~13,950 gpm firm pump station capacity	3 new 300 hp pumps: 3 x $564,000 = $1,692,000 Pump Upgrade Alternatives Analysis: [d] $100,000	$3,145,000 [d]
2030-2035[e]	974	--	--	--	--
Total	***13,947***				***$3,145,000***

Footnotes:

a. Peak flowrate defined as the MDD multiplied by the diurnal pattern factor at the time of the modeled peak flowrate from WRPS.
b. Costs basis is March 2025 average of ENR 20 Cities and San Francisco CCI (14,511)
c. CIP Costs include implementation costs as summarized in Section 5.1.
d. Project assumes that pump may be replaced within the pump station. The presented value includes funds to perform a pump station alternatives analysis to determine whether an expansion of WRPS would be required. See Section 5.4.1.
e. When demands increase on the gravity system in this phase, supply from Dry Creek WWTP to the Main Zone will diminish. This drop in supply will need to be compensated through additional pumping capacity at West Roseville Pump Station.

5.2.1.2 PG WWTP Recycled Water Pumps

Peak day flows from PG WWTP PS to the West Roseville PS would increase from about 6,600 gpm under existing demands to about 11,700 gpm at buildout. Currently, there are three pumps at the station with room for one more. However, the pumps are sized for higher head than necessary to deliver supply to West Roseville PS tanks and have sufficient capacity needed for buildout flows. Another potential project, not thoroughly discussed in this report, would be to install additional pumps to increase the frequency that the West Zone is served directly from the PG WWTP pump station, allowing operators to take West Roseville pump station offline and thereby conserving energy.

5.2.2 Storage Improvements

5.2.2.1 DC WWTP Recycled Water Storage Project

The DC WWTP pump station is currently served directly from treated effluent from the plant. There is currently no effective storage located at DC WWTP. This project proposes modifying the existing Chlorine Contact Basins (CCB) at the DCWWTP for use as RW storage basins. Adding storage at DC WWTP would address the anticipated storage deficiency under buildout demands as presented in **Table 4-4**. This also provides a level of operational resilience in the event the DC WWTP needs to be taken offline, there would be some available supply for the recycled water system to utilize from DC WWTP.

A conceptual diagram of the project is shown in **Figure 5-1** below. The proposed project costs shown in **Table 5-3** include costs for piping, slide gate, valves, concrete, demolition, and other modifications to provide an additional 1.1 MG of RW storage capacity. Basins 1 and 2 would operate as a single plug-flow RW storage basin. Basin 3, Pass 1 is maintained empty as an airgap between the UV Effluent Channel (CCB, Pass 2) and proposed RW storage basins. A concrete repair allowance for the CCBs has been included; however, it is recommended that the City further evaluate basin conditions during the design stage to refine this cost.

Note that the currently unused CCB at the PGWWTP could also provide greater than 2 MG of additional RW storage. However, this basin is currently uncovered and is expected to require significant additional improvements for RW storage usage so has not been recommended as a potential capital improvement project at this time.

TABLE 5-3: DC WWTP RECYCLED WATER STORAGE PHASING

Phase	Project ID	Project	Estimated Raw Construction Cost[a]	Estimated Capital Cost[b]
Existing		--	--	--
2025-2030	S-1	Rehabilitate DC WWTP CCB to utilize as 1.1 MG of RW storage	$925,000	$1,443,000
	Total		**$925,000**	**$1,443,000**

Footnotes:

a. Costs basis is March 2025 average of ENR 20 Cities and San Francisco CCI (14,511)
b. CIP Costs include implementation costs as summarized in Section 5.1

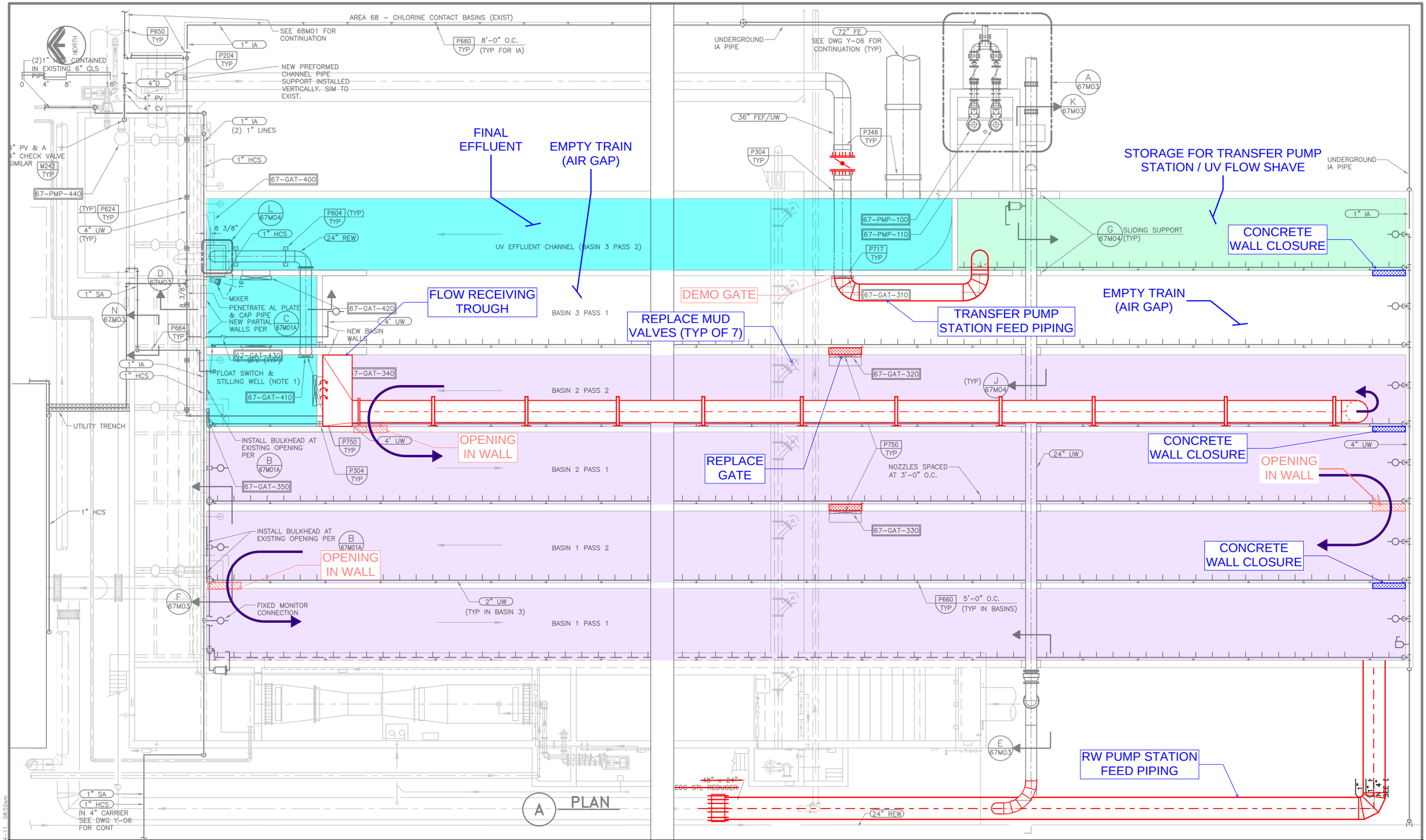


FIGURE 5-1
DCWWTP RECLAIMED WATER STORAGE IMPROVEMENTS CONCEPT FIGURE
RECLAIMED WATER SYSTEM EVALUATION
SCALE: 1/16" = 1'-0"

15'-0" 15'-0"

5.2.2.2 Potential Additional Storage Improvements

Based on the criteria and analysis presented in **Table 4-4**, an additional 0.18 MG of storage will be needed, in addition to the recycled water storage provided by conversion of the Dry Creek CCBs, to provide the City with the operational and buffer storage for max day conditions. Three alternatives could be pursued to address this, however the City should monitor recycled water supplies and demands as new customers are connected to the system. Changes to supply or demand may change the need for or quantity of additional recycled water storage.

- Connect North Zone Tank and Pump Station
    - Connecting North Zone Pump Station and Tank to the system would provide additional storage, however, demands in North Zone are lower than demands in the West Zone and South Zone, so adding storage here does not provide much hydraulic benefit and would increase O&M costs. Estimated costs to rehabilitate North Zone Tank and Pump Station are presented in **Table 5-4** for informational purposes**.**
- Rehabilitate PG CCBs
    - Similar to the Dry Creek CCBs, Pleasant Grove WWTP has CCBs that could be rehabilitated and converted to recycled water storage. It is estimated that conversion of the PG CCBs would result in an additional 2 MG of storage. Hydraulically, storage at this location would be beneficial for system performance, however, costs to rehabilitate the PG CCBs will likely be more expensive than recommissioning North Zone Tank, the PG CCBs are currently uncovered. Costs for this alternative were not developed for this study but should be in subsequent studies if additional storage is required.
- Additional Tank at WRPS
    - The City has previously considered adding a recycled water storage tank at WRPS. Storage at this location would benefit system performance and operation as demands increase as WRPS provides a majority of the West Zone with recycled water. However, costs for an additional tank may be significant. The minimum size of this tank would be 0.2 MG to meet storage requirements, however, the City could consider upsizing this to 1.0 MG so potential future customers not considered as part of this report could be serviced. The cost for a 1.0 MG storage tank is presented in **Table 5-4**.
- Operate system with less buffer storage
    - Another alternative is to operate the system with less buffer storage than 25% of max day demand for customers without storage. With the DC CCBs converted to recycled water storage, total buffer storage will be approximately 23% of the abovementioned max day demands. While it does not meet the criteria previously presented, the City may find this buffer storage is sufficient for their needs. No project is required for this alternative.

TABLE 5-4: ESTIMATED COSTS FOR ADDITIONAL STORAGE IMPROVEMENTS OPTIONS

Alternative	Estimated Raw Construction Cost[a]	Estimated Capital Cost[b]
Rehabilitate NZ Tanks and Pump Station	$610,000	$950,000
Additional 1.0 MG Storage Tank at WRPS	$3,335,00	$5,203,000

Footnotes:

a. Costs basis is March 2025 average of ENR 20 Cities and San Francisco CCI (14,511)
b. CIP Costs include implementation costs as summarized in Section 5.1.

5.2.3 Pipeline Improvements

Pipeline improvement projects include projects to alleviate the deficiencies identified in **Section 4.2** and **Section 4.3**, as well as projects to improve the reliability of the system through improved interties between pressure zones. Detailed cost estimates can be found in **Appendix C**. The proposed improvements are shown in **Figure 5-2** and their estimated costs are summarized in **Table 5-5**.

5.2.3.1 B-1

Project B-1 would increase the size of the bypass pipeline from the Pleasant Grove WWTP pumps to the West Zone system from 10-inches to 24-inches. This would improve the City's ability to take the West Roseville Pump Station offline, either to perform maintenance or for efficiency purposes.

5.2.3.2 I-1

Project I-1 would add a 6-inch intertie pipeline between the West Zone and the North Zone at Angus Road and Casa Sedona Drive. This provides two benefits:

- Improves reliability by improving the system's ability to backfeed from the North Zone into the West Zone during low demand periods.
- Potentially improves efficiency by improving the City's ability to serve the North Zone directly from either the West Roseville Pump Station or the pumps at the PG WWTP during low demand periods.

5.2.3.3 I-2

Project I-2 would add a 6-inch intertie pipeline between the West Zone and the South Zone at Blue Oaks Boulevard. The intertie provides two benefits:

- Improves reliability by allowing the system to bypass either the West Zone or the North Zone during low demand periods.
- Potentially improves efficiency by improving the City's ability to bypass either the West Roseville Pump Station or DC WWTP pumps during low demand periods.

5.2.3.4 I-3

Project I-3 would add an 8-inch intertie pipeline between the West Zone and the South Zone at Baseline Road and Fiddyment Road. This project would also increase the reliability of the system by improving the system's ability to bypass either the West Roseville PS or the pumps at the DC WWTP. This project provides hydraulic improvements to the system under buildout conditions and would reduce operational storage by an estimated 0.1 MG.

5.2.3.5 I-4

Project I-4 would add a 10-inch intertie pipeline from the end of Project I-3 further south to interconnect the Main Zone with the Gravity System at Walerga Rd and Dry Creek Community Park. This project would increase the reliability of the gravity system by allowing the system to be supplied from the Main Zone if the gravity system supply was limited or taken offline. This intertie will likely not be able to convey max day, peak hour demand conditions to all customers, but under average day conditions it would provide customers with a reasonable level of service pressure for their anticipated demands. However, system performance may vary depending on the season and time of day that the intertie is operated. Under normal operating conditions, this line would be valved out of service.

5.2.3.6 PP-1

Project PP-1 would install a parallel 24-inch pipeline between the West Roseville Pump Station (WRPS) and West Park Drive via Phillip Road (approx. 485 LF pipeline). This pipeline would only be needed when velocities in the existing 24-inch pipe exceed design criteria once West Roseville Pump Station improvements are implemented. Installing the parallel pipeline would improve redundancy for a critical component, as well as allowing greater flexibility for providing system supply during low demand periods directly from the PG WWTP pumps.

5.2.3.7 PP-2

Project PP-2 proposes adding a looped pipe in the North Zone pressure zone to relieve a headloss deficiency identified under buildout max day demand conditions. Project PP-2 includes the installation of 1,600 linear feet of a new 12" main from the existing main on Woodcreek Oaks Boulevard, connecting to the existing 8" main on Prairie Woods Way via Painted Desert Drive. This project should be completed before connecting additional customers west of Woodcreek Oaks Boulevard.

5.2.3.8 PP-3

Project PP-3 would upsize the existing pipeline from DC WWTP Pumps to the South Zone from a 20-inch to a 30-inch pipe. This project relieves a bottleneck from DC WWTP that contributes to pressure drop in the system. The additional capacity in the system provides necessary pressure improvements under buildout conditions and would allow for greater utilization of the DC CCB recycled water storage.

5.3 Phasing Summary

Many of the projects identified in Section 4.2 can be phased in as recycled water demand increases. **Table 5-6** below summarizes the potential phases.

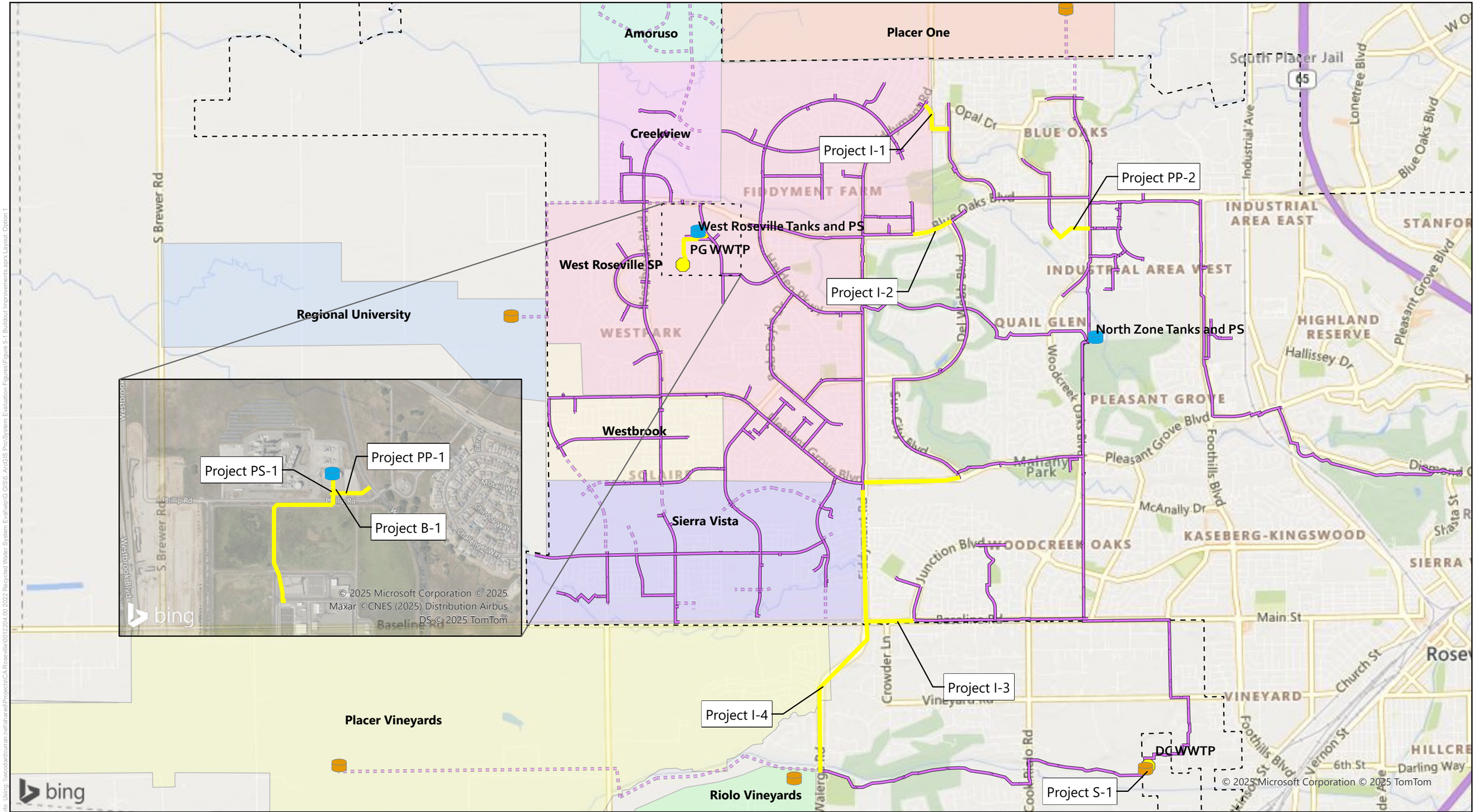


Figure 5-2 Buildout Improvements

Roseville Recycled Water Systems Evaluation

Legend

- WWTP
- Existing Recycled Water Main
- Future Recycled Water Pipeline
- City Limits

FutureStructures

Status

- Existing Storage and PS
- Future Storage and PS
- ProjectPipes

0 0.15 0.3 0.6 Miles

N

CITY OF ROSEVILLE CALIFORNIA

Woodard & Curran

Project #: 0012204.00
Map Created: July 2024

Figure Exported: 5/29/2025 By: dmerlo Using: \\woodardcurran.net\shared\Projects\CA Roseville\0012204.00 2022 Recycled Water System Eval\wip\G GIS\5 GIS\wipG GIS\5 ArcGIS Pro\System Evaluation Figures\Figure 5-1 Buildout Improvements aprx Layout: Option 1

TABLE 5-5: PIPELINE AND SUPPLY PROJECTS SUMMARY

Project Number	Project Description	Location	Size	Quantity	Estimated Raw Construction Cost	Estimated Capital Cost[a, b]
Reliability Projects						
B-1	Upsize bypass at West Roseville PS/Pleasant Grove WWTP from 10" to 24"	West Roseville PS	24-in	50-LF	$66,000	$115,000
I-1	Install an intertie between the West Zone and North Zone	Angus Rd and Casa Sedona Dr	6-in	1640-LF	$431,000	$672,000
I-2	Install an intertie between the West Zone and South Zone	Blue Oaks Blvd	6-in	1520-LF	$400,000	$622,000
I-3	Install an intertie between the West Zone and South Zone	Baseline Rd and Fiddyment Rd	8-in	6,700-LF	$1,985,000	$3,097,000
I-4	Install an intertie between West / South Zone and Gravity Zone	Baseline Rd and Walerga Rd	10-in	6,300-LF	$1,885,000	$2,941,000
Reliability Projects Subtotal					**$4,767,000**	**$7,447,000**
Pinch Point Projects						
PP-1	Install 485 LF of parallel 24” pipeline between West Roseville Pump Station and West Park Drive.	Between the WRPS and West Park Drive	24-in	485-LF	$289,000	$451,000
PP-2	Install 1,600 LF of 12” pipeline along Painted Desert Drive and Prairie Woods Way.	Painted Desert Drive and Prairie Woods Way	12-in	1,600-LF	$628,000	$980,000
PP-3	Install 2,530 ilnear feet of 30” pipe from DC WWTP recycled water pumps	DC WWTP Recycled Water Pumps	30-in	2,530-LF	$1,400,000	$2,184,000
Pinch Point Projects Subtotal					**$2,317,000**	**$3,615,000**
Total					**$7,084,000**	**$11,062,000**

Footnotes:

c. Includes implementation costs as described in Section 5.1.

d. Costs in March 2025 dollars

TABLE 5-6: PHASING SUMMARY

Development Phase	Incremental MDD (mgd)	Project Required	Estimated Capital Cost
Existing	8.34	--	--
2025-2030	5.4	PP-2	$980,000
		PS-1	$3,145,000
		S-1	$1,443,000
		PP-1	$451,000
2030-2035	4.18	PP-3	$2,184,000
Total	***17.92***		***$8,203,000***

5.4 Additional Recommendations

5.4.1 West Roseville Pump Station Facility Planning

The proposed phasing plan and cost estimate identified in this report for the West Roseville Pump Station was prepared at a feasibility study level and are not suitable for more detailed planning. As noted, it may be feasible to replace existing pumps with larger pumps without other significant improvements to the station. If more substantial improvements are required, additional facility planning is recommended to investigate the potential site in more detail, particularly as more information is available on potential future demands. The facility plan would provide a better estimate of the future costs of the pump station, and give more certainty about the future layout and facilities that will need to be constructed as the developers are connected.

The facility plan should investigate the following items that may significantly impact the pump station design:

- Need for new electrical service and other electrical upgrades, which could be a significant cost item
- A plan for integration of the new pump station with the City's SCADA and control system.
- Consideration of potential surge control measures and needs.
- More detailed examination of potential phasing approaches and integration with system operations.

5.4.2 System Operation Plan

This System's Evaluation anticipates that as recycled water demands grow, operation of the facilities will become more challenging. The City should develop a System Operation Plan to provide an operational approach for challenging conditions. This System Operation Plan can address issues such as:

- Inadequate supply at either Pleasant Grove or Dry Creek WWTPs.
- Storage levels drop below acceptable levels.
- Allowable usage patterns for specific customers, including times for filling tanks.

These conditions may require coordination with customers, and the System Operation Plan can provide a pathway to communicate any customer requirements.

5.4.3 Coordination with UGA System Operations

Several of the UGAs (Regional University, Placer One, and Placer Vineyards), are anticipated to have storage tanks that the City's system will discharge into. The City should work with the UGA operators to maintain control of storage tank fill rates and times, and ensure that recycled water supply agreements with the UGAs provide for City to have the control needed to implement the System Operation Plan.

5.4.4 Future Updates

As previously noted, the operation of the system depends heavily on the balance of projected supplies and demands, and the daily patterns associated with each. A number of assumptions have been made about future uses, including adjustments to demand patterns associated with customers who have on-site storage, as well as demands associated with urban growth areas. As development plans are updated, or as new developments in West Roseville or other UGAs are constructed, these demand estimates may become outdated. New customers may also be identified with potentially significant demands, and the consumption patterns may differ from the assumptions described in this report.

It is therefore recommended this Systems Evaluation be updated every five to ten years or as significant changes in potential demands are identified to ensure that the Systems Evaluation remains current. This will also provide an opportunity to review observed peaking factors and diurnal patterns, and update the model to enable the model to continue answering operational questions.

APPENDIX A: NEAR-TERM POTENTIAL DEMAND CUSTOMERS

ID	Customer Name	Customer Type	On-Site Storage (Yes/No)	Annual Average Demand (AFY)	Average Day Demand (MGD)	Peak Day Demand (gpm)	Modeled Demand Node(s)
1	Mahaney Park	Park	No	4	0.003	6	J-115
2	Silverado Middle School	School	No	47	0.042	73	J-70
3	Robert Cooley School	School	No	38	0.034	59	J-476
4	Blue Oaks Median	Streetscape	No	-41	-0.037	0	J-457
5	Diamond Oaks Park	Park	No	20	0.018	31	J-129
6	Woodcreek Oaks School	School	No	58	0.052	90	J-117
7	Blue Oaks Streetscape	Streetscape	No	6	0.005	9	J-457
8	Catholic Church	Church	No	16	0.014	25	J-719
9	Sadona Streetscape	Streetscape	No	16	0.014	25	J-714
10	Safeway Store	Commercial	No	11	0.010	17	J-701
11	Aquatic Center	Commercial	No	16	0.014	25	J-117
12	Blue Oaks Elementary School	School	No	14	0.012	22	J-238
13	Bank of America Building	Commercial	No	15	0.013	23	J-497
14	Pleasant Grove Condos	Condo	No	8	0.007	12	J-98
15	Pleasanton Grove Church	Church	No	7	0.006	11	J-98
16	Quail Glenn School/Bob Doyle	School/Park	No	19	0.017	29	J-724
17	Coyote School	School	No	17	0.015	26	J-720
18	Mistywood Park	Park	No	8	0.007	12	J-123
19	Fiddyment and Baseline Streetscape	Streetscape	No	13	0.012	20	J-718
20	Paul Lundardi	Commercial	No	6	0.005	9	J-70
21	Duke Davis Park	Park	No	17	0.015	26	J-652
22	Park Regency	Park	No	11	0.010	17	J-721
23	North Central Zone G	Industrial	No	6	0.005	9	J-275
24	Blue Oaks Park	Park	No	10	0.009	15	J-726
25	WAPA Easement	Streetscape	No	112	0.100	174	J-118
26	Homestead Elementary School	School	No	18	0.016	28	J-411
27	Hewlett Packard/Campus Oaks	Commercial	No	179	0.160	278	J-261

ID	Customer Name	Customer Type	On-Site Storage (Yes/No)	Annual Average Demand (AFY)	Average Day Demand (MGD)	Peak Day Demand (gpm)	Modeled Demand Node(s)
28	James Hill Park	Park	No	18	0.016	28	J-64
29	Placer One + Sunset Industrial Area	UGA	Yes	373	0.333	1451	J-650
30	Regional University	UGA	Yes	650	0.580	1031	J-772
31	Sierra Vista/Westbrook	UGA	No	502	0.448	802	J-173
32	Placer Vineyards	UGA	Yes	1580	1.411	2505	J-55
32	Riolo Vineyards	UGA	Yes	403	0.360	639	J-55
33	Amoruso Ranch	UGA	No	245	0.219	388	J-971
34	Creekview	UGA	No	73	0.065	116	J-971
35	West Roseville SP	UGA	No	-265	-0.236	30	J-606, J-667, J-661, J-760, J-870, J-756, J-754, J-891, J-589, J-873, J-661, J-410

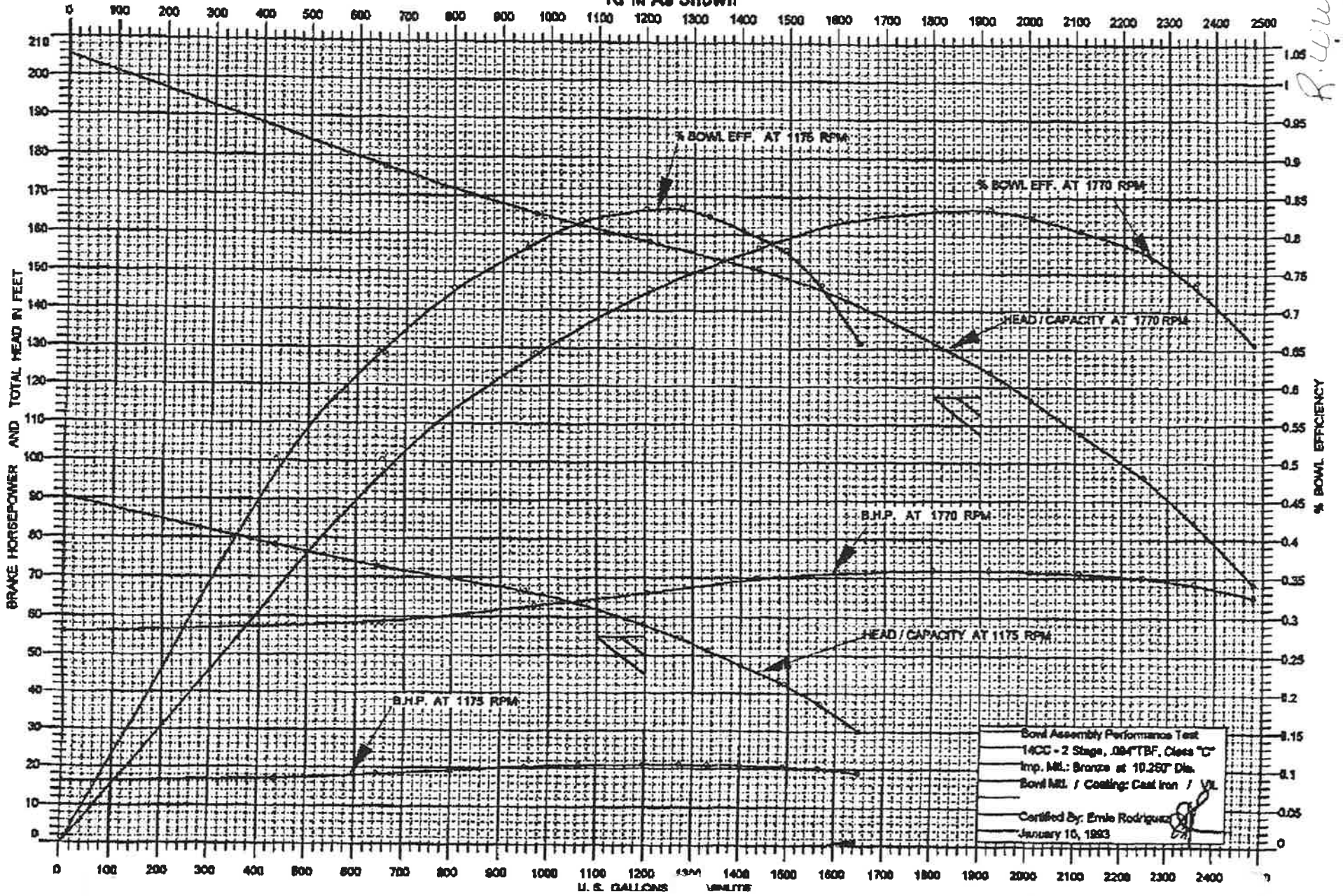
APPENDIX B: EXISTING PUMP CURVES

Dry Creek WWTP PS - Pump 1

002

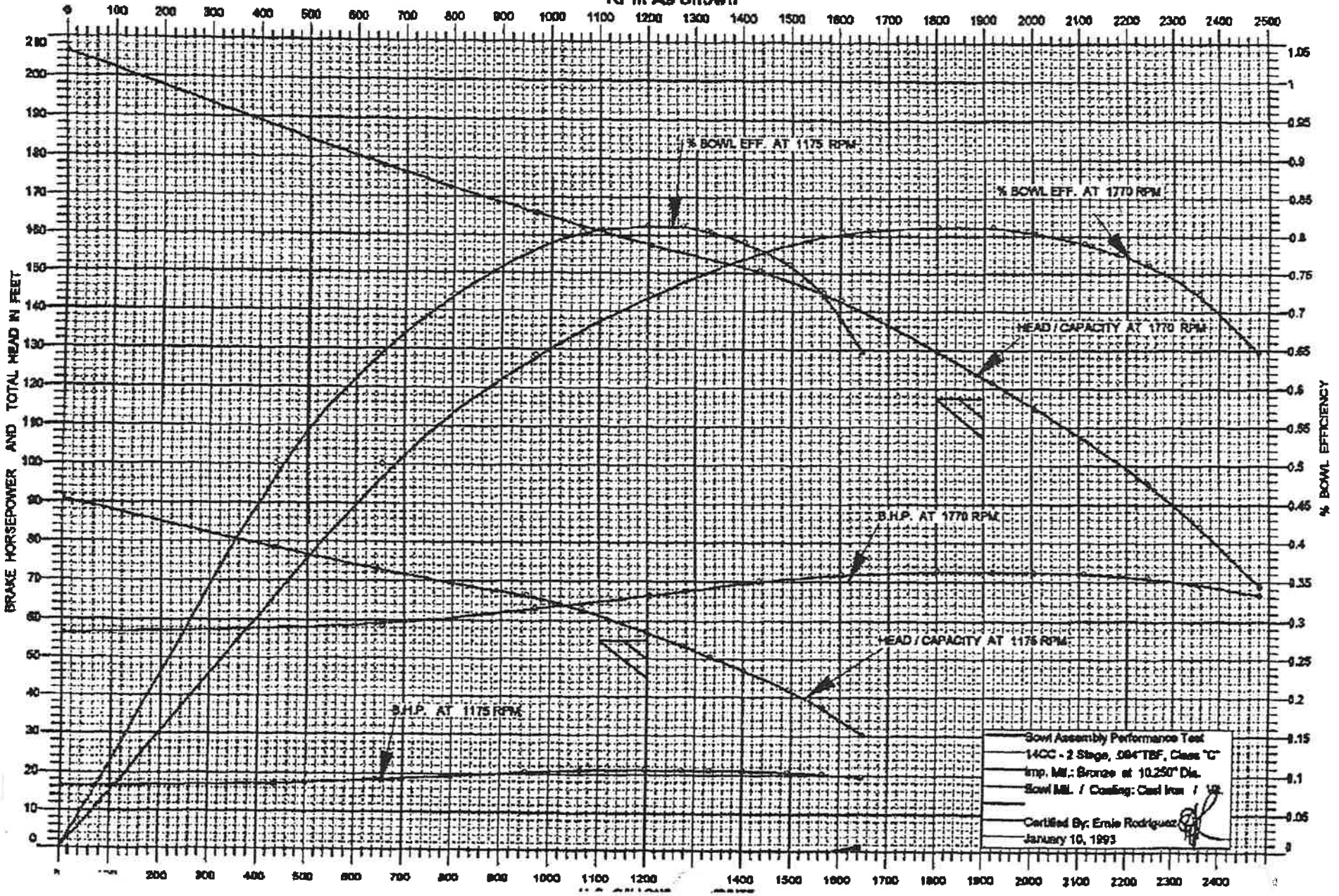
01/11/93 15:13 JOHNSTON PUMP

Johnston Pump Company
Brookshire, Texas
Customer: Mc Lemore Pump, Inc.
Job #: TC - 2123 TC #:06817
Tag Equipment #: 66-P-01-REW Reclaimed Water
RPM As Shown



Dry Creek WWTP PS - Pump 2

Johnston Pump Company
Brookshire, Texas
Customer: Mc Lemore Pump, Inc.
Job #: TC - 2124 TC #:06818
Tag Equipment #: 66-P-02-REW Reclaimed Water
RPM As Shown

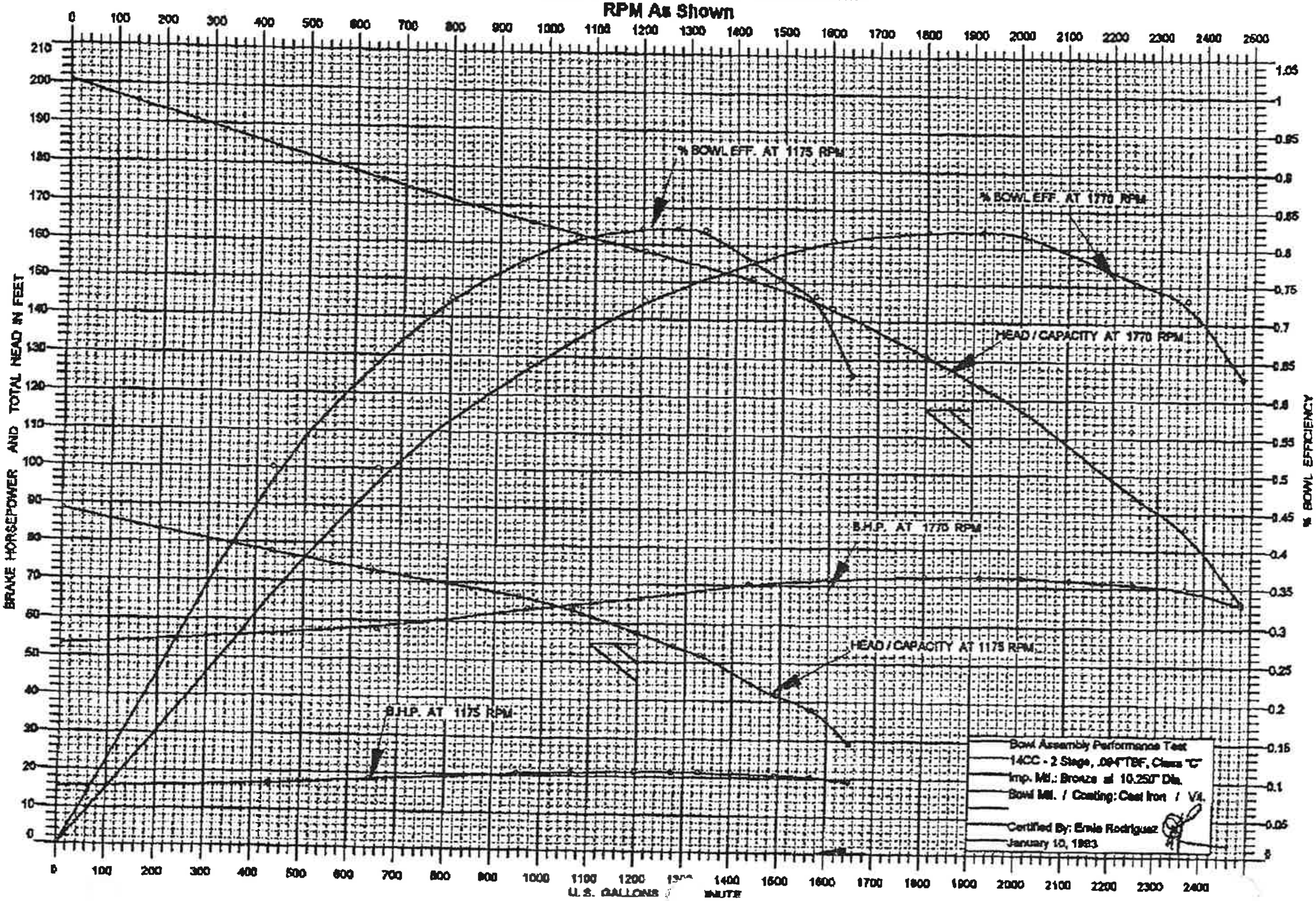


003 JOHNSTON PUMP 15:15 01/11/93

Dry Creek WWTP PS - Pump 3

01/11/93 15:16 JOHNSTON PUMP 004

Johnston Pump Company
Brookshire, Texas
Customer: Mc Lemore Pump, Inc.
Job #: TC - 2125 TC #:06819
Tag Equipment #: 66-P-03-REW Reclaimed Water
RPM As Shown

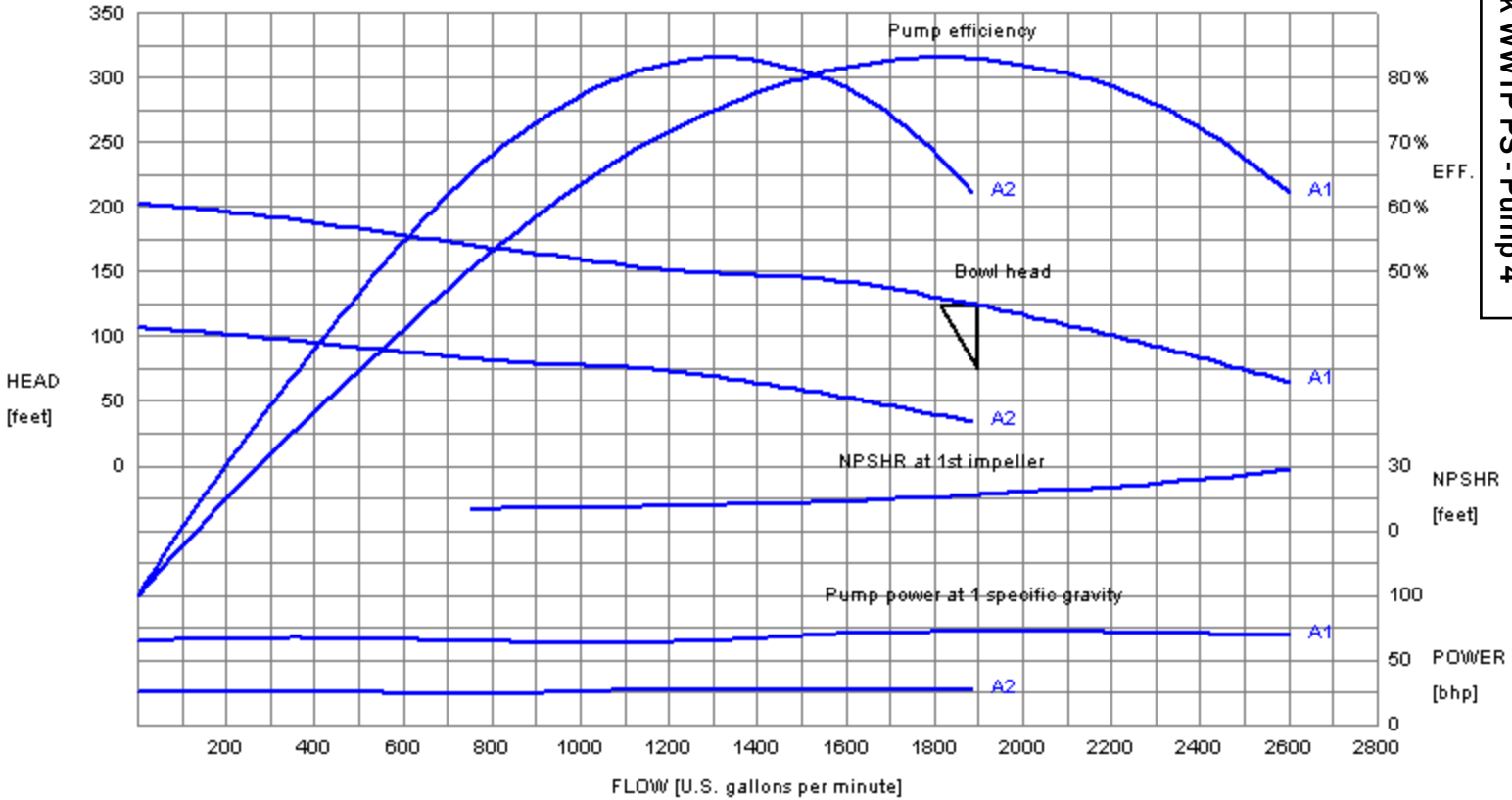


The head and power may be different than shown in accordance with Hydraulic Institute standards.

Trim Diameter: 8.242
Pump Downthrust at design: 2249 lbs
Pump Downthrust at shutoff: 3342 lbs
A1 = 1780 RPM
A2 = 1290 RPM

City of Roseville
Placer County, Ca.
(1) 75 HP Recycled Water Pump
Item 66-P-004-RW

Dry Creek WWTP PS - Pump 4



Manito Construction
1048 Serpentine Lane, Suite 306
Pleasanton, Ca 94566

FLOWAY PUMPS
FRESNO, CALIFORNIA
A WEIR COMPANY

TYPE:	14DKH
NO. OF STAGES:	2
R.P.M.:	1770
PUMP SERIAL NO.:	48547-1/1

DWG. NO. 4854701PC

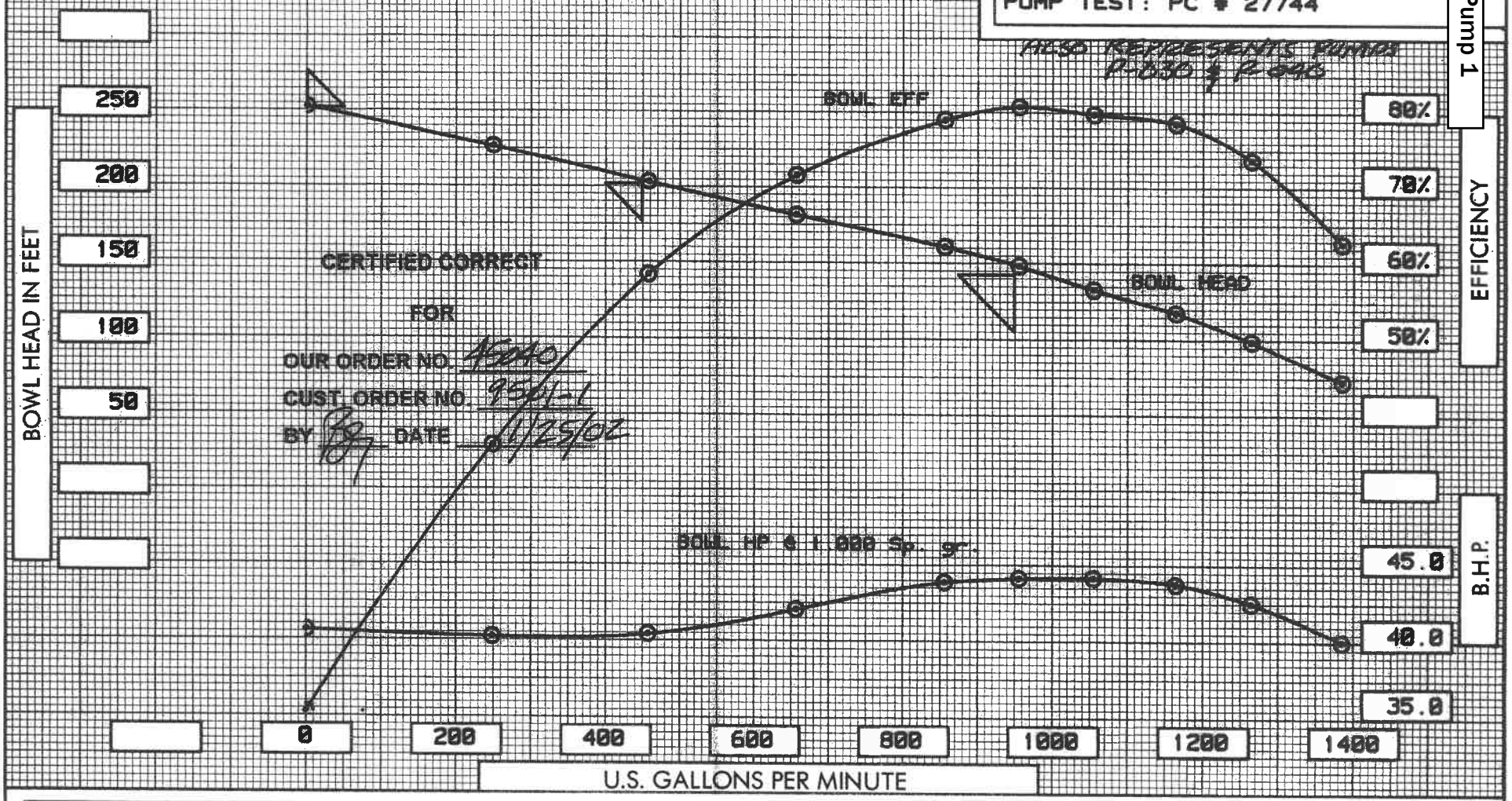
DWN. BY: TLL

DATE: 07/10/2002

North Zone PS - Pump 1

CITY OF ROSEVILLE. CA
ROSEVILLE RECYCLED WATER PROJE
RECYCLED WATER PUMP
P-020
PUMP TEST: PC # 27744

TEST ACROSS-THE-LINE, CESS VFD FOR PERFORMANCE EVALUATION



CERTIFIED CORRECT
FOR
OUR ORDER NO. 45040
CUST. ORDER NO. 9561-1
BY BMT DATE 01/25/02

SYBLON-REID CO. INC.
SRC CONTRACTORS
1130 SIBLEY ST. BOX 100
FOLSOM CA 95630-0100

FLOWAY PUMPS
FRESNO, CALIFORNIA

A WEIR COMPANY

TYPE 12 DKL
NO. OF STAGES 3
R.P.M. 1780
PUMP SERIAL NO. 45040-3-1

DWG. NO. 45040-3-1-T1

DWN. BY BMT DATE 01-09-2002

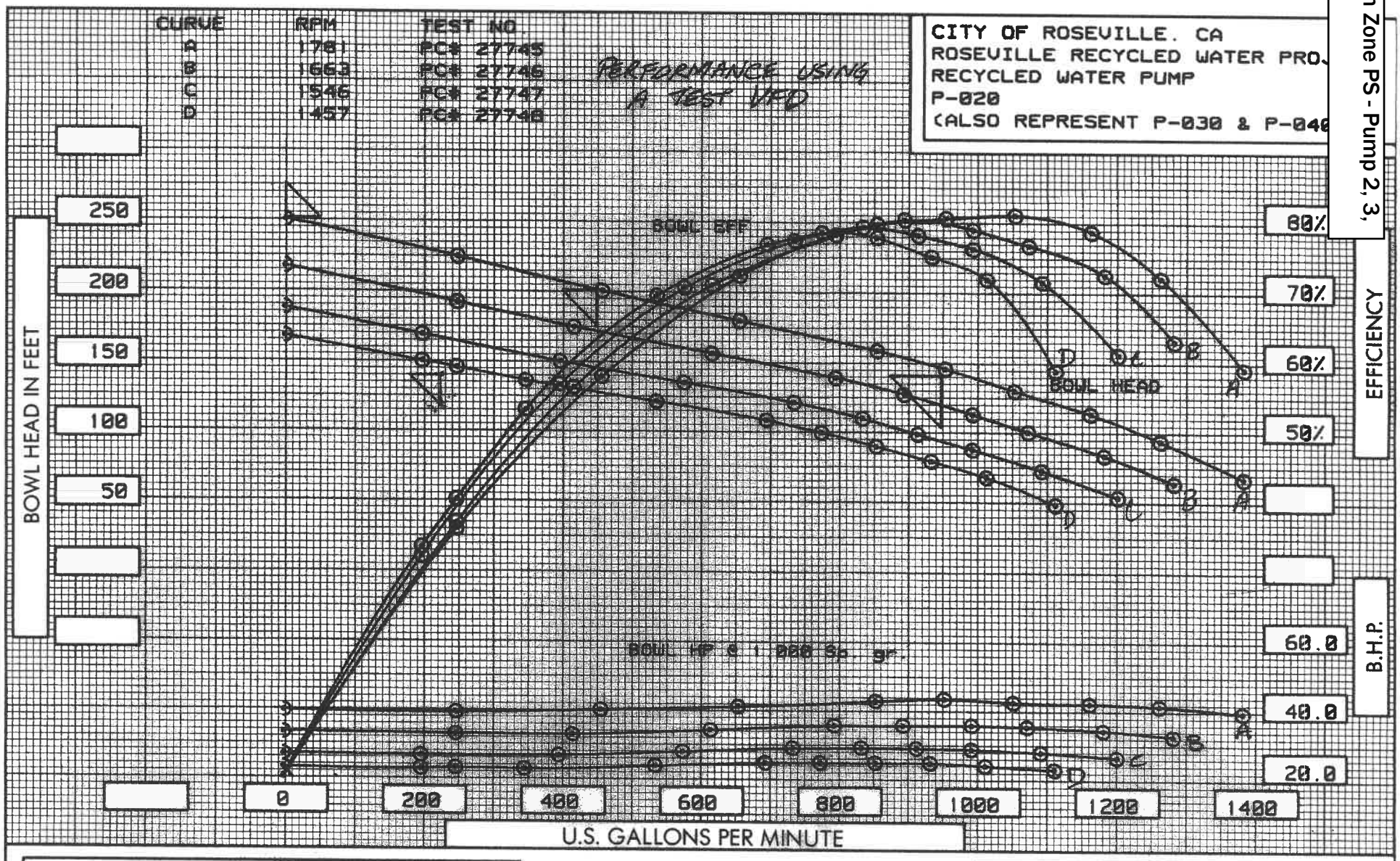
PF-614

North Zone PS - Pump 2, 3, & 4

CURVE	RPM	TEST NO.
A	1781	FC# 27745
B	1663	FC# 27746
C	1546	FC# 27747
D	1457	FC# 27748

PERFORMANCE USING A TEST VFD

CITY OF ROSEVILLE. CA
ROSEVILLE RECYCLED WATER PRO
RECYCLED WATER PUMP
P-020
(ALSO REPRESENT P-030 & P-040



SYBLON-REID CO. INC.
SRC CONTRACTORS
1130 SIBLEY ST. BOX 100
FOLSOM CA 95630-0100

DWG. NO. 45040-3-1-T1 MULT

FLOWAY PUMPS
FRESNO, CALIFORNIA

A WSR COMPANY

TYPE 12 DKL
NO. OF STAGES 3
R.P.M. SEE LEGEND
PUMP SERIAL NO 45040-3-1

DWN. BY BMT DATE 1/24/02

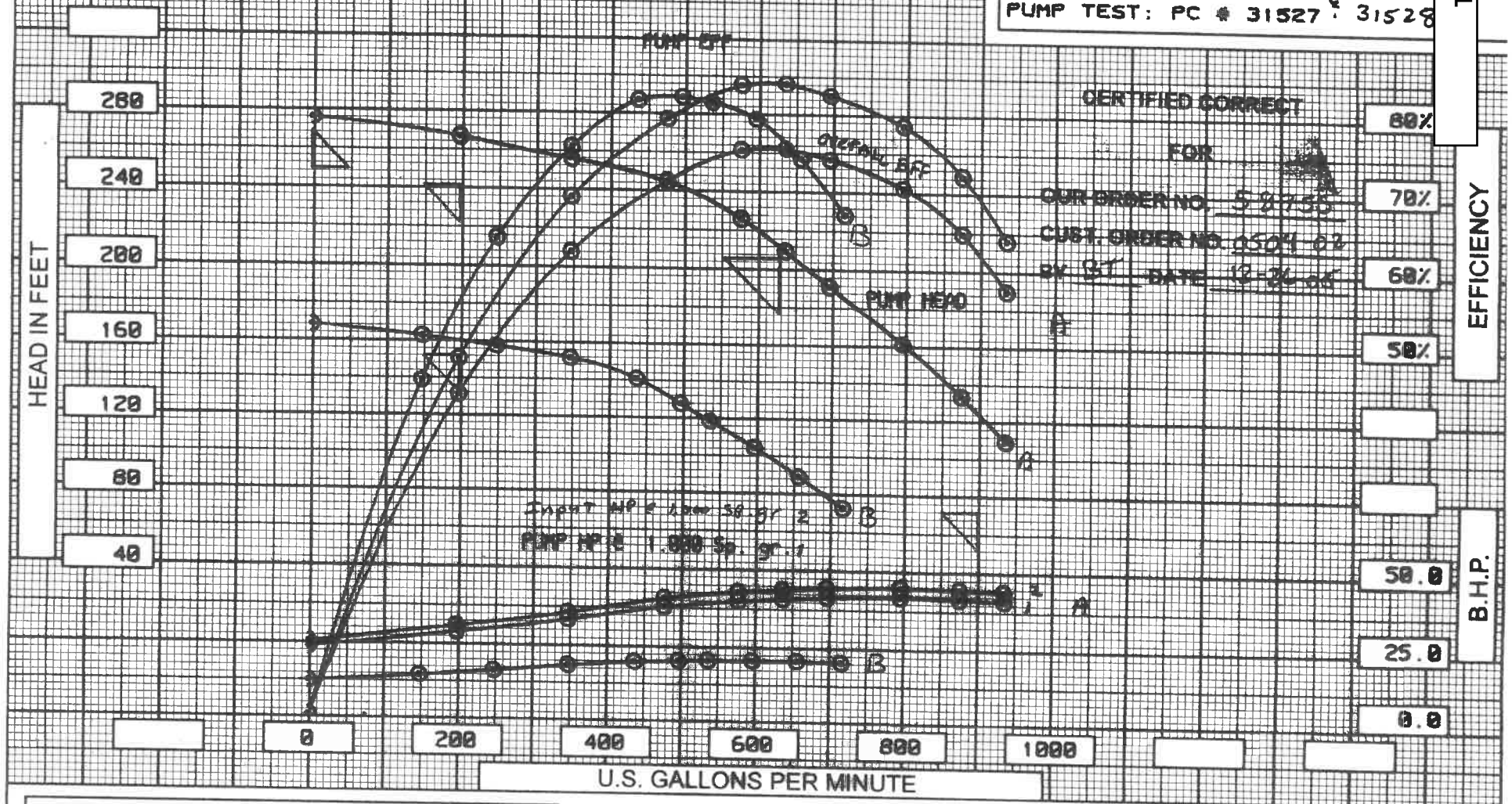
PF-614

WRPS - Pump 1

CURVE A = FULL SPEED (1792 RPM)
CURVE B = REDUCE SPEED 1376 RPM

CITY OF ROSEVILLE
WEST ROSEVILLE RECYCLED WATER
STORAGE TANK & PUMP STATION
P-100
PUMP TEST: PC # 31527 & 31528

CERTIFIED CORRECT
FOR
OUR ORDER NO. 5 [illegible]
CUST. ORDER NO. 450[illegible] 02
BY GT DATE 12-[illegible]-05



MANITO CONSTRUCTION INC
1046 SERPENTINE LAN SUITE I
PLEASANTON CA 94566

DWG. NO. 58755-1-1-T2

CLEAR LIQUID

TYPE 10 JKH
NO. OF STAGES 5
R.P.M. 1792
PUMP SERIAL NO. 58755-1-1

DWN. BY BMT DATE 12-26-2005

PF-614

WZPS Pump 2, 3, 4, 5, & 6

CURVE A = FULL SPEED (1792 RPM)
CURVE B = REDUCE SPEED 1837 RPM
CERTIFIED CORRECT

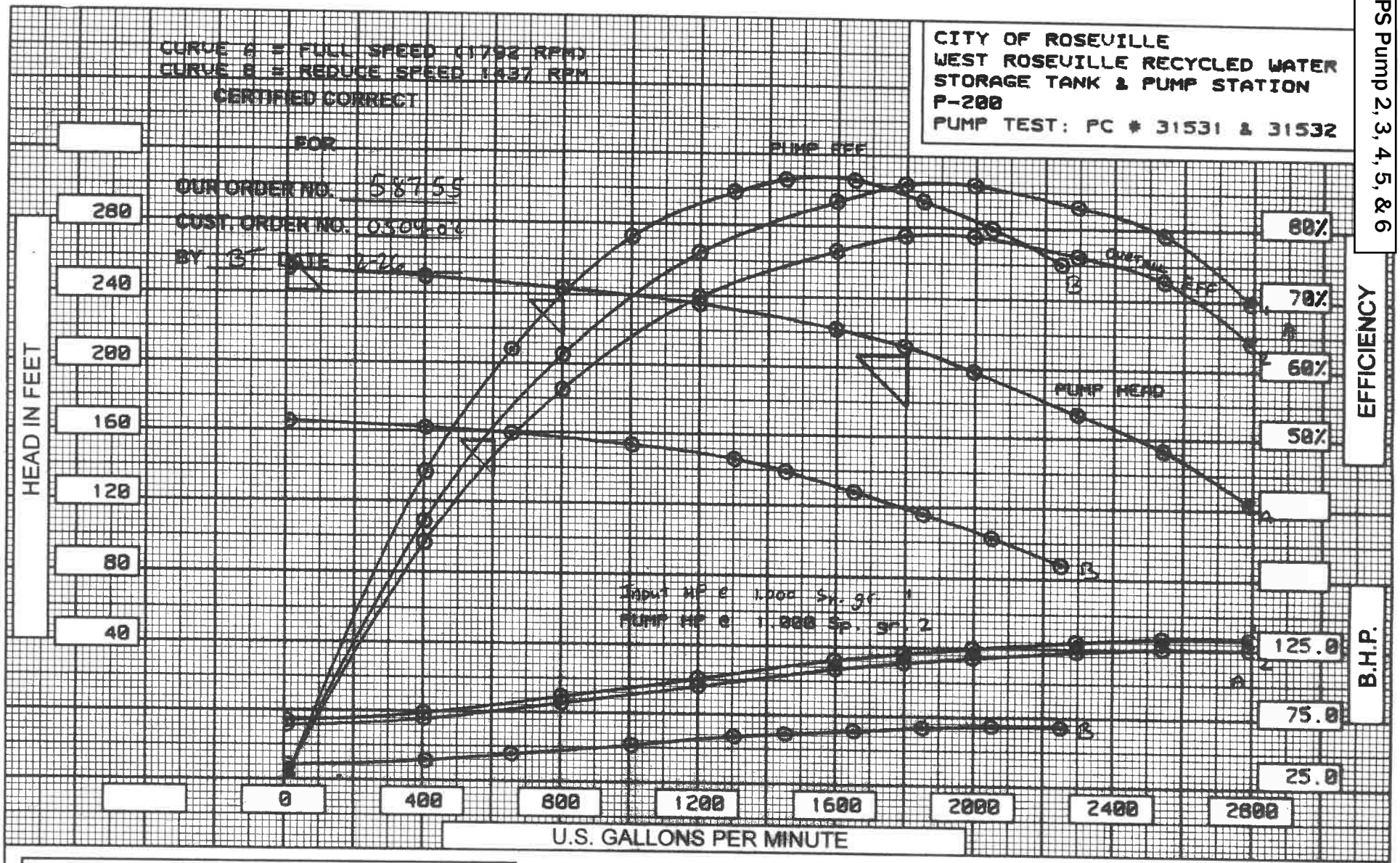
FOR

OUR ORDER NO. 58755

CUST. ORDER NO. 05044

BY BT DATE 1-26

CITY OF ROSEVILLE
WEST ROSEVILLE RECYCLED WATER
STORAGE TANK & PUMP STATION
P-200
PUMP TEST: PC # 31531 & 31532



MANITO CONSTRUCTION INC
1048 SERPENTINE LANE SUITE I
PLEASANTON CA 94566

DWG. NO. 58755-4-1-T1

CLEAR LIQUID

TYPE 14 JKH
NO. OF STAGES 2
R.P.M. 1792
PUMP SERIAL NO. 58755-4-1

DWN. BY BMT DATE 12-26-2005

PF-814

Pleasant Grove WWTP PS
250 hp - Pump 1

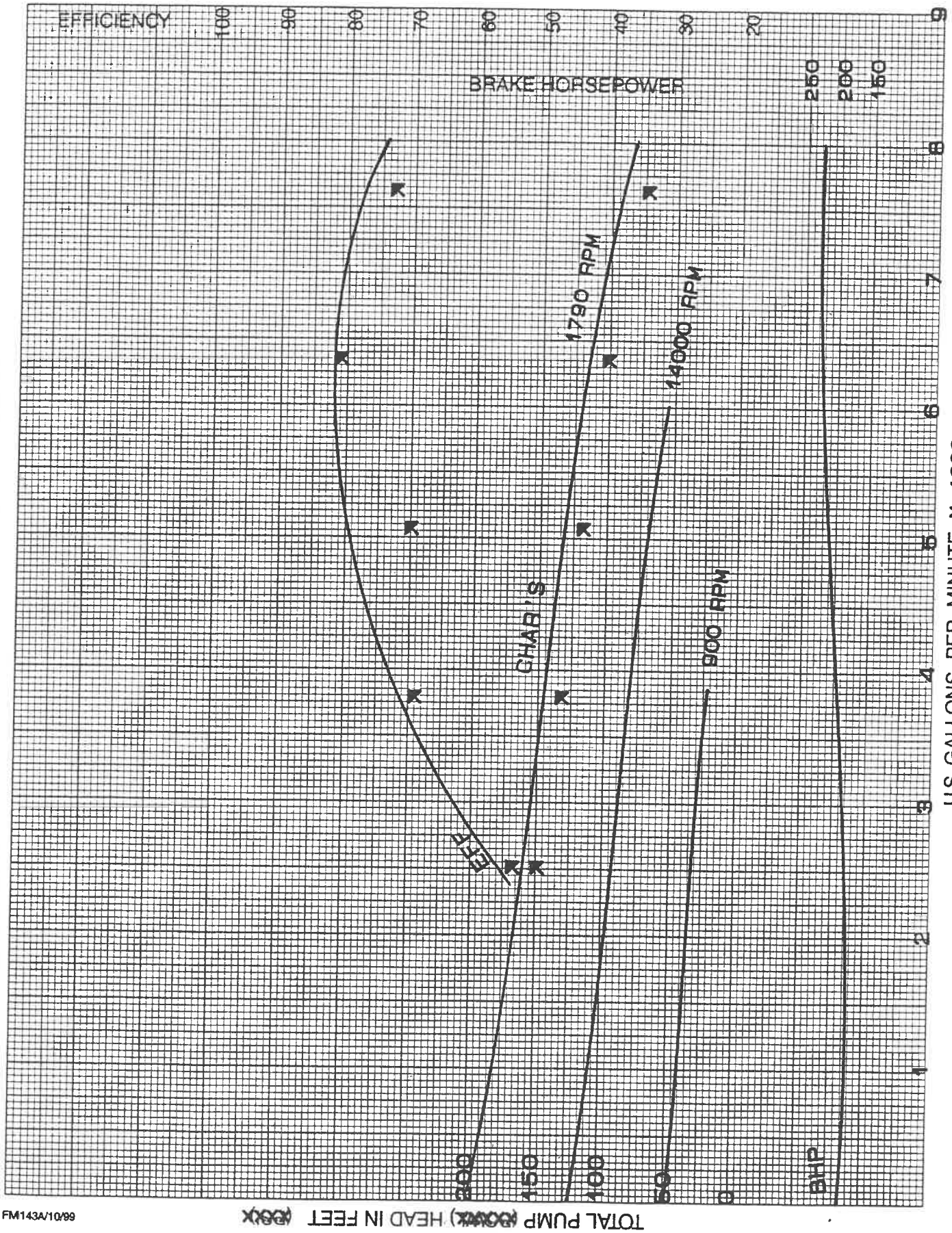
Fairbanks Morse

113128/2029

CERTIFIED CURVE

SERIAL NO. 328142-0 NO. STAGES ONE SIZE-MODEL 19B-7100AW
TEST DATE 04/08/02 DRIVER TM-250 MTR IMPELLER STD
IMPELLER DIA. 13.95"
CERTIFIED CORRECT BY _____ 04/02 RPM(S) 1790
TEST DEPARTMENT DATE

CERTIFIED PUMP PERFORMANCE CURVE



PROJECT NO. 063196

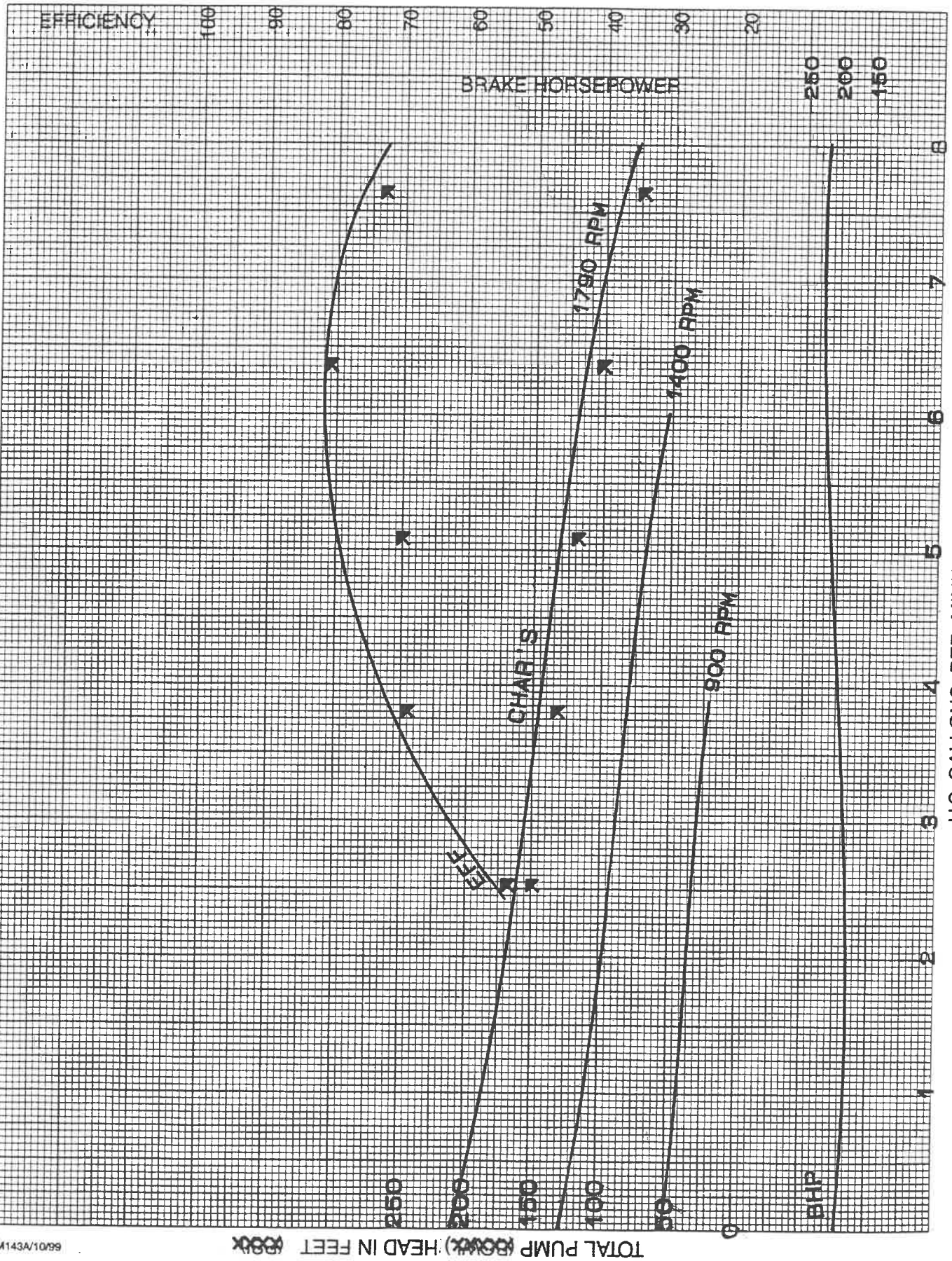
FM143A/10/99

Fairbanks Morse
Pentair Pump Group

CERTIFIED CURVE

Pleasant Grove WWTP PS
250 hp - Pump 2

2-1 NO. STAGES ONE SIZE-MODEL 198-7100AW
TEST DATE 04/08/02 DRIVER TM-250 MTR IMPELLER STD
IMPELLER DIA. 13.95"
CERTIFIED CORRECT BY [signature] 04/08 RPM(S) 1790
TEST DEPARTMENT DATE



CERTIFIED PUMP PERFORMANCE CURVE

PROJECT NO. 063196

U.S. GALLONS PER MINUTE X 1000

TOTAL PUMP (XXXX) HEAD IN FEET (XXXX)

FM143A/10/99

Pleasant Grove WWTP PS
30 hp - Pump 3

Fairbanks Morse Pump
A Member of Pentair Pump Group

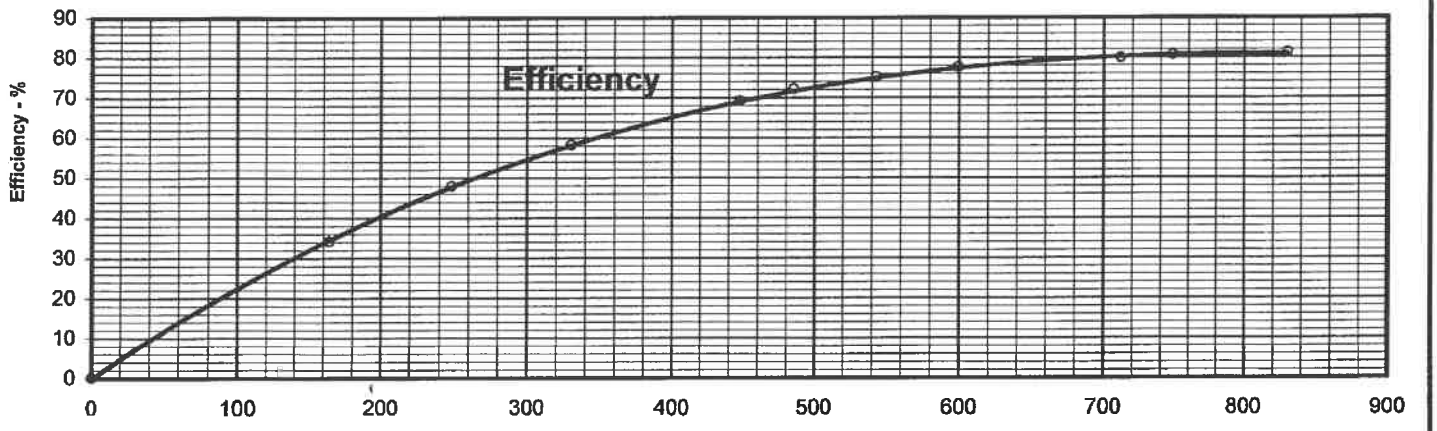
Certified Pump Performance Curve

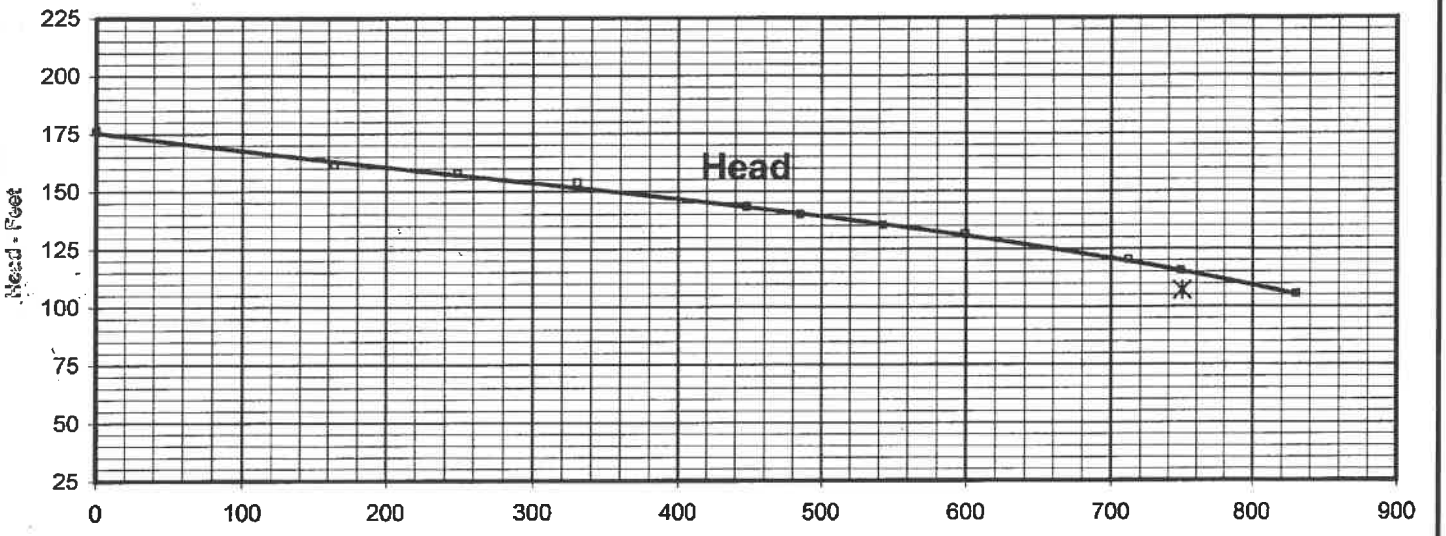
Guaranteed Values					
GPM	750				
HEAD	107				
Eff					
RPM	1765				

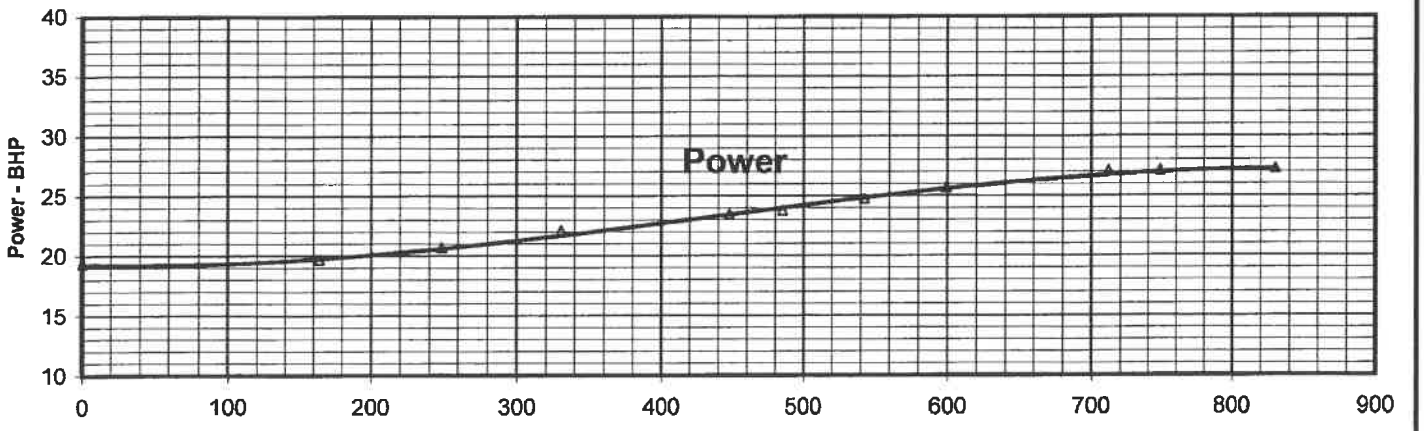
Size-Model	10G	7100AW		CCW
Impeller:		LV4455277208		
Impeller Dia:		7.96"		
Driver:	60 HP and 1800 RPM VHS		HP:	30
RPM:	1765	Stages:	3	

Serial Number:	1485699		
Project Number:	090384		
Test Date:	5/1/2007		

Certified By: [signature] Test Department — 05/07 Date







APPENDIX C: DETAILED COST ESTIMATES

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION	
PROJECT ID:	B-1
LOCATION:	West Roseville PS
BRIEF PROJECT DESCRIPTION:	Upsize bypass at West Roseville PS/Pleasant Grove WWTP from 10" to 24"
PROPOSED PROJECT PHASING:	0
REASON FOR PROJECT:	Improve system reliability and flexibility
SPECIAL CONSIDERATIONS:	Small project (additional 15% contingency)
ALTERNATIVES:	Parallel pipe could be installed.

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	24 in.	50	LF	365 $/ft	$18,245
Connection to Existing System		2	EA	19,607 $/EA	$39,215
Surface Restoration					
Pavement Restoration	50' long	6' wide	300' SF	9.62 $/sf	$2,887
Subtotal					$60,346
Mobilization and Demobilization				**10%**	$6,035
Raw Construction Cost Subtotal					**$66,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$13,200
Subtotal					**$79,200**
Project Contigency				**30%**	$23,760
Small Project Contingency				**15%**	$11,880

Capital Improvement Cost Total **$115,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION	
PROJECT ID:	I-1
LOCATION:	Angus Rd and Casa Sedona Dr
BRIEF PROJECT DESCRIPTION:	Add an intertie between the the West and North Pressure Zones
PROPOSED PROJECT PHASING:	0
REASON FOR PROJECT:	Improve system reliability and flexibility
SPECIAL CONSIDERATIONS:	
ALTERNATIVES:	A different alignment could be used. A larger diameter pipe could be considered to provide additional future flexibility.

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	6 in.	1640	LF	180 $/ft	$295,669
Connection to Existing System		2	EA	1,429 $/EA	$2,858
Misc. Pipe Appurtenances (valves)				5%	$14,926
Traffic and Construction Productivity Factors					
Traffic Control		5% of baseline pipe cost		5%	$14,783
Surface Restoration					
Pavement Restoration	1,640' long	4' wide	6,560' SF	9.62 $/sf	$63,128
Subtotal					$391,365
Mobilization and Demobilization				**10%**	$39,136
Raw Construction Cost Subtotal					**$431,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$86,200
Subtotal					**$517,200**
Project Contigency				**30%**	$155,160

Capital Improvement Cost Total **$672,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID: I-2

LOCATION: Blue Oaks Blvd

BRIEF PROJECT DESCRIPTION: Add an intertie between the the West and South Pressure Zones

PROPOSED PROJECT PHASING: 0

REASON FOR PROJECT: Improve system reliability and flexibility

SPECIAL CONSIDERATIONS:

ALTERNATIVES: A larger diameter pipe could be considered to provide additional future flexibility.

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	6 in.	1520	LF	180 $/ft	$274,035
Connection to Existing System		2	EA	1,429 $/EA	$2,858
Misc. Pipe Appurtenances (valves)				5%	$13,845
Traffic and Construction Productivity Factors					
Traffic Control		5% of baseline pipe cost		5%	$13,702
Surface Restoration					
Pavement Restoration	1,520' long	4' wide	6,080' SF	9.62 $/sf	$58,509
Subtotal					$362,948
Mobilization and Demobilization				**10%**	$36,295
Raw Construction Cost Subtotal					**$399,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$79,800
Subtotal					**$478,800**
Project Contigency				**30%**	$143,640

Capital Improvement Cost Total **$622,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID: I-3

LOCATION: Baseline Rd and Fiddyment Rd

BRIEF PROJECT DESCRIPTION: Add an intertie between the the West and South Pressure Zones

PROPOSED PROJECT PHASING: 3

REASON FOR PROJECT: Improve system reliability

SPECIAL CONSIDERATIONS: Requires future extension of recycled water main south on Fiddyment Rd.

ALTERNATIVES: A larger diameter pipe could be considered to provide additional future flexibility.

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	8 in.	6681	LF	201 $/ft	$1,341,531
Connection to Existing System		3	EA	1,429 $/EA	$4,286
Misc. Pipe Appurtenances (valves)				5%	$67,291
Traffic and Construction Productivity Factors					
Congested Traffic or Utility Corridor Factor		5% of baseline pipe cost		5%	$67,077
Traffic Control		5% of baseline pipe cost		5%	$67,077
Surface Restoration					
Pavement Restoration	6,681' long	4' wide	26,724' SF	9.62 $/sf	$257,171
Subtotal					$1,804,432
Mobilization and Demobilization				**10%**	$180,443
Raw Construction Cost Subtotal					**$1,985,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$397,000
Subtotal					**$2,382,000**
Project Contigency				**30%**	$714,600
Capital Improvement Cost Total					**$3,097,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID: I-3

LOCATION: Baseline Rd and Fiddyment Rd

BRIEF PROJECT DESCRIPTION: Add an intertie between the the West and South Pressure Zones

PROPOSED PROJECT PHASING: 3

REASON FOR PROJECT: Improve system reliability

SPECIAL CONSIDERATIONS: Requires future extension of recycled water main south on Fiddyment Rd.

ALTERNATIVES: A larger diameter pipe could be considered to provide additional future flexibility.

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	10 in.	6316	LF	221 $/ft	$1,397,794
Connection to Existing System		2	EA	1,429 $/EA	$2,858
Misc. Pipe Appurtenances (valves)				5%	$70,033
Traffic and Construction Productivity Factors					
Congested Traffic or Utility Corridor Factor		5% of baseline pipe cost		5%	$0
Traffic Control		5% of baseline pipe cost		5%	$0
Surface Restoration					
Pavement Restoration	6,316' long	4' wide	25,264' SF	9.62 $/sf	$243,121
Subtotal					$1,713,805
Mobilization and Demobilization				**10%**	$171,380
Raw Construction Cost Subtotal					**$1,885,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$377,000
Subtotal					**$2,262,000**
Project Contigency				**30%**	$678,600

Capital Improvement Cost Total **$2,941,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID:..... PP-1

LOCATION:.....West Roseville Pump Station to West Park Drive

BRIEF PROJECT DESCRIPTION:..... Install parallel 24" pipe (1891 LF)

PROPOSED PROJECT PHASING: ..... Implement when upgrading West Roseville PS capacity

REASON FOR PROJECT:..... Reduced headloss during peak periods and increase conveyance capacity.

SPECIAL CONSIDERATIONS:.....

ALTERNATIVES:..... Remove and replace existing or install parallel pipe

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	24	485	LF	365 $/ft	$176,974
Connection to Existing System		2	EA	19,607 $/EA	$39,215
Traffic and Construction Productivity Factors					
Traffic Control		5% of baseline pipe cost		5%	$8,849
Surface Restoration					
Pavement Restoration	485' long	8' wide	3,880' SF	9.62 $/sf	$37,338
Subtotal					$262,375
Mobilization and Demobilization				**10%**	$26,238
Raw Construction Cost Subtotal					**$289,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$57,800
Subtotal					**$346,800**
Project Contigency				**30%**	$104,040

Capital Improvement Cost Total **$451,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID:	PP-2 note acutally triggered by city future
LOCATION:	Blue Oaks Blvd west of Woodcreek Oaks Blvd
BRIEF PROJECT DESCRIPTION:	Replace 8" pipe with 15" pipe along Blue Oaks Blvd between Woodcreek Oaks and Diamond Creek Blvd
PROPOSED PROJECT PHASING:	Before additional customers are added west of Woodcreek Oaks Blvd
REASON FOR PROJECT:	Reduced headloss during peak periods and improve system reliability.
SPECIAL CONSIDERATIONS:	
ALTERNATIVES:	Install parallel 8" pipe

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	12	1600	LF	242 $/ft	$386,915
Connection to Existing System		2	EA	19,607 $/EA	$39,215
Traffic and Construction Productivity Factors					
Traffic Control		5% of baseline pipe cost		5%	$21,307
Surface Restoration					
Pavement Restoration	1,600' long	8' wide	12,800' SF	9.62 $/sf	$123,177
Subtotal					$570,614
Mobilization and Demobilization				**10%**	$57,061
Raw Construction Cost Subtotal					**$628,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$125,600
Subtotal					**$753,600**
Project Contigency				**30%**	$226,080

Capital Improvement Cost Total **$980,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID:..... PP-3

LOCATION:..... Dry Creek WWTP

BRIEF PROJECT DESCRIPTION:..... Replace 20" pipe with 30" pipe along Blue Oaks Blvd between Woodcreek Oaks and Diamond Creek Blvd

PROPOSED PROJECT PHASING: ..... Before Placer One Demands added

REASON FOR PROJECT:..... Reduced headloss during peak periods and improve system reliability.

SPECIAL CONSIDERATIONS:.....

ALTERNATIVES:..... Install parallel 12" pipe

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Pipe (PVC)	30	2533	LF	426 $/ft	$1,080,147
Connection to Existing System		2	EA	19,607 $/EA	$39,215
Traffic and Construction Productivity Factors					
Traffic Control		5% of baseline pipe cost		5%	$55,968
Surface Restoration					
Pavement Restoration	2,533' long	8' wide	20,264' SF	4.81 $/sf	$97,502
Subtotal					$1,272,832
Mobilization and Demobilization				**10%**	$127,283
Raw Construction Cost Subtotal					**$1,400,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$280,000
Subtotal					**$1,680,000**
Project Contigency				**30%**	$504,000

Capital Improvement Cost Total **$2,184,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID:..... PS-1

LOCATION:.....West Roseville Pump Station

BRIEF PROJECT DESCRIPTION:..... Replace three pumps at West Roseville Pump Station for added capacity

PROPOSED PROJECT PHASING: X

REASON FOR PROJECT:..... Increase system capacity required for future buildout

SPECIAL CONSIDERATIONS:.....

ALTERNATIVES:.....Install new pumps at West Roseville Pump Station

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Pipe Construction Cost					
Replacement of Pumps	300 HP	3	EA	$564,000	$1,692,000
Subtotal					$1,692,000
Mobilization and Demobilization				**10%**	$169,200
Raw Construction Cost Subtotal					**$1,861,000**
Alternatives Analysis				**10%**	$186,100
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$372,200
Subtotal					**$2,419,300**
Project Contigency				**30%**	$725,790

Capital Improvement Cost Total **$3,145,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

Cost Estimating Worksheet

ROSEVILLE RECYCLED WATER SYSTEM PROJECT DESCRIPTION

PROJECT ID: S-1

LOCATION: Dry Creek Wastewater Treatment Plant

BRIEF PROJECT DESCRIPTION: Improvements to modify (2) existing Chlorine Contact Basins for use as Reclaimed Water Storage Basins

PROPOSED PROJECT PHASING:

REASON FOR PROJECT: Increase reclaimed water storage volume.

SPECIAL CONSIDERATIONS:

ALTERNATIVES:

MAJOR ITEMS	Size	Quantity	Unit	UNIT COST	COST
Baseline Construction Cost					
Demo - Gates		2	EA	$3,000	$6,000
Demo - Mud Valves, Slab		7	EA	$2,000	$14,000
Demo - Wall Opening, 6'x6', Add'l. Reinf.		3	EA	$4,000	$12,000
Demo - Existing 24"-REW		1	LS	$8,000	$8,000
Concrete Wall Closure		3	EA	$6,000	$18,000
Aluminum Flow Rec. Trough		1	EA	$20,000	$20,000
48"-DI Pipe		158760	LBS	$1.20	$190,512
Piping Installation Labor		1	LS	$19,051	$19,051
DI Pipe Supports, 304 SS		18	EA	$2,500	$45,000
48"-DI 90* Bend		1	EA	$8,000	$8,000
48"-DI REW Feed Piping		132300	LBS	$1.20	$158,760
Piping Installation Labor		1	LS	$15,876	$15,876
48"-DI REW Feed Fittings, Couplings		3	EA	$8,000	$24,000
48"-DI REW Feed Wall Pen's		1	EA	$2,000	$2,000
24"-DI REW Piping		4575	LBS	$1.10	$5,033
Piping Installation Labor		1	LS	$5,033	$5,033
24"-DI REW Fittings, Couplings		3	EA	$5,000	$15,000
36"-DI REW Feed Piping		18300	LBS	$1.15	$21,045
Piping Installation Labor		1	LS	$10,523	$10,523
36"-DI REW Feed Fittings, Couplings		4	EA	$7,000	$28,000
DI Pipe Supports, 304 SS		4	EA	$2,500	$10,000
36" Butterfly Valve		1	EA	$30,000	$30,000
12" Mud Valve		7	EA	$5,000	$35,000
Concrete Repair Allowance		1	LS	$100,000	$100,000
Aluminum Slide Gate		2	EA	$20,000	$40,000
Subtotal					$840,832
Mobilization and Demobilization				**10%**	$84,083
Raw Construction Cost Subtotal					**$925,000**
Engineering/Construction Management and Administration, and Legal Costs				**20%**	$185,000
Subtotal					**$1,110,000**
Project Contigency				**30%**	$333,000

Capital Improvement Cost Total **$1,443,000**

ENR = 14,511 (Average of 20 Cities and San Francisco, March 2025)

APPENDIX D: ALTERNATIVES DEVELOPMENT AND EVALUATION FOR REYCLED WATER DISTRIBUTION SYSTEM (TM 5B)

Technical Memorandum

South Placer Regional Wastewater & Recycled Water Systems Evaluation Project

Subject:	**Alternatives Development and Evaluation for Recycled Water Distribution System (TM 5b)**
Prepared For:	Art O'Brien – City of Roseville Ed Wydra – Placer County
Prepared by:	Amanda Schmidt Glenn Hermanson Andy Smith
Reviewed by:	Dave Richardson
Date:	February 8, 2007; updated February 11, 2008
Reference:	0091.05

0 Previous TM Publication and Updates

Since the latest publication of technical memorandum (TM) 5b on February 8, 2007, changes in information available for the South Placer Wastewater and Recycled Water Systems Evaluation (Systems Evaluation), as well as changes in the data, have resulted in the need to identify and update out-of-date information. This newest publication of TM 5b reflects the changes in available data and/or assumptions.

1 Introduction

The objectives of this TM are to define and evaluate recycled water facilities alternatives to serve the existing City of Roseville (City) service area and Urban Growth Areas (UGAs).

This TM is organized as follows:

- Introduction
- Alternatives Development
- Alternatives Evaluation
- Implementation Plan
- Bibliography

1.1 Project Alternative Definition

Each recycled water project alternative is defined as the combination of the treatment, storage/pumping, and distribution options (supply side) necessary to serve targeted users located in a given service area (demand side). Alternatives for delivering recycled water were evaluated using H_2ONet hydraulic modeling software.

The development of the recycled water project alternatives involved defining the following components for each alternative:

- **Service Area:** Where would recycled water be used?

  Recycled water will be used in the existing Roseville service area (generally in the vicinities of the regional WWTPs; north and west of I-80/UPRR) in addition to Urban Growth Areas.

Recycled water will be used as irrigation for business parks, commercial, multi-family developments, golf courses, parks, and streetscape. Industrial customers will use recycled water for non-contact cooling processes.

- **Treatment:** Where would recycled water be produced?

  Recycled water would be produced at the Pleasant Grove Wastewater Treatment Plant (PGWWTP) and at the Dry Creek Wastewater Treatment Plant (DCWWTP) to supply customers in the existing service area and UGAs.

  An option of satellite treatment will be evaluated for Placer Vineyards (PV) and Placer Ranch (PR) UGAs. Satellite treatment would consist of seasonally operated treatment facilities to treat wastewater from the UGA before it reaches the WWTP. Treated recycled water would be directly pumped back to the corresponding UGA.

- **Storage:** How much recycled water would need to be stored and where?

  Each UGA will be required to have a storage facility to hold recycled water. The minimum operational storage volume of each UGA storage tank is equal to the maximum day demand of recycled water.

  The existing 1.5 MG storage tank at the North Zone Pump Station (NZPS) will be utilized to hold recycled water supplied by DCWWTP and a supplemental supply will be provided from PGWWTP.

  The need for operational storage at PGWWTP and DCWWTP will be evaluated.

- **Distribution:** How would recycled water be distributed to the different users?

  In general, pipelines will be located in major corridors (roadways or along property boundaries), but have flexibility in the specific alignment.

1.2 Project Alternatives Development and Evaluation Update

The recycled water setting has changed since the development of the April 2000 Recycled Water Distribution Feasibility Study (RWFS), presenting new opportunities and new challenges. Because of these changes, the recommended recycled water project and associated implementation plan included in the 2000 RWFS were revisited. The treatment, storage/pumping, and distribution options identified in the 2000 RWFS formed the basis for project alternative development and evaluation. Existing facilities are listed in **Table 1**. Additional facility improvements will be evaluated in the following sections.

Table 1: Storage and Pumping Facilities

Existing Storage and Pumping Facilities Used in the Hydraulic Model		
North Zone Storage Tank	(Feet)	**North Zone Pump Station**
Base Elevation (floor)	123.0	Pumps
Minimum Water Level	5.0	2 duty pumps, 1 standby
Maximum Water Level	16.5	Pump Curve (all three pumps)
Initial Water Level (for modeling)	5.0	Design Point: 950 gpm at 140 feet
Diameter	124.0	Shutoff Head: 0 gpm at 234 feet
Datum for all elevations: Sea Level (0 feet)		High Flow: 1,338 gpm at 0 feet
		Pumps water from Storage Tank
Dry Creek Pump Station		**Pleasant Grove Pump Station**
Pumps		Pumps
3 duty pumps, 1 standby		2 duty pumps
Pump Curve (all four pumps)		Pump Curve (both pumps)
Design Point: 1,900 gpm at 124.6 feet		Design Point: 5,120 gpm at 124 feet
Shutoff Head: 0 gpm at 206 feet		Shutoff Head: 0 gpm at 192 feet
High Flow: 2,480 gpm at 0 feet		High Flow: 7,680 gpm at 0 gpm
Pumps from a wet well with a water surface elevation of 114 ft.		Pumps from a wet well with a surface elevation of 90 ft.

1.3 Approach

The following approach was adopted to meet the TM objectives described above:

- Develop a list of conceptual alternatives (including preliminary sizing and alignments, pumping requirements and location and storage requirements) building on the technical work of the 2000 Recycled Water Distribution Feasibility Study
- Evaluate the pros and cons of each conceptual alternative to find the preferred alternative

2 Alternatives Development

This section presents the recycled water facilities alternatives that were developed by:

- Considering the different options available for each project component
- Combining these options to form logical project alternatives
- Developing the necessary technical information necessary to define and evaluate each alternative

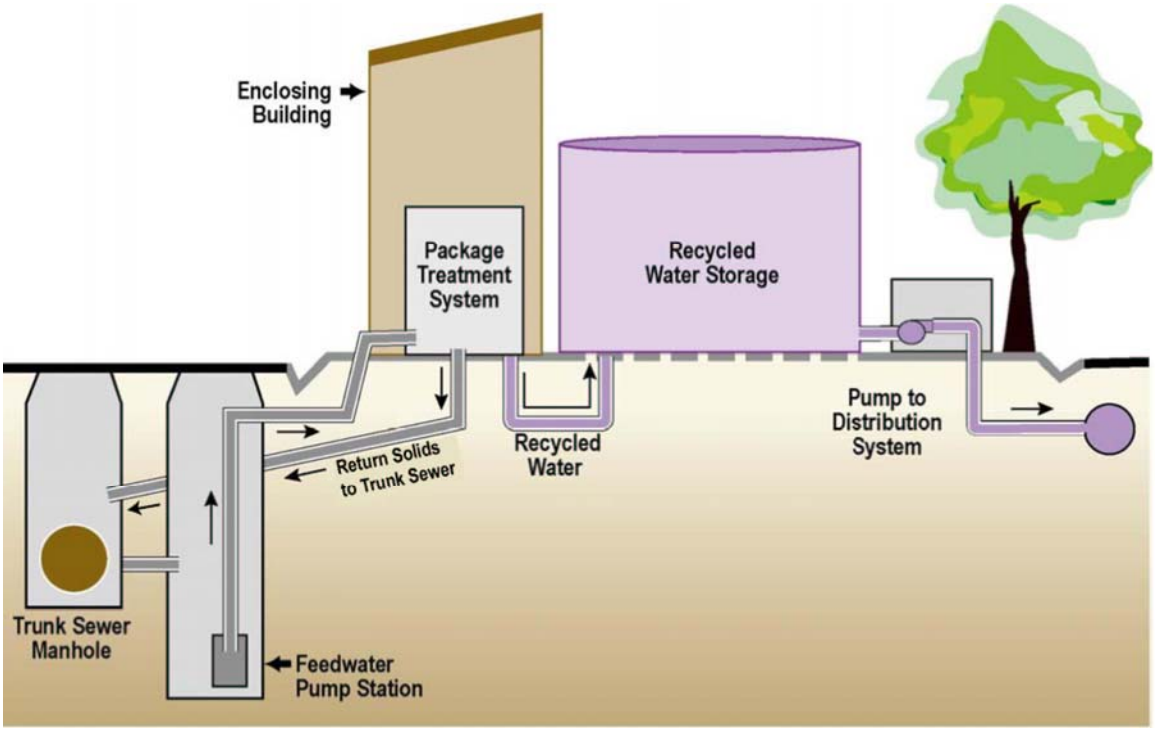
2.1 Alternatives Identification

Two basic categories of options are available for the production of recycled water: centralized treatment with distribution from Pleasant Grove and Dry Creek WWTPs, and satellite treatment and distribution. This section will discuss satellite treatment, detail the treatment process, costs, and advantages and disadvantages (relative to centralized treatment). Distribution options and pipeline alignments along with storage requirements will also be discussed in this section.

2.1.1 Satellite Treatment

Satellite facilities would treat the wastewater from local trunk sewers to tertiary standards and likely return solids back to the trunk sewer. Recycled water would be available for use in the vicinity of the satellite plant. A conceptual illustration of a facility is shown in **Figure 1**. Seasonally operated satellite treatment could be used to supply the furthest UGA from PGWWTP, which is Placer Ranch and DCWWTP which is Placer Vineyards.

Figure 1: Conceptual Illustration of Satellite Recycled Water Facility



The treatment technology most widely used currently for new satellite treatment facilities is a membrane bioreactor (MBR). This technology combines the secondary biological process with the filtration process in a single reactor, an aeration tank with submerged membranes. RMC gathered data from ten satellite plants ranging in size from 0.3 mgd to 10 mgd (RMC, 2004). Information gathered included capital cost, MBR equipment costs, and operation and maintenance (O&M) costs for the surveyed satellite treatment facilities (all costs are expressed in 2004 dollars). Using this information, RMC has investigated the degree to which satellite treatment facilities could be more cost effective than serving recycled water from the central treatment plant through a pipeline.

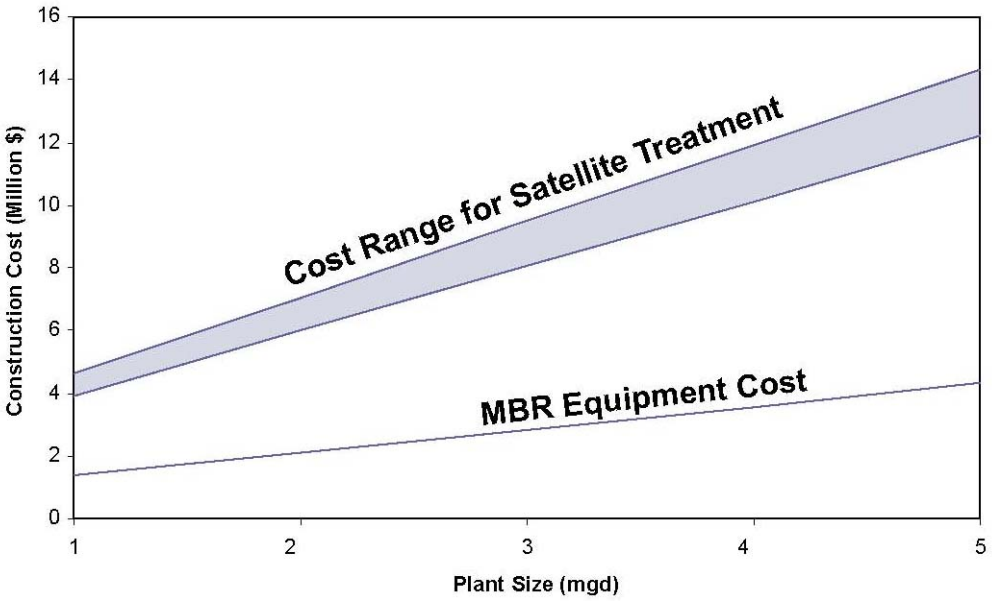
Footprint Size

Footprint sizes can vary widely; from the available data it was extrapolated that a plant size ranging from 1 to 5 mgd would require approximately 4 acres of land. This would be an appropriate land assumption for PR and PV because their demands are 3.34 and 5.4 mgd, respectively. This footprint requirement includes space for the treatment process, as well as for a distribution pump station. It does not include land requirements for recycled water storage, which might add an additional acre of land depending upon tank configuration and surrounding land use.

Construction Costs

Capital costs varied widely due to the variety in construction and operation of each plant. A cost curve was developed based on MBR quotes from Zenon and US Filter and construction cost information from interviewed satellite treatment facilities, shown in **Figure 2**.

Figure 2: Planning Level Cost Guidelines – Construction Cost ($ 2004)



A reasonable construction cost estimate for PR is $12.5 million (including MBR equipment costs). Similarly, PV construction cost estimate would be $18.75 million. Placer Vineyards costs were extrapolated from the graph. This does not include the cost of land. Also this does not include the cost of recycled water storage and distribution facilities, since these costs are paid for by the developer in both the satellite and central treatment options. For reference, from this estimate, MBR equipment costs would be approximately $3.25 million for PR and $4.75 million for PV.

Operation and Maintenance Costs

Annual O&M Costs are shown on **Figure 3** below. Again, the annual cost for each plant varies. This variability is due to different unit processes and different approaches to operation and maintenance that each plant employs. From the information obtained in Figure 3, annual operation and maintenance costs will be approximately $300,000 for PR and $500,000 for PV per year.

Figure 3: Comparison of Annual O&M Cost to Plant Size ($ 2004)

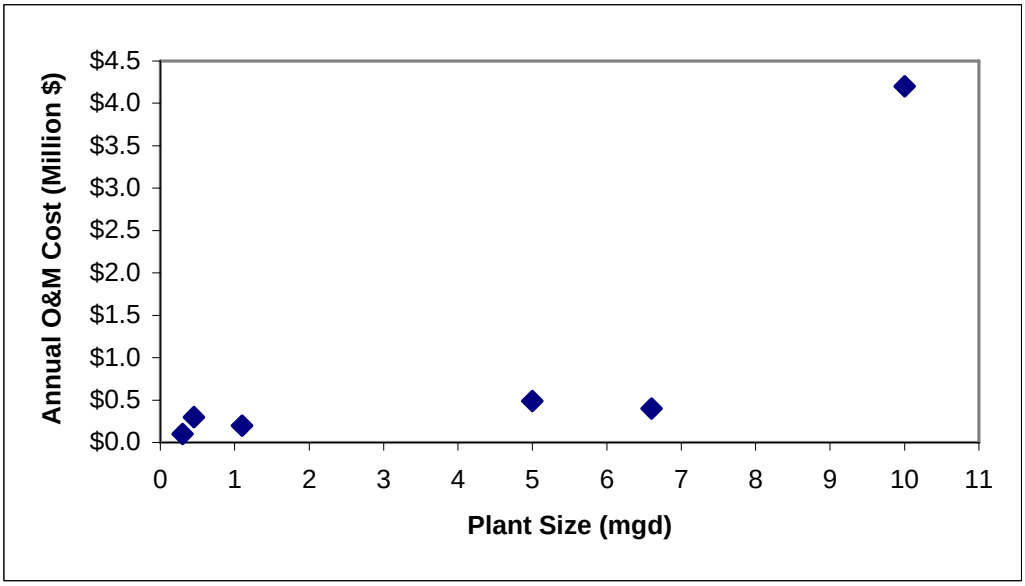


Table 2 provides a cost summary to build and operate a satellite treatment facility at PR and PV. Total present value cost for PR would be $17.4 million and PV would be $27 million.

Table 2: Satellite Treatment Cost Summary

Cost [a]	Placer Ranch	Placer Vineyards
Construction Costs	$12,500,000	$18,750,000
Present Value O&M Cost [b]	$9,905,000	$8,176,000
Total Present Value Cost for Satellite Treatment Alternative	**$17,405,000**	**$26,926,000**
Pipeline Cost for Centralized Transmission Treatment Alternative [c]	**$1,207,000**	**$2,840,000**
Low Cost Alternative	**Centralized**	**Centralized**

Footnotes:

a. 2004 dollars, no inflation assumed
b. Present value is calculated over a 20 year period. Assumed inflation rate = 3%, interest rate = 5%, therefore the discount rate = 2%.
c. Cost to install recycled water pipeline including contingency factors. See Section 4.2 and Attachment C.

Conclusions

Feasibility of satellite recycled water treatment can be determined by comparing its cost effectiveness to the development or expansion of centralized water recycling and transmission of recycled water to the use site.

Note: From a cost standpoint, satellite recycled water treatment has become a competitive alternative for recycled water production and delivery to remote areas; generally 5 to 10 miles beyond the central WWTP and other recycled water customers. PR and PV are the furthest UGAs from Pleasant Grove WWTP, but their distances are not remote enough to offset the capital and O&M costs associated with satellite treatment. PR and PV are both adjacent to other recycled water

customers (UGAs) and, depending on the location where recycled water is delivered, are only 1 to 3 miles from the nearest customer.

Proposed recycled water pipelines will distribute water to UGAs along a path towards PR and PV. It would be unreasonable to pursue the option of satellite recycled water treatment because of the following reasons: the PGWWTP and DCWWTP can provide the required recycled water, a recycled water distribution system is currently being developed, and PR and PV are less then 5 miles from the nearest recycled water customer. The option best suited for the given situation would be a centralized treatment and distribution from the Pleasant Grove and Dry Creek WWTPs. Incidentally, if recycled water were needed to be distributed to regions within South Placer Wastewater Authority (SPWA) service area further from the WWTPs, (e.g. Granite Bay, Rocklin, or Loomis) at some point in the future satellite treatment may be the best choice.

2.1.2 Description of Pipeline Alternatives

A hydraulic analysis using H_2O Net was performed to compute the pipeline diameter needed to serve the identified customers while conforming to a set of hydraulic criteria. The set of hydraulic criteria that was used is shown in **Table 3**.

Table 3: Hydraulic Design Criteria for Model Development

System Component	Unit	Value
Minimum Pressure at Customer Connections During Irrigation Period [a]	psi	60 [b]
Minimum Pressure at Customer Connections During Non-irrigation Period	psi	40
Maximum Pressure	psi	120
Minimum Pipe Size (including laterals)	inches	6
Available Pipe Sizes [c]	inches	6, 8, 12, 16, 24, 30
Maximum Head Loss	feet per 1000 feet	5
Velocity Range	feet per second	2 – 8
Hazen-Williams Coefficient for Headloss Calculation	n/a	130

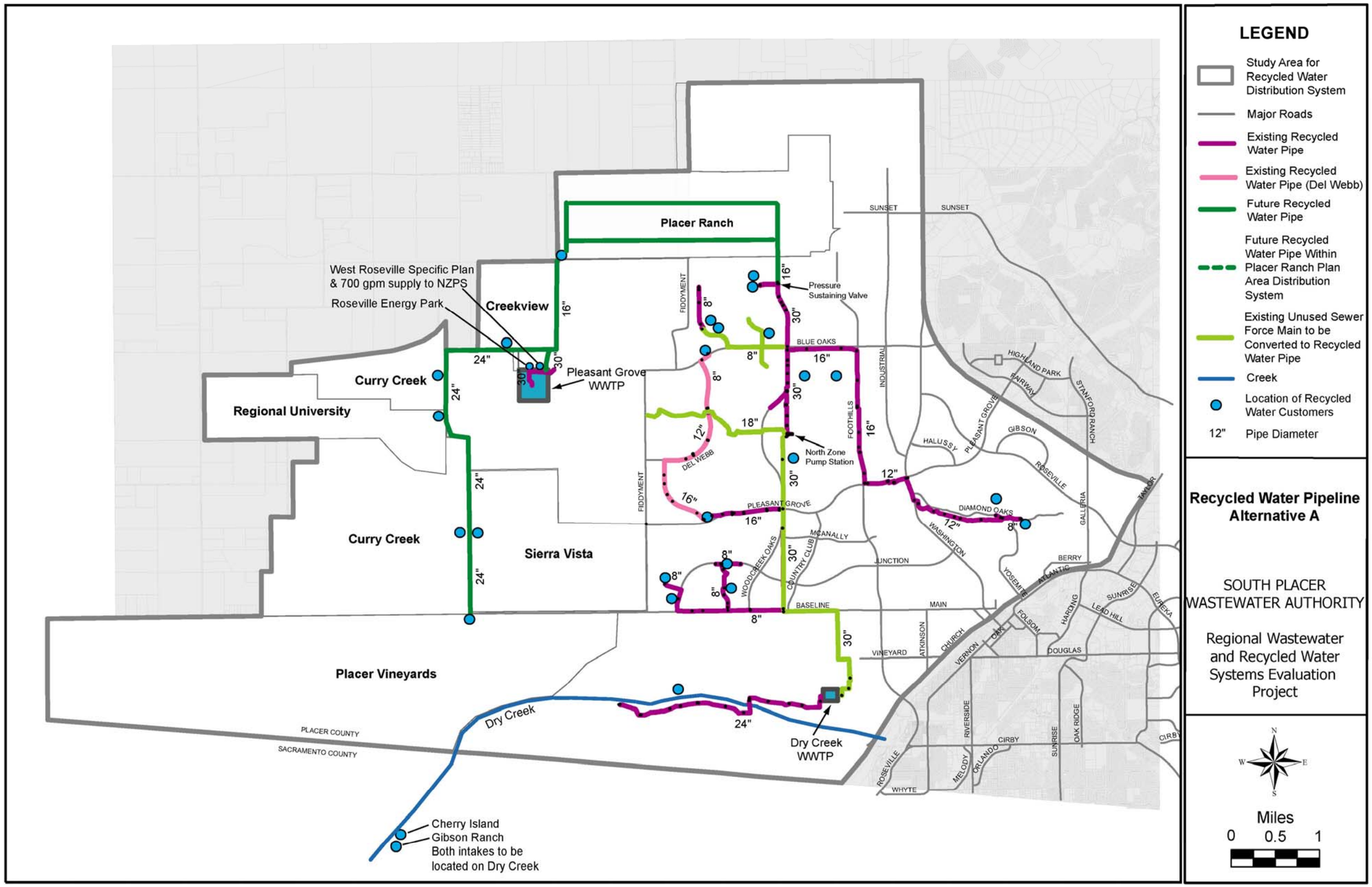
Footnotes:

a. South zone of Recycled Water System (south of North Zone Pump Station) will have an operating pressure of 30 psi
b. This pressure is for customers without a recycled water storage facility.
c. Per Roseville Standards for Recycled Water.

Since satellite treatment is not recommended for currently anticipated demands, there are three distribution alternatives that will be evaluated in this TM. The following alternatives are described below.

- **Alternative A: Non-Looped System.** New pipe from Pleasant Grove WWTP will connect to existing recycled water pipe along Phillip Road, and follow UGA boundaries around the western border of West Roseville Specific Plan and Sierra Vista. The pipe will end at the northern boundary of Placer Vineyards as shown in **Figure 4**. The pipeline will also run north on the eastern side of Creekview and end at the southwest corner of Placer Ranch. An internal Placer Ranch pipe will connect to the 30" recycled water pipeline stub on Woodcreek Oaks Blvd. with a pressure sustaining valve. This configuration will allow recycled water to flow either to or from the North Zone tank. In this alternative, it is assumed that PGWWTP will supply Placer Vineyards.

Figure 4: Map of Alternative A – Non-Looped System



- **Alternative B: Looped System.** Recycled water pipelines would follow similar alignments as Alternative A, however pipe will continue east along the northern border of Placer Vineyards and connect the 24" gravity recycled water line near Dry Creek as shown in **Figure 5**. Placer Vineyards could be supplied by either DCWWTP or PGWWTP. The 24" gravity line may need to be pressurized; therefore changes may be required at the DCWWTP recycled water pump station. Currently recycled water flows by gravity from the chlorine contact basins to Morgan Creek Golf Course. Additional pumping will most likely be required to have the necessary hydraulic head to reach Morgan Creek Golf Course and Placer Vineyards. This will be described in more detail later in the TM.
- **Alternative C: Additional Flow through West Roseville Specific Plan.** New pipe from PGWWTP will connect existing recycled water pipe along Phillip Road, and follow UGA boundaries around the western border of West Roseville Specific Plan and Sierra Vista. The pipe will end at the northern boundary of Curry Creek South and Sierra Vista as shown in **Figure 6**. The pipeline will also run north on the eastern side of Creekview and end at the southwestern corner of Placer Ranch. Placer Vineyards will be supplied recycled water from DCWWTP via the 24" pipeline running parallel to Dry Creek. Placer Vineyards will install a pipe to distribute recycled water from the terminus of the existing 24-inch recycled water pipeline along Dry Creek to a storage tank on West Dyer Lane and 16th Street.

  To balance the recycled water demands on each wastewater treatment plant, recycled water will be distributed from PGWWTP to Woodcreek Oaks Golf Course (WOGC) and Sun City Golf Course (SCGC). Their pipe connections can be retrofitted to receive recycled water from DCWWTP or PGWWTP as the system grows to best use available recycled water. This will be described more in detail in the following section.

  Water will be transferred to WOGC and SCGC via the 24" recycled water pipeline through West Roseville Specific Plan and through the 18" converted force main. To minimize the amount of pumping, the WRSP pump station 24" inlet is connected to the to the 24" outlet, which allows bypassing the WRSP pump station. Recycled water can then be sent to the WOGC and SCGC storage facilities directly from the PGWWTP pump station. This configuration provides flexibility for supplying RW to the WOGC and SCGC during the 15-hour non-irrigation period. This option is available during the non-irrigation period because the WRSP pump station will not be used. During the irrigation period the bypass will be closed and the pump station will operate normally.

  The Sun City Golf Course storage pond can be connected by tying the 18" converted force main in Del Webb Boulevard into an existing 8-inch recycled water main in Del Webb Boulevard. This will serve the purpose of filling the SCGC pond from PGWWTP. The Woodcreek Oaks Golf Course would utilize a portion of the existing 18" recycled water line which will be decommissioned. Recycled water will flow south through the 18" recycled water line from the 18" converted force main/30" converted force main connection to the lake. When completed there will be two connections to the Woodcreek Oaks Golf Course lake, the 18" recycled water line and the 30" converted force main.

Figure 5: Map of Alternative B – Looped System

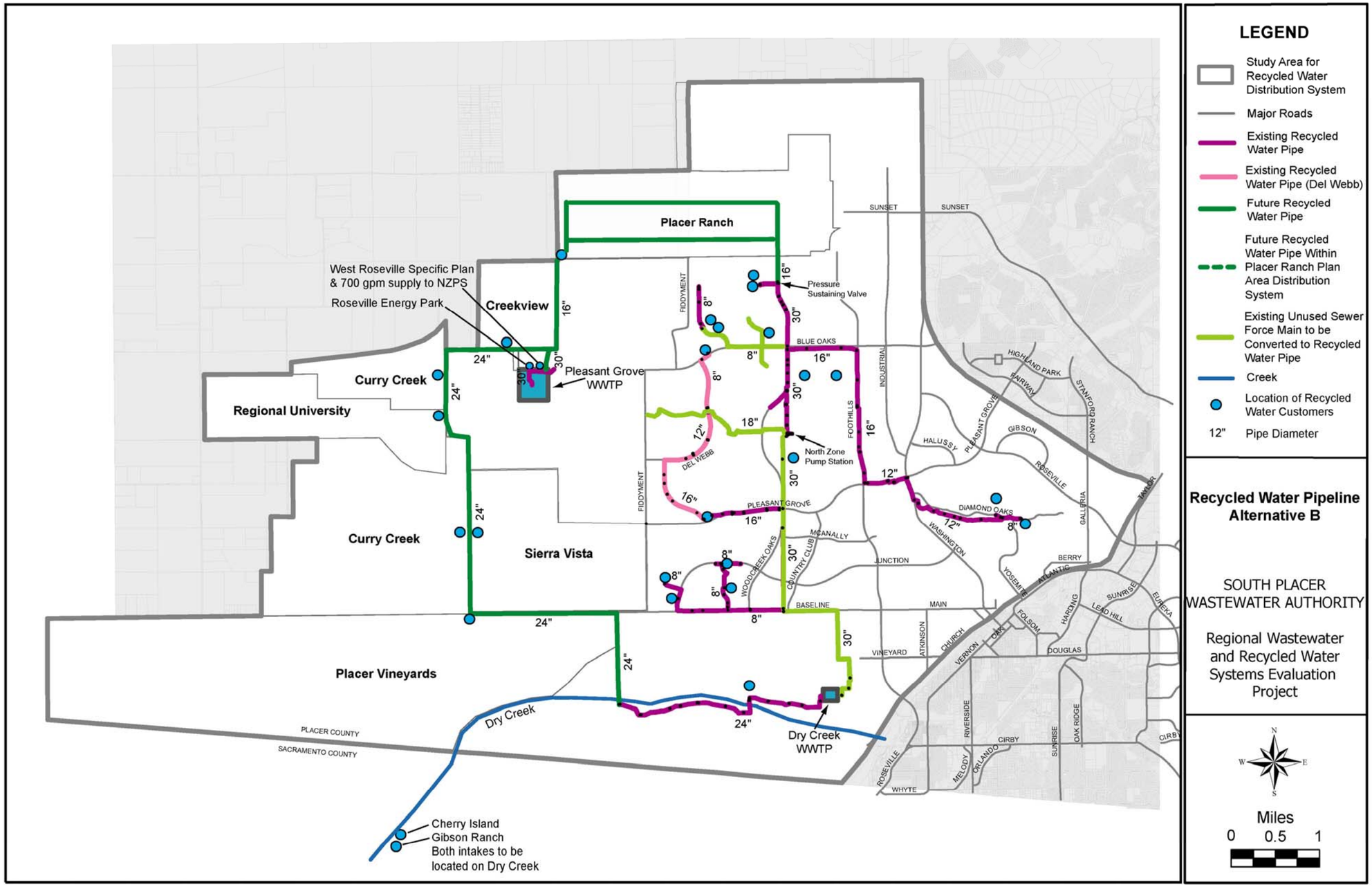


Figure 6: Map of Alternative C – Additional Flow through West Roseville Specific Plan

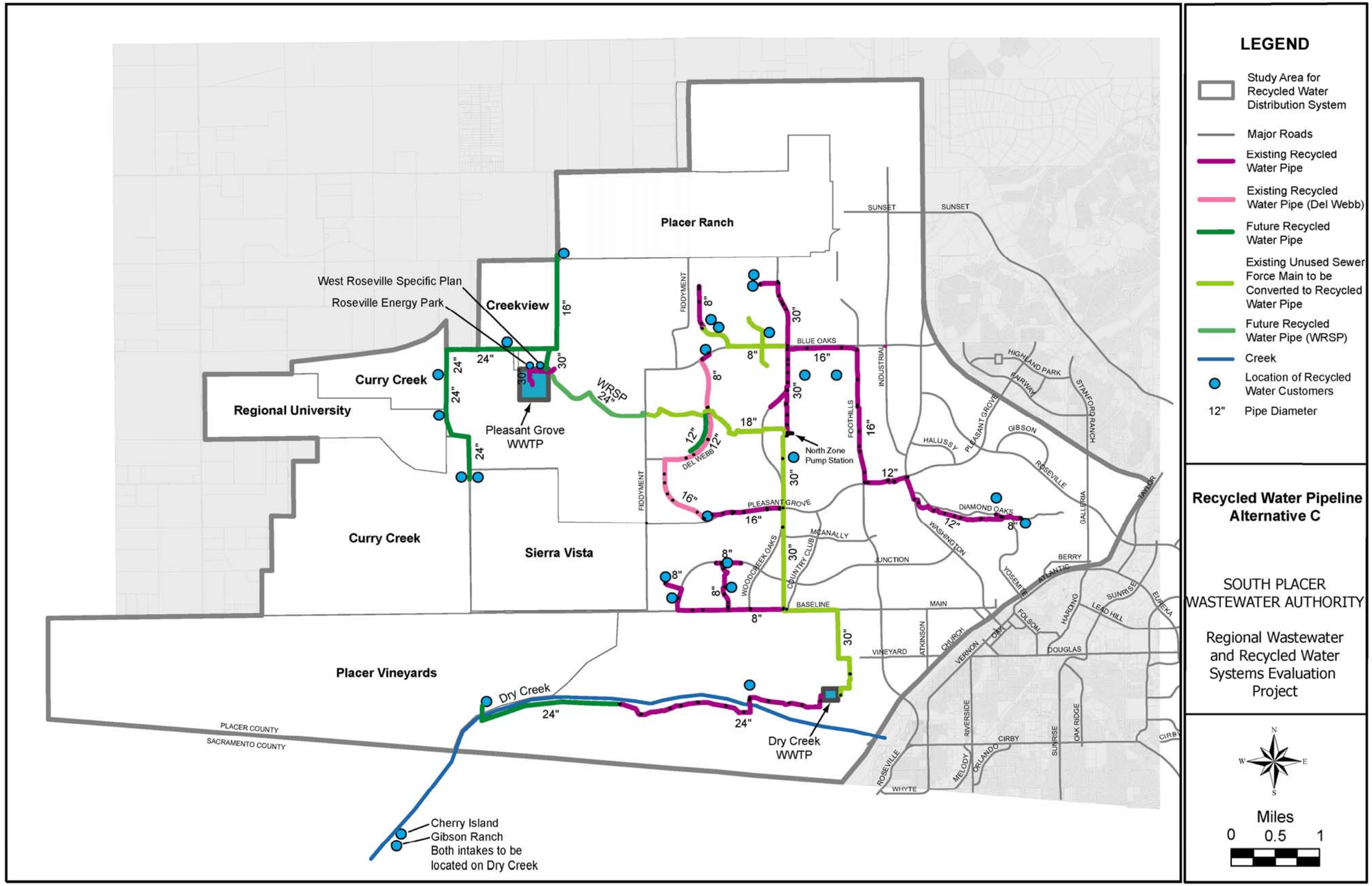


Table 4 lists the lengths and diameters of new recycled water pipelines that would be installed for each alternative and the existing force mains that will be converted to recycled water pipes. Alternative B has the largest amount of pipe installed because the northern and southern sections of the City are connected.

Table 4: Description of Alternatives

	New Pipe Diameter (inches)	Existing Force Main to be Converted to Recycled Water Pipe (feet)	Length of New RW Pipe (feet)
All Three Alternatives	30”	19,600	-
	18”	9,700	-
	8”	8,900	-
	Total	**38,200**	**-**
Alternative A	30”	-	3,100
	24”	-	23,000
	16”	-	7,300
	Total	**38,200**	**33,400**
Alternative B	30”	-	3,100
	24”	-	37,300
	16”	-	7,300
	Total	**38,200**	**47,700**
Alternative C	30”	-	3,100
	24”	-	21,400
	16”	-	5,800
	12”	-	2,700
	Total	**38,200**	**33,000**

2.1.3 Recycled Water Storage Analysis

Due to the high demand for recycled water, hourly irrigation patterns, and diurnal fluctuations of wastewater effluent, an hour-by-hour analysis has been conducted to determine the storage requirement and the operational scenarios at the Pleasant Grove and Dry Creek WWTPs to optimize recycled water distribution. Scenarios are developed assuming there will be a storage facility (tank or pond) at each UGA with a volume to store one peak day (July day) of recycled water demand. Diurnal fluctuations in recycled water generation produce a challenge in supplying customers during the irrigation period from 9:00 PM to 6:00 AM for the following reasons: the highest demand for recycled water comes during the period of lowest generation and recycled water must be supplied during the non-irrigation period in addition to the irrigation period to fulfill the total demand of the UGAs.

Alternative C Storage Analysis

Multiple scenarios were evaluated to distribute recycled water to customers to show the amount of storage needed at either DCWWTP or PGWWTP in Alternative C. From the supply availability analysis, the recycled water demand in Alternatives A and B exceeded available supply, therefore a storage analysis was not deemed necessary. From the storage analysis, it was determined that recycled water storage will not be required at PGWWTP if recycled water is distributed to the UGAs as it is generated. Storage is

also not required at DCWWTP. The detailed storage calculations can be found in **Attachment A** and are summarized in **Table 5**. The following scenarios present variations in recycled water distribution to customers with storage facilities.

Pleasant Grove WWTP Distribution Scenarios:

- 24-hour Distribution – Recycled water would be distributed equally to all customers over a 24 hour period. For UGAs, the storage tank is filled evenly through the day. Recycled water generated in excess of the water supplied to the UGAs will be discharged to the creek.
- 15-hour Distribution – Recycled water would be distributed to customers over the non-irrigation 15-hour period (from 6:00 AM to 9:00 PM). In this scenario, while water could be distributed during the irrigation period, it is assumed that all water produced during this time period will be discharged to the creek
- Equal Tank Fill – Recycled water would be distributed as it is generated and all UGA storage facilities are filled at the same rate. Once a tank is full, remaining water will be supplied to other storage facilities until all are filled. Excess water will be discharged to the creek after all the tanks are full. Four recycled water pumps will be required to pump the maximum effluent flow rate.
- Two Tank Fill – Recycled water would be distributed as it is generated and two UGA storage tanks will be filled at a time. Excess recycled water generated after all tanks are filled will be discharged to the creek. Four recycled water pumps will be required to pump the maximum effluent flow rate.
- Capped Flow Distribution – Recycled water would be distributed as generated but will not exceed a maximum flow rate of 16,000 gpm and water generated in excess of 16,000 gpm will be discharged to the creek. In this scenario, a minimum pressure of 10 psi will be at the furthest UGAs, with only three pumps operating at the PGWWTP recycled water pump station.

Dry Creek WWTP Distribution Scenarios:

- 24-hour Distribution – Recycled water would be distributed equally to creek customers over a 24 hour period.
- 15-hour Distribution – Recycled water would be only distributed to creek customers during the non-irrigation 15-hour period (from 6:00 AM to 9:00 PM).
- Creek Distribution – Recycled water would be distributed as it is generated to fill the North Zone Pump Station tank and to customers with storage facilities. Excess water from the filling the tank and pipeline distribution will be discharged to the creek. Creek customers will be supplied with recycled water until demand is fulfilled.
- Proportional Flow to Creek Customers – Recycled water would be distributed as it is generated to fill the North Zone Pump Station tank and to customers with storage facilities. Excess water from the filling the tank and pipeline distribution will be discharged to the creek. Creek customers will be supplied proportionally to volume demanded. This distribution is more theoretical because the creek customer's demands will be fulfilled at the same time. In proportional flow more recycled water is distributed to Gibson Ranch than Cherry Island per hour because the recycled water demand at Gibson Ranch is higher than Cherry Island.

Table 5: Storage Analysis for Alternative C

Scenario	Available RW to Supply to Customers During Low Generation Period	Required Storage at DCWWTP	Peak Flow Distributed through RW Pipeline (gpm)	Rank [a]
PGWWTP				
24-hour Distribution	No	Yes, 2.14 MG	15,825	3 (tie)
15-hour Distribution	No	Yes, 1.97 MG	23,193	3 (tie)
Equal Tank Fill	Yes	None	26,156 [b, e]	1 (tie)
Two Tank Fill	Yes	None	26,156 [b, e]	1 (tie)
Capped Flow Distribution	No [c]	None	16,000	4
DCWWTP				
24-hour Distribution	No	Yes, 1.70 MG	6,782	4
15-hour Distribution	No	Yes, 0.55 MG	6,782	3
Creek Distribution	Yes [d]	None	6,782	1
Proportional Flow to Creek Customers	Yes [d]	None	6,782	2

Footnotes:

a. Qualitative ranking based on analysis of required storage, supply and peak flow distribution.
b. These two scenarios would require a velocity greater than 10 ft/sec in the existing 30" recycled water pipe at the PGWWTP.
c. There is not enough time to fill all UGA tanks within 24 hour period if recycled water distribution is limited to 16,000 gal/min.
d. There is supply deficiency between 5:00 AM and 6:00 AM. From 5:00 AM – 6:00 AM an additional supply of 11,073 gallons is needed. This supply deficit of ~11,000 gallons can be eliminated if customers with storage facilities (like golf courses) are supplied more water during periods of higher recycled water generation
e. This scenario would require control and valve modifications to the West Roseville and North Zone Pump Stations, as well as design modifications to future pump stations.

Criteria used in ranking the distribution scenarios are based on the necessity of required storage at the treatment plant, availability of supply during all hours of the day, and the peak flow being pumped from the treatment plant pump station. Scenarios that do not require storage at the treatment plant rank higher than those that do; additionally, scenarios that do not have available supply for the demand are infeasible. Peak flow from the treatment plant is evaluated to determine pumping requirements. Maximum flow rates may occur for only a few hours a day, however exceeding the proposed design criteria is not recommended.

According to the hydraulic model and the storage analysis, in both the Equal Tank Fill and Two Tank Fill scenarios the maximum flowrate pumped between approximately 12:00 PM and 1:00 AM will exceed the velocity design criteria of 8 ft/sec in the 30" pipe from the PGWWTP pump station to the West Roseville Specific Plan Pump Station. This is assuming all UGAs are receiving the peak day demand at buildout. The velocity in that section of pipe (maximum 12 ft/sec) will be above 8 ft/sec for 13 hours per day and the 10 ft/sec for 4 hours per day. This daily maximum flow will peak during July and a total of four pumps would be needed to maintain pressure at the furthest UGAs from the PGWWTP. To accommodate either of these scenarios, two separate fill valves will be required to each tank at all future pump stations. This design will allow for the flexibility needed to distribute the recycled water supply as necessary.

It was concluded that this maximum flowrate and velocity would not be acceptable. To reduce the amount of flow in the 30" pipe, a new 30" pipe should be installed parallel to the existing pipe from the recycled

water pump station to the junction of the West Roseville Specific Plan pump station. It is recommended to monitor the pipe velocity over time to identify when and the length of time it is over 8 ft/sec. In the future, a parallel pipe can be installed. The 30" parallel pipe is being included as a recommended project. It is recognized that this additional 30" parallel pipe will only be needed at buildout and if the UGAs develop as indicated herein. It is recommended to revisit this analysis approximately every 5 years to confirm the need for this parallel pipe.

Another option to reduce the maximum flow in the 30" pipe is to "shave off" the peak flow rate and pump a maximum of 16,000 gpm from the pump station. Any flow in excess of the 16,000 gpm would be discharged to Pleasant Grove Creek. This would keep the velocity in the pipe around 7.5 ft/sec. This alternative is infeasible because there is not enough recycled water to supply UGA customers with their Peak (July) Day Demand.. Too much recycled water is "shaved off" and sent to the creek. The Two Tank or Equal Tank Fill is the recommended fill scenario.

For DCWWTP, distributing recycled water to the creek customers when available is the best operational scenario. There is enough supply at DCWWTP to serve customers south of the North Zone pump station and the customers from the 24" gravity line. The creek customers have storage ponds; therefore there is flexibility to fill throughout the day. As mentioned in Footnote D from **Table 5**, the demand exceeds supply from 5:00 to 6:00 AM. The supply deficit of 11,073 gallons can be eliminated if customers with storage facilities are supplied extra recycled water during period with excess supply.

2.1.4 Hydraulic Analysis for 24-inch Gravity Line

A hydraulic analysis was completed to determine if the 24" recycled water line from DCWWTP to Morgan Creek Golf Course and Placer Vineyards (PV) could remain a gravity line, as shown in **Attachment B**.. The proposed location of the (PV) recycled water storage tank is on the southwest corner of West Dyer Lane and 16th Street, in the center of UGA. The pipeline alignment used in this analysis through (PV) is along West Dyer Lane. The results of the analysis show the 24" pipe can remain gravity flow with certain limitations. The storage facilities must be filled in 24 hours,. A fill time of 15 hours representing the non-irrigation period is also not possible. A gravity line will limit the City's operational flexibility to supply recycled water. The pipeline also cannot be shut down in the summer months for maintenance or repair.

It is recommended to install a booster pump station at the recycled water pipe stub at Wallerga Road. This will provide the additional head needed to fill the Placer Vineyards tank in a shorter period than 24 hours. It is also recommended to connect the 24" line to the Dry Creek WWTP recycled water pump station or a low head pump to provide pressure for the storage facilities and to two future direct tap customers. The pressurized pipe will allow the City to supply customers with recycled water when it is available. If the 24" line is pressurized from DCWWTP, then the booster pump may not be needed.

3 Alternatives Evaluation

This Section will:

- Present criteria that will be used to evaluate project alternatives identified in Section 2
- Show results of the alternatives evaluation
- Present the alternative that is recommended

3.1 Evaluation Criteria

A set of economic and non-economic criteria addressing specific issues within the planning area will be developed to evaluate the recycled water facilities alternatives. These criteria are found in **Table 6** as follows:

Table 6: Alternative Evaluation Criteria

Criteria	Description
Meets Recycled Water Demand	Ability to meet total recycled water demand
Estimated Cost	Total Capital Costs
Flexibility	Ease with which (1) recycled water can be delivered from either treatment facility to meet demand, (2) SPWA can adapt to changes in planning assumptions regarding future demand patterns, projected resources or other uncertainties, and (3) system can be phased
Ease of Implementation	Ease with which alternative can be permitted and constructed. This also includes easement acquisition and congestion concerns
Adaptability	Degree of synergy with existing recycled water system and ability to adapt to existing recycled water system
Environmental/Social Impacts	Various impacts including risk of impact to biological systems and construction related impacts (i.e. traffic disruptions)

Capital cost for the project alternatives are shown in **Table 7**. A flat cost of $8/LF-in diameter is used for 16” diameter to 30” diameter pipes installed in developing areas, like the UGAs. A cost of $12/LF-in diameter is used for urban areas where there are existing roads and/or pavement. **Table 6** also includes a line item for the connection of the 24” gravity line to the DCWWTP recycled water pump station. The cost only includes the connection; pumping capacity at DCWWTP is addressed in **Table 9**.

Table 7: Economic Assumptions and Unit Costs

Item	Cost [a]
Open Trench Installation	
30" Pipe Installation Cost	$240 /linear foot
24" Pipe Installation Cost	$192 /linear foot
16" Pipe Installation Cost	$128 /linear foot
12" Pipe Installation Cost	$144 /linear foot
Conversion of DCWWTP to pump into 24" gravity line [b]	$60,000
Other Cost Estimate Criteria [c]	
Construction Cost Contingency	30% of pipeline costs
Engineering and Administration	25% of pipeline costs

Footnotes:

a. Unit costs are in October 2005 dollars.
b. Short pipe connection between 24" gravity line and existing recycled water pump station discharge will be required.
c. An overhead markup of 62.5% was applied based on a 30% construction cost contingency a plus a 25% engineering and administration factor to calculate the capital cost. Hence, for budgeting purposes, it is assumed that the contingency and project implementation multiplier is 1.625 (1.00 x 1.30 x 1.25 = 1.625)

3.2 Evaluation Results

3.2.1 Alternatives Evaluation

Preliminary cost estimates based upon economic assumptions in **Table 7** are listed in **Table 8**. Detailed cost estimates for the alternatives can be found in **Attachment C**. Criteria from **Table 6** are used to evaluate the two alternatives and are listed in **Table 8**.

Table 8: Alternatives Evaluation

Evaluation Criteria (from Table 6)	Alternative A – Non-Looped System	Alternative B – Looped System	Alternative C – Flow Through WRSP
Meets Recycled Water Demand	High	High	High
Estimated Cost [a]	$11,002,000	$15,321,000 [b]	$10,883,000 [b]
Flexibility			
Flexibility to supply RW from more than one plant	Medium	High	High
Adapt to changes in planning assumptions	Medium	High	High
Ability for project phasing	Medium	Medium	High
Ease of Implementation			
Ease to be designed, permitted, and constructed	High	Medium	High
Easement Acquisition	High	High	High
Adaptability			
Degree of synergy with existing recycled water system	High	Medium	High
Environmental/Social Impact			
Biological Impacts and Construction Related Impacts	Low	Low	Low
Utility Congestion	Low	Low	Low
Rank [c]	2	3	1

Footnotes:

a. Total capital costs are in October 2005 dollars and include all construction costs, contingencies, and fees.
b. Price includes $60,000 for the retrofit of DCWWTP recycled water pump station to connect the 24" gravity line. Refer to Table 7.
c. Qualitative ranking based on analysis of benefits, risks and degrees of impact.

3.3 Conclusions

Based upon the evaluation presented in **Table 8**, Alternative C is the recommended choice because it is an interconnected system that provides the optimum balance of recycled water supply and demand. Alternative A is a moderately connected system, with Placer Ranch internal recycled water piping connecting to the 30" pipe on Woodcreek Oaks Blvd. Alternative B joins both the north and south sections of the distribution system, but there is a considerable distance between Placer Vineyards demand location and the stub of the 24" gravity line. To connect the two pipes, 14,400 linear feet of pipe would need to be installed and a piping/pumping modification at DCWWTP would need to be constructed with an additional cost of $2.8 million. Both Alternatives A and B have a recycled water demand that exceeds supply.

It is recommended that under typical operating scenarios, customers be supplied recycled water by a particular treatment facility; Alternatives B and C allow operational changes to be made in the pipeline system to move recycled water across the distribution system in response to an atypical operating scenario. Looping the southern portion of the distribution system is less beneficial than connecting PGWWTP through the West Roseville Specific Plan and converted force main because of the pipeline capital costs and the distance of the customers from the pipe. The majority of the customers are in the central potion of Roseville, in close proximity to the North Zone Tank. It would be better to have the operational flexibility in that area rather than on the outskirts of the distribution system.

4 Implementation Plan

The goal of the Recycled Water System Evaluation is to develop a long-term strategy for the ultimate implementation recycled water projects in the region. Numerous tasks would need to take place between the completion of the Systems Evaluation and construction of the ultimate buildout, including conceptual engineering, environmental documentation and permitting, public outreach, funding, financing, design, and construction. This draft implementation plan describes the tasks required to implement the recycled water projects and provides an approximate schedule for their completion. The City's pipeline infrastructure will include the trunk line from the wastewater treatment plant as well as the storage, pumping and distribution of recycled water within the property. Trunk recycled water pipeline sections from the PGWWTP to the Urban Growth Area will be installed by the City and reimbursed by individual land owners. The recycled pipeline will be built according to phasing described in the following sections. Any interim measures/solutions developed by the UGA developers for receiving recycled water will be approved by the City.

4.1 Preferred Alternative

The preferred alternative is Alternative C with recycled water sent from PGWWTP to supply Woodcreek Oaks and Sun City Golf Courses. This system will be described in detail and individual projects will be identified in the following sections. The recycled water system has been divided into projects and is shown in **Figure 7**. Projects are numbered in no particular order, but are organized according to implementation schedule. Projects shown in Figure 7 are listed in **Table 9** with length and diameter of pipe that will be installed. Pipeline costs include contingencies and pump costs include installation. Detailed cost information is found in **Attachment C**.

4.2 Project Phasing

An implementation strategy for each preferred alternative project phase is presented in this section. The phasing of the preferred alternative is summarized as follows:

Phase I – This phase includes the existing recycled water distribution system and existing users. Recycled water is supplied from Dry Creek WWTP. This phase also includes the conversion of 8", 18", and 30" force mains to recycled water pipelines, which is currently in progress. Woodcreek Oaks Golf Course and Sun City Golf Course will be supplied recycled water from the PGWWTP.

Phase II – This phase expands on the current distribution system with the addition of "Existing Near Future Recycled Water Customers" from the RW Market Assessment (RMC, 2005). The new customers will be supplied by Dry Creek WWTP. DCWWTP and the North Zone pump station will install new recycled water pumps.

Phase III – This phase builds from Phase II to include all Urban Growth Areas. Pleasant Grove WWTP will supply recycled water to these customers except for Placer Vineyards. Two additional duty pumps and one standby pump will be added to the PGWWTP recycled water pump station. At the point when the velocity in 30" pipe from the PGWWTP pump station to the West Roseville Pump Station become higher than 8 ft/sec for a hours at a time a new 30" parallel pipe should be constructed. The 24" line supplying Placer Vineyards will be connected to the DCWWTP pump station.

Figure 7: Recommended Projects for Recycled Water Distribution System

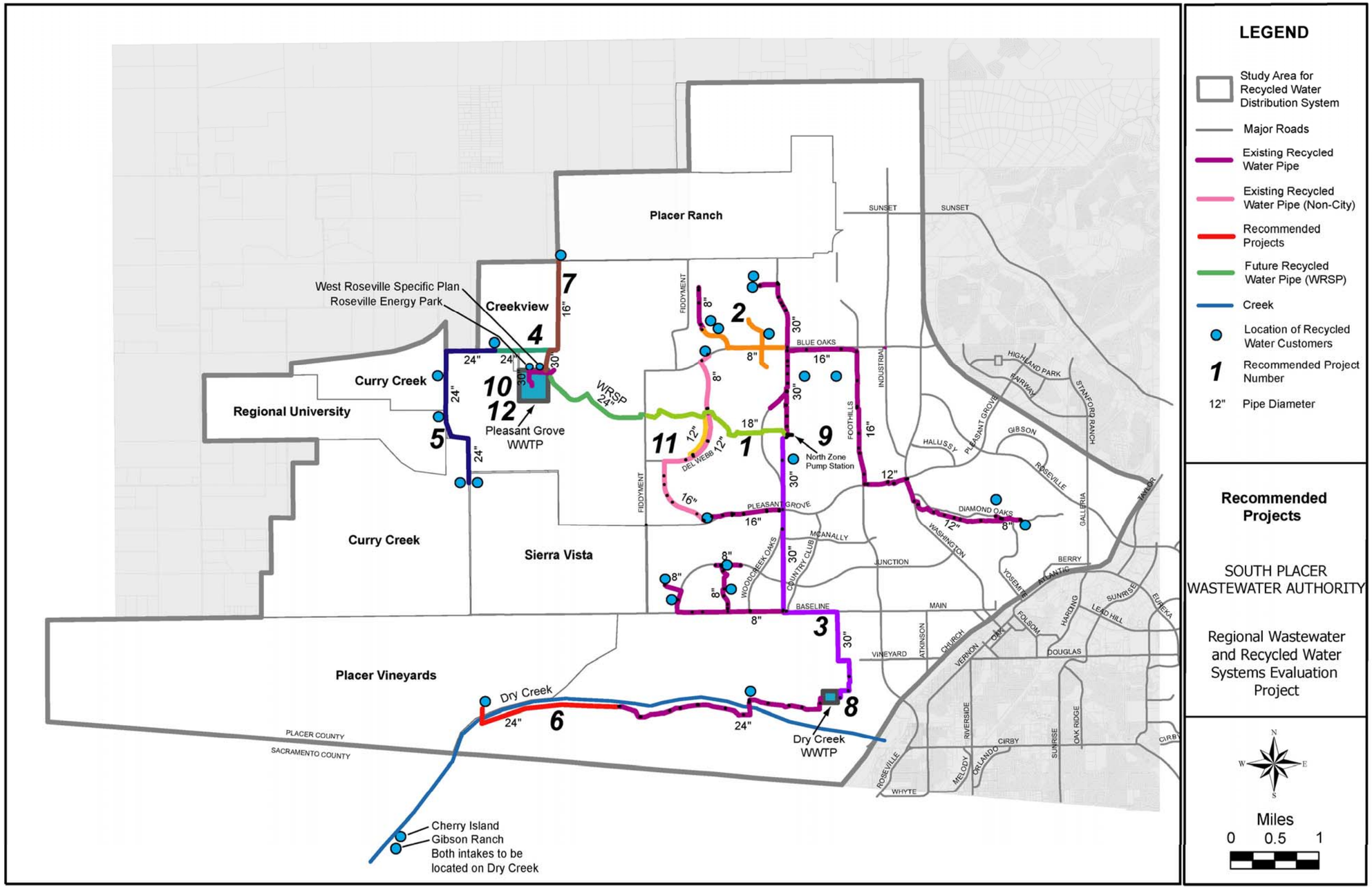


Table 9: Recommended Projects by Phase

Project No.	Description	Size (in.) or flow (gpm)	Length (ft.)	Cost
	Phase I (in Progress) [a]			
1	18" FM Conversion for RW Use from PGWWTP	18"	9,700	n/a
11	Sun City Pipeline from 18" Converted Force Main (with option to supply WOGC and SCGC)	12"	2,700	632,000
2	8" FM Conversion for RW Use	8"	8,900	n/a
3	30" FM Conversion for RW Use South of North Zone Pump Station	30"	19,600	n/a
		Subtotal	**40,900**	**$632,000**
	Phase II (Year 2005 to 2010) [a]			
8	DCWWTP one-50 HP pump	1,900 gpm	-	98,000
9	North Zone PS one-50 HP pump	950 gpm	-	57,000
		Subtotal	**-**	**$155,000**
	Phase III (Year 2010 to 2025) [a]			
4	Creekview Pipeline	24"	3,300	1,030,000
5	Creekview to Curry Creek North	24"	4,600	1,436,000
	Curry Creek North to Regional University	24"	2,100	655,000
	Regional University to Curry Creek South and Sierra Vista	24"	2,300	718,000
6	Placer Vineyards Pipeline	24"	9,100	2,840,000
7	North from PGWWTP to "Tee"	30"	1,400	546,000
	Pipeline from "Tee" to Placer Ranch PS	16"	5,800	1,207,000
10	PGWWTP three-250 HP pumps	15,360 gpm	-	609,000
12	Addition of 30" Pipe at PGWWTP for Maximum Flow Conveyance	30"	1,700	995,000
		Subtotal	**30,300**	**$10,036,000**
Total			**71,200**	**$10,823,000**

Footnotes:

a. Recycled water project phasing depends on development timing.

4.2.1 Phase I

This phase includes the conversion of 8", 18", and 30" sewer force main (FM) to recycled water pipe, which is in progress. The existing 24" recycled water pipe connecting the Dry Creek WWTP with the North Zone Pump Station (NZPS) will be decommissioned and the 30" FM will be used instead. An 18" FM will also be converted connecting the NZPS to Pleasant Grove WWTP via the West Roseville Specific Plan recycled water pipeline. In the northern portion of Roseville, an 8" FM will be converted and connected to an existing 30" recycled water pipe. These are Projects #1 through #3 from Figure 7. It is recommended the FM conversions be completed before the addition of the "Existing Near Future Recycled Water Customers" (referenced from the SPWA Recycled Water Market Assessment) to the network. The pipeline from the converted 18" force main to the Sun City Golf Course pond inlet, Project

#11, will be constructed during this phase. Additionally, once the 30" force main is converted Woodcreek Oaks Golf Course can be connected to the 18" converted force main. Connecting these customers to both PGWWTP and DCWWTP supply will allow the City greater flexibility as both distribution systems are growing.

4.2.2 Phase II

Phase II includes the existing customers and distribution system of Phase I, plus additional recycled water customers as sufficient supply from Dry Creek WWTP is available. Projected wastewater flows from the SPWA Projected WWTP Projected Loadings and Buildout TM 4a, estimates there will be adequate supply in 2012 to provide "Existing Near Future Recycled Water Customers" (identified in the Market Assessment TM) with recycled water. "Existing Near Future Recycled Water Customers" include Cherry Island Golf Course, Diamond Creek Park, Diamond Oaks Park, Eskaton Retirement Community, Fiddyment Park, Free Run Park, Gibson Ranch County Park, Homestead Park, Homestead Elementary School, HP Campus Current Landscaping, HP Rezone, West Roseville Specific Plan, and Woodcreek West Park.

In this phase, the Dry Creek WWTP and North Zone pump stations will need to be upgraded. Projects #8 and #9 specify the addition of one 50 hp pump at DCWWTP and one 50 hp pump at NZPS, respectively. Based on the hydraulic model, these additional pumps will be necessary to maintain a minimum pressure of 10 psi for the furthest customers on the recycled water distribution pipeline. The additional pumps will be required during high flow periods. A volume increase to the North Zone storage tank will not be required.

4.2.3 Phase III

Phase III includes all of the customers in Phase II plus the Urban Growth Areas. New recycled water pipeline installations to Creekview, Curry Creek, Regional University, Sierra Vista, and Placer Ranch are Projects #4, #5, and #7. The Urban Growth Areas will begin construction in 2008 through 2010, with buildout of the recycled water service area estimated to be completed in 2025. Based on the hydraulic model two additional duty pumps and one standby pump will be required at the Pleasant Grove WWTP recycled water pump station. The additional pumps will be required to keep a minimum pressure of 10 psi in the pipeline at the furthest customers and to supply recycled water to the Woodcreek Oaks (WOGC) and Sun City Golf Courses (SCGC). Upgrades to the Pleasant Grove WWTP pump station is Project #10. The installation of a 30" parallel pipe from PGWWTP to the West Roseville Specific Plan pump station (Project #12) should occur when the velocity in the existing 30" line increases over 8 ft/sec. This project should occur before UGA buildout. Recycled water from PGWWTP will be transferred to the WOGC and SCGC through the West Roseville Specific Plan pipeline and the 18" converted force main. A continuation of the 24" pipe will be installed to serve Placer Vineyards, Project #6. The booster pump station at the recycled water pipe stub at Wallerga Road could be installed to produce the hydraulic head to fill the tank in a shorter period than 24 hours.

4.2.4 Urban Growth Area Storage Requirement

UGAs will be required to have a recycled water storage facility with the capacity to store one peak day (July day) demand volume. July demands have been documented in the SPWA Market Assessment TM (RMC, January 2008). The minimum storage tank volume required for each UGA is listed in **Table 10**.

Table 10: Minimum Required Storage Volumes

UGA	Minimum Tank Volume (MG)
Brookfield	0.94
Creekview & Panhandle	1.25
Curry Creek North	0.78
Curry Creek South	3.33
Placer Ranch	3.34
Placer Vineyards	3.50
Regional University	1.72
Sierra Vista	2.46

4.3 Permitting

The State Water Resources Control Board (SWRCB) and the State Department of Health Services (DHS) have regulatory and permitting authority over recycled water projects in the State of California. The City of Roseville must have a Master Water Reclamation Permit from the Central Valley Regional Water Quality Control Board (RWQCB). The City has Master Reclamation Permit No. 97-147, and it is understood that a new permit has been adopted by the Regional Board recently.

4.4 Funding

The following are the possible funding sources for the projects in this report:

- Connection Fees – Currently, the City does not collect a connection fee for recycled water connections. A connection fee analysis could be performed and connection fees collected would fund regional facilities necessary to serve new developments.
- Developer/Community Facilities District – In this financing scenario, developer funded community facilities would be shared through reimbursement agreements.

4.4.1 Pipelines to Urban Growth Areas

Recycled water pipeline to the UGAs will be paid for by the Urban Growth Area developers. Individual UGA developers will be responsible for the construction of the recycled water transmission pipeline from the upstream UGA to their connection point with a pipe diameter appropriate to the peak day July recycled water demand. UGAs will also be responsible for upsizing recycled water pipe upstream of their location. As an example, Curry Creek North will need an 8” pipe to deliver recycled water. The 8” section of pipe connecting Creekview downstream to Curry Creek North will be paid for by Curry Creek North. Since 3 UGAs are downstream, the 8” pipe will need to be upsized to a 24” pipe. The upsizing cost will be split amongst the other 3 UGAs proportional to their recycled water demand. This process is continued down the recycled water pipe to Curry the Creek South/Sierra Vista connection point. Since Placer Vineyards is the only user on the pipe after the Morgan Creek Golf Course connection point, Placer Vineyards will pay the full installation cost of the 24” pipe. Further details of pipeline costs are found in **Attachment D**. Developers will be required to reimburse the City (or other funding party) if the transmission pipeline is built before the UGA undergoes construction.

4.5 CEQA/NEPA Compliance

CEQA review will be conducted by the City of Roseville for Regional Facilities. Mainly construction-related impacts will be addressed in the CEQA review. Urban Growth Area CEQA/NEPA review will be the responsibility of the UGA developers. The letter from the City of Roseville to Jim Durfee dated April 26, 2005 provides guidance for the preparation of environmental impact documents, consistent with the requirements of the California Environmental Quality Act (CEQA).

5 Bibliography

RMC Water and Environment. Sacramento Regional County Sanitation District (SRCSD) Recycled Water Satellite Facility Study, June 2004.

RMC Water and Environment. SPWA Recycled Water Market Assessment, November 2005.

Attachment A

Storage Analysis

Pleasant Grove Wastewater Treatment Plant Supply Analysis for Alternative C

24-hour Recycled Water Distribution

Hour	Effluent Flow into Chlorine Contact Basin (gal)	Flow to NZ Tank for WOGC & SCGC (gal)	Roseville Energy Park (gal)	Brookfield (gal)	Curry Creek North (gal)	Curry Creek South (gal)	Regional University (gal)	Placer Ranch (gal)	Creekview (gal)	Sierra Vista (gal)	WRSP (gal)	Recycled Water sent to Creek (gal)	Flow Leaving Plant to be pumped in distribution system (gpm)	Supply and Demand Check
		gpd 2,200,756	gpd 1,584,000	gpd 940,000	gpd 776,816	gpd 3,333,321	gpd 1,720,000	gpd 3,340,000	gpd 1,250,000	gpd 2,460,000	gpd 3,862,911			
6:00	524,393	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	15,825	-425,118
7:00	495,114	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	15,825	-454,396
8:00	535,354	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	15,825	-414,157
9:00	666,840	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	15,825	-282,671
10:00	852,098	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	15,825	-97,413
11:00	971,019	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	21,508	15,825	0
12:00	1,213,621	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	264,111	15,825	0
13:00	1,257,452	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	307,941	15,825	0
14:00	1,189,343	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	239,832	15,825	0
15:00	1,299,146	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	349,635	15,825	0
16:00	1,257,229	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	307,718	15,825	0
17:00	1,202,861	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	253,350	15,825	0
18:00	1,128,692	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	179,182	15,825	0
19:00	1,390,748	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	441,237	15,825	0
20:00	1,563,137	146,717	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	613,627	15,825	0
21:00	1,569,379	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	766,585	13,380	0
22:00	1,492,147	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	689,354	13,380	0
23:00	1,165,859	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	363,065	13,380	0
0:00	1,178,080	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	375,286	13,380	0
1:00	1,020,537	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	217,743	13,380	0
2:00	839,464	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	36,671	13,380	0
3:00	747,830	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	13,380	-54,964
4:00	635,130	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	13,380	-167,664
5:00	561,868	0	66,000	39,167	32,367	138,888	71,667	139,167	52,083	102,500	160,955	0	13,380	-240,926
Totals	**24,757,340**	**2,200,756**	**1,584,000**	**940,000**	**776,816**	**3,333,321**	**1,720,000**	**3,340,000**	**1,250,000**	**2,460,000**	**3,862,911**	**5,426,845**		

Pleasant Grove Wastewater Treatment Plant Supply Analysis for Alternative C

15-hour Recycled Water Distribution

Hour	Effluent Flow into Chlorine Contact Basin (gal)	gpd 2,200,756 Flow to NZ Tank for WOGC & SCGC (gal)	gpd 1,584,000 Roseville Energy Park (gal)	gpd 940,000 Brookfield (gal)	gpd 776,816 Curry Creek North (gal)	gpd 3,333,321 Curry Creek South (gal)	gpd 1,720,000 Regional University (gal)	gpd 3,340,000 Placer Ranch (gal)	gpd 1,250,000 Creekview (gal)	gpd 2,460,000 Sierra Vista (gal)	gpd 3,862,911 WRSP (gal)	Recycled Water sent to Creek (gal)	Flow Leaving Plant to be pumped in distribution system (gpm)	Supply and Demand Check
6:00	524,393	146,717	66,000		0	0	0	0	0	0	0	311,676	3,545	0
7:00	495,114	146,717	66,000		0	0	0	0	0	0	0	282,397	3,545	0
8:00	535,354	146,717	66,000		0	0	0	0	0	0	0	322,637	3,545	0
9:00	666,840	146,717	66,000		0	0	0	0	0	0	0	454,123	3,545	0
10:00	852,098	146,717	66,000		0	0	0	0	0	0	0	639,381	3,545	0
11:00	971,019	146,717	66,000		0	0	0	0	0	0	0	758,302	3,545	0
12:00	1,213,621	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	20,227	-177,966
13:00	1,257,452	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	20,958	-134,135
14:00	1,189,343	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	19,822	-202,244
15:00	1,299,146	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	21,652	-92,441
16:00	1,257,229	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	20,954	-134,358
17:00	1,202,861	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	20,048	-188,726
18:00	1,128,692	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	18,812	-262,895
19:00	1,390,748	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	23,179	-839
20:00	1,563,137	146,717	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	171,551	23,193	0
21:00	1,569,379	0	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	324,509	20,748	0
22:00	1,492,147	0	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	247,277	20,748	0
23:00	1,165,859	0	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	19,431	-79,011
0:00	1,178,080	0	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	19,635	-66,790
1:00	1,020,537	0	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	17,009	-224,333
2:00	839,464	0	66,000	62,667	51,788	222,221	114,667	222,667	83,333	164,000	257,527	0	13,991	-405,405
3:00	747,830	0	66,000		0	0	0	0	0	0	0	681,830	1,100	0
4:00	635,130	0	66,000		0	0	0	0	0	0	0	569,130	1,100	0
5:00	561,868	0	66,000		0	0	0	0	0	0	0	495,868	1,100	0
Totals	**24,757,340**	**2,200,756**	**1,584,000**	**940,000**	**776,816**	**3,333,321**	**1,720,000**	**3,340,000**	**1,250,000**	**2,460,000**	**3,862,911**	**5,258,680**		

Pleasant Grove Wastewater Treatment Plant Supply Analysis for Alternative C

Equal Tank Fill

		gpd 2,200,756	gpd 1,584,000	gpd 940,000	gpd 776,816	gpd 3,333,321	gpd 1,720,000	gpd 3,340,000	gpd 1,250,000	gpd 2,460,000	gpd 3,862,911			
Hour	Effluent Flow into Chlorine Contact Basin (gal)	Flow to NZ Tank for WOGC & SCGC (gal)	Roseville Energy Park (gal)	Brookfield (gal)	Curry Creek North (gal)	Curry Creek South (gal)	Regional University (gal)	Placer Ranch (gal)	Creekview & Panhandle (gal)	Sierra Vista (gal)	WRSP (gal)	Recycled Water sent to Creek (gal)	Flow Leaving Plant to be pumped in distribution system (gpm)	Supply and Demand Check
6:00	524,393	146,717	66,000	38,959	38,959	38,959	38,959	38,959	38,959	38,959	38,959	0	8,740	0
7:00	495,114	146,717	66,000	35,300	35,300	35,300	35,300	35,300	35,300	35,300	35,300	0	8,252	0
8:00	535,354	146,717	66,000	40,330	40,330	40,330	40,330	40,330	40,330	40,330	40,330	0	8,923	0
9:00	666,840	146,717	66,000	56,765	56,765	56,765	56,765	56,765	56,765	56,765	56,765	0	11,114	0
10:00	852,098	146,717	66,000	79,923	79,923	79,923	79,923	79,923	79,923	79,923	79,923	0	14,202	0
11:00	971,019	146,717	66,000	94,788	94,788	94,788	94,788	94,788	94,788	94,788	94,788	0	16,184	0
12:00	1,213,621	146,717	66,000	125,113	125,113	125,113	125,113	125,113	125,113	125,113	125,113	0	20,227	0
13:00	1,257,452	146,717	66,000	130,592	130,592	130,592	130,592	130,592	130,592	130,592	130,592	0	20,958	0
14:00	1,189,343	146,717	66,000	122,078	122,078	122,078	122,078	122,078	122,078	122,078	122,078	0	19,822	0
15:00	1,299,146	146,717	66,000	135,804	135,804	135,804	135,804	135,804	135,804	135,804	135,804	0	21,652	0
16:00	1,257,229	146,717	66,000	149,216		149,216	149,216	149,216	149,216	149,216	149,216	0	20,954	0
17:00	1,202,861	146,717	66,000			165,024	165,024	165,024	165,024	165,024	165,024	0	20,048	0
18:00	1,128,692	146,717	66,000			183,195	183,195	183,195		183,195	183,195	0	18,812	0
19:00	1,390,748	146,717	66,000			235,606	235,606	235,606		235,606	235,606	0	23,179	0
20:00	1,563,137	146,717	66,000			270,084	270,084	270,084		270,084	270,084	0	26,052	0
21:00	1,569,379	0	66,000			375,845		375,845		375,845	375,845	0	26,156	0
22:00	1,492,147	0	66,000			356,537		356,537		356,537	356,537	0	24,869	0
23:00	1,165,859	0	66,000			366,620		366,620			366,620	0	19,431	0
0:00	1,178,080	0	66,000			370,693		370,693			370,693	0	19,635	0
1:00	1,020,537	0	66,000								954,537	0	17,009	0
2:00	839,464	0	66,000									773,464	1,100	0
3:00	747,830	0	66,000									681,830	1,100	0
4:00	635,130	0	66,000									569,130	1,100	0
5:00	561,868	0	66,000									495,868	1,100	0
Totals	**24,757,340**	**2,200,756**	**1,584,000**	**1,008,867**	**859,651**	**3,332,471**	**1,862,776**	**3,332,471**	**1,173,891**	**2,595,158**	**4,287,008**	**2,520,292**		

Pleasant Grove Wastewater Treatment Plant Supply Analysis for Alternative C

Two Tank Fill

Hour	Effluent Flow into Chlorine Contact Basin (gal)	Flow to NZ Tank for WOGC & SCGC (gal)	Roseville Energy Park (gal)	Brookfield (gal)	Curry Creek North (gal)	Curry Creek South (gal)	Regional University (gal)	Placer Ranch (gal)	Creekview & Panhandle (gal)	Sierra Vista (gal)	WRSP (gal)	Recycled Water sent to Creek (gal)	Flow Leaving Plant to be pumped in distribution system (gpm)	Supply and Demand Check
		gpd 2,200,756	gpd 1,584,000	gpd 940,000	gpd 776,816	gpd 3,333,321	gpd 1,720,000	gpd 3,340,000	gpd 1,250,000	gpd 2,460,000	gpd 3,862,911			
6:00	524,393	146,717	66,000	155,838	155,838							0	8,740	0
7:00	495,114	146,717	66,000	141,199	141,199							0	8,252	0
8:00	535,354	146,717	66,000	161,318	161,318							0	8,923	0
9:00	666,840	146,717	66,000	227,061	227,061							0	11,114	0
10:00	852,098	146,717	66,000	319,690			319,690					0	14,202	0
11:00	971,019	146,717	66,000				379,151	379,151				0	16,184	0
12:00	1,213,621	146,717	66,000				500,452	500,452				0	20,227	0
13:00	1,257,452	146,717	66,000				522,367	522,367				0	20,958	0
14:00	1,189,343	146,717	66,000					488,313	488,313			0	19,822	0
15:00	1,299,146	146,717	66,000					543,215	543,215			0	21,652	0
16:00	1,257,229	146,717	66,000					522,256	522,256			0	20,954	0
17:00	1,202,861	146,717	66,000			495,072		495,072				0	20,048	0
18:00	1,128,692	146,717	66,000			457,988				457,988		0	18,812	0
19:00	1,390,748	146,717	66,000			589,015				589,015		0	23,179	0
20:00	1,563,137	146,717	66,000			675,210				675,210		0	26,052	0
21:00	1,569,379	0	66,000			751,689				751,689		0	26,156	0
22:00	1,492,147	0	66,000			713,074					713,074	0	24,869	0
23:00	1,165,859	0	66,000								1,099,859	0	19,431	0
0:00	1,178,080	0	66,000								1,112,080	0	19,635	0
1:00	1,020,537	0	66,000								954,537	0	17,009	0
2:00	839,464	0	66,000									773,464	1,100	0
3:00	747,830	0	66,000									681,830	1,100	0
4:00	635,130	0	66,000									569,130	1,100	0
5:00	561,868	0	66,000									495,868	1,100	0
Totals	**24,757,340**	**2,200,756**	**1,584,000**	**1,005,107**	**685,416**	**3,682,048**	**1,721,661**	**3,450,826**	**1,553,783**	**2,473,903**	**3,879,549**	**2,520,292**		

Pleasant Grove Wastewater Treatment Plant Supply Analysis for Alternative C

Capped Flow of 16,000 gpm

Max flow 16,000 gpm		gpd	gpd	gpd	gpd	gpd	gpd	gpd	gpd	gpd	gpd			
Max flow 960,000 gal/hr		2,200,756	1,584,000	940,000	776,816	3,333,321	1,720,000	3,340,000	1,250,000	2,460,000	3,862,911			
Hour	Effluent Flow into Chlorine Contact Basin (gal)	Flow to NZ Tank for WOGC & SCGC (gal)	Roseville Energy Park (gal)	Brookfield (gal)	Curry Creek North (gal)	Curry Creek South (gal)	Regional University (gal)	Placer Ranch (gal)	Creekview (gal)	Sierra Vista (gal)	WRSP (gal)	Recycled Water sent to Creek (gal)	Flow Leaving Plant to be pumped in distribution system (gpm)	Supply and Demand Check
6:00	524,393	146,717	66,000	38,959	38,959	38,959	38,959	38,959	38,959	38,959	38,959	0	8,740	0
7:00	495,114	146,717	66,000	35,300	35,300	35,300	35,300	35,300	35,300	35,300	35,300	0	8,252	0
8:00	535,354	146,717	66,000	40,330	40,330	40,330	40,330	40,330	40,330	40,330	40,330	0	8,923	0
9:00	666,840	146,717	66,000	56,765	56,765	56,765	56,765	56,765	56,765	56,765	56,765	0	11,114	0
10:00	852,098	146,717	66,000	79,923	79,923	79,923	79,923	79,923	79,923	79,923	79,923	0	14,202	0
11:00	971,019	146,717	66,000	93,410	93,410	93,410	93,410	93,410	93,410	93,410	93,410	11,019	16,000	0
12:00	1,213,621	146,717	66,000	93,410	93,410	93,410	93,410	93,410	93,410	93,410	93,410	253,621	16,000	0
13:00	1,257,452	146,717	66,000	93,410	93,410	93,410	93,410	93,410	93,410	93,410	93,410	297,452	16,000	0
14:00	1,189,343	146,717	66,000	93,410	93,410	93,410	93,410	93,410	93,410	93,410	93,410	229,343	16,000	0
15:00	1,299,146	146,717	66,000	93,410	93,410	93,410	93,410	93,410	93,410	93,410	93,410	339,146	16,000	0
16:00	1,257,229	146,717	66,000	93,410	93,410	93,410	93,410	93,410	93,410	93,410	93,410	297,229	16,000	0
17:00	1,202,861	146,717	66,000	106,755		106,755	106,755	106,755	106,755	106,755	106,755	242,861	16,000	0
18:00	1,128,692	146,717	66,000	106,755		106,755	106,755	106,755	106,755	106,755	106,755	168,692	16,000	0
19:00	1,390,748	146,717	66,000			124,547	124,547	124,547	124,547	124,547	124,547	430,748	16,000	0
20:00	1,563,137	146,717	66,000			124,547	124,547	124,547	124,547	124,547	124,547	603,137	16,000	0
21:00	1,569,379	0	66,000			178,800	178,800	178,800		178,800	178,800	609,379	16,000	0
22:00	1,492,147	0	66,000			178,800	178,800	178,800		178,800	178,800	532,147	16,000	0
23:00	1,165,859	0	66,000			178,800	178,800	178,800		178,800	178,800	205,859	16,000	0
0:00	1,178,080	0	66,000			223,500		223,500		223,500	223,500	218,080	16,000	0
1:00	1,020,537	0	66,000			223,500		223,500		223,500	223,500	60,537	16,000	0
2:00	839,464	0	66,000			193,366		193,366		193,366	193,366	0	13,991	0
3:00	747,830	0	66,000			227,277		227,277			227,277	0	12,464	0
4:00	635,130	0	66,000			189,710		189,710			189,710	0	10,585	0
5:00	561,868	0	66,000			165,289		165,289			165,289	0	9,364	0
Totals	**24,757,340**	**2,200,756**	**1,584,000**	**1,025,248**	**811,739**	**3,033,384**	**1,810,743**	**3,033,384**	**1,274,343**	**2,451,109**	**3,033,384**	**4,499,250**		

Dry Creek Wastewater Treatment Plant Recycled Water Supply Analysis for Alternative C

24-hour Distribution

Hour	Effluent Flow into Chlorine Contact Basin (gal)	RW Pumped to North & South Zone (gal)	Flow in 24" RW Line (gal)	Recycled Water to Cherry Island (gal)	Recycled Water to Gibson Ranch (gal)	Flow to meet min. Fish and Game Req. (gal)	Excess flow in Creek (gal)	Total Flow Down the Creek (gal)	Flow Leaving Plant into distribution system (gal/hr)	Flow Leaving Plant (gal/min)	Supply and Demand Check
			gpd 4,747,168	gpd 1,103,689	gpd 2,876,213	gpd 4,000,000					
6:00	369,449	32,500	197,799	45,987	119,842	166,666	0	332,495	230,299	3,838	-193,345
7:00	348,822	32,500	197,799	45,987	119,842	166,666	0	332,495	230,299	3,838	-213,972
8:00	377,171	32,500	197,799	45,987	119,842	166,666	0	332,495	230,299	3,838	-185,623
9:00	469,807	32,500	197,799	45,987	119,842	166,666	0	332,495	230,299	3,838	-92,987
10:00	600,326	32,500	197,799	45,987	119,842	166,666	37,532	370,027	230,299	3,838	0
11:00	684,109	32,500	197,799	45,987	119,842	166,666	121,315	453,811	230,299	3,838	0
12:00	855,029	32,500	197,799	45,987	119,842	166,666	292,235	624,730	230,299	3,838	0
13:00	885,909	32,500	197,799	45,987	119,842	166,666	323,115	655,610	230,299	3,838	0
14:00	837,924	32,500	197,799	45,987	119,842	166,666	275,130	607,625	230,299	3,838	0
15:00	915,284	32,500	197,799	45,987	119,842	166,666	352,490	684,985	230,299	3,838	0
16:00	885,752	32,500	197,799	45,987	119,842	166,666	322,958	655,453	230,299	3,838	0
17:00	847,448	32,500	197,799	45,987	119,842	166,666	284,654	617,149	230,299	3,838	0
18:00	795,194	32,500	197,799	45,987	119,842	166,666	232,400	564,896	230,299	3,838	0
19:00	979,819	32,500	197,799	45,987	119,842	166,666	417,026	749,521	230,299	3,838	0
20:00	1,101,273	32,500	197,799	45,987	119,842	166,666	538,479	870,974	230,299	3,838	0
21:00	1,105,670	209,125	197,799	45,987	119,842	166,666	366,251	698,746	406,924	6,782	0
22:00	1,051,258	209,125	197,799	45,987	119,842	166,666	311,839	644,335	406,924	6,782	0
23:00	821,379	209,125	197,799	45,987	119,842	166,666	81,960	414,456	406,924	6,782	0
0:00	829,989	209,125	197,799	45,987	119,842	166,666	90,570	423,065	406,924	6,782	0
1:00	718,996	209,125	197,799	45,987	119,842	166,666	0	332,495	406,924	6,782	-20,423
2:00	591,425	209,125	197,799	45,987	119,842	166,666	0	332,495	406,924	6,782	-147,994
3:00	526,866	209,125	197,799	45,987	119,842	166,666	0	332,495	406,924	6,782	-212,553
4:00	447,466	209,125	197,799	45,987	119,842	166,666	0	332,495	406,924	6,782	-291,953
5:00	395,851	209,125	197,799	45,987	119,842	166,666	0	332,495	406,924	6,782	-343,568
Totals	**17,442,217**	**2,369,625**	**4,747,168**	**1,103,689**	**2,876,213**	**3,999,984**	**4,047,954**	**12,027,840**			

Dry Creek Wastewater Treatment Plant Recycled Water Supply Analysis for Alternative C

15-hour Distribution

Hour	Effluent Flow into Chlorine Contact Basin (gal)	RW Pumped to North & South Zone (gal)	Flow in 24" RW Line (gal)	Recycled Water to Cherry Island (gal)	Recycled Water to Gibson Ranch (gal)	Flow to meet min. Fish and Game Req. (gal)	Excess flow in Creek (gal)	Total Flow Down the Creek (gal)	Flow Leaving Plant into distribution system (gal/hr)	Flow Leaving Plant (gal/min)	Supply and Demand Check
			gpd 4,747,168	gpd 1,103,689	gpd 2,876,213	gpd 4,000,000					
6:00	369,449	32,500	197,799	0	0	0	139,150	139,150	230,299	3,838	0
7:00	348,822	32,500	197,799	0	0	0	118,523	118,523	230,299	3,838	0
8:00	377,171	32,500	197,799	0	0	0	146,873	146,873	230,299	3,838	0
9:00	469,807	32,500	197,799	0	0	0	239,508	239,508	230,299	3,838	0
10:00	600,326	32,500	197,799	0	0	0	370,027	370,027	230,299	3,838	0
11:00	684,109	32,500	197,799	73,579	191,748	266,667	0	531,993	230,299	3,838	-78,183
12:00	855,029	32,500	197,799	73,579	191,748	266,667	92,737	624,730	230,299	3,838	0
13:00	885,909	32,500	197,799	73,579	191,748	266,667	123,617	655,610	230,299	3,838	0
14:00	837,924	32,500	197,799	73,579	191,748	266,667	75,632	607,625	230,299	3,838	0
15:00	915,284	32,500	197,799	73,579	191,748	266,667	152,992	684,985	230,299	3,838	0
16:00	885,752	32,500	197,799	73,579	191,748	266,667	123,459	655,453	230,299	3,838	0
17:00	847,448	32,500	197,799	73,579	191,748	266,667	85,156	617,149	230,299	3,838	0
18:00	795,194	32,500	197,799	73,579	191,748	266,667	32,902	564,896	230,299	3,838	0
19:00	979,819	32,500	197,799	73,579	191,748	266,667	217,527	749,521	230,299	3,838	0
20:00	1,101,273	32,500	197,799	73,579	191,748	266,667	338,981	870,974	230,299	3,838	0
21:00	1,105,670	209,125	197,799	73,579	191,748	266,667	166,753	698,746	406,924	6,782	0
22:00	1,051,258	209,125	197,799	73,579	191,748	266,667	112,341	644,335	406,924	6,782	0
23:00	821,379	209,125	197,799	73,579	191,748	266,667	0	531,993	406,924	6,782	-117,538
0:00	829,989	209,125	197,799	73,579	191,748	266,667	0	531,993	406,924	6,782	-108,928
1:00	718,996	209,125	197,799	73,579	191,748	266,667	0	531,993	406,924	6,782	-219,921
2:00	591,425	209,125	197,799	0	0	0	184,502	184,502	406,924	6,782	0
3:00	526,866	209,125	197,799	0	0	0	119,943	119,943	406,924	6,782	0
4:00	447,466	209,125	197,799	0	0	0	40,543	40,543	406,924	6,782	0
5:00	395,851	209,125	197,799	0	0	0	0	0	406,924	6,782	-11,073
Totals	**17,442,217**	**2,369,625**	**4,747,168**	**1,103,689**	**2,876,213**	**4,000,000**	**2,881,165**	**10,861,067**			

Dry Creek Wastewater Treatment Plant Recycled Water Supply Analysis for Alternative C

Creek Distribution

Hour	Effluent Flow into Chlorine Contact Basin (gal)	RW Pumped to North & South Zone (gal)	Flow in 24" RW Line (gal)	Recycled Water to Cherry Island (gal)	Recycled Water to Gibson Ranch (gal)	Flow to meet min. Fish and Game Req. (gal)	Excess flow in Creek (gal)	Total Flow Down the Creek (gal)	Flow Leaving Plant into distribution system (gal/hr)	Flow Leaving Plant (gal/min)	Supply and Demand Check
			gpd 4,747,168	gpd 1,103,689	gpd 2,876,213	gpd 4,000,000					
6:00	369,449	32,500	197,799	46,383	46,383	46,383	0	139,150	230,299	3,838	0
7:00	348,822	32,500	197,799	39,508	39,508	39,508	0	118,523	230,299	3,838	0
8:00	377,171	32,500	197,799	48,958	48,958	48,958	0	146,873	230,299	3,838	0
9:00	469,807	32,500	197,799	79,836	79,836	79,836	0	239,508	230,299	3,838	0
10:00	600,326	32,500	197,799	123,342	123,342	123,342	0	370,027	230,299	3,838	0
11:00	684,109	32,500	197,799	151,270	151,270	151,270	0	453,811	230,299	3,838	0
12:00	855,029	32,500	197,799	208,243	208,243	208,243	0	624,730	230,299	3,838	0
13:00	885,909	32,500	197,799	218,537	218,537	218,537	0	655,610	230,299	3,838	0
14:00	837,924	32,500	197,799	202,542	202,542	202,542	0	607,625	230,299	3,838	0
15:00	915,284	32,500	197,799	228,328	228,328	228,328	0	684,985	230,299	3,838	0
16:00	885,752	32,500	197,799		327,726	327,726	0	655,453	230,299	3,838	0
17:00	847,448	32,500	197,799		308,575	308,575	0	617,149	230,299	3,838	0
18:00	795,194	32,500	197,799		282,448	282,448	0	564,896	230,299	3,838	0
19:00	979,819	32,500	197,799		374,760	374,760	0	749,521	230,299	3,838	0
20:00	1,101,273	32,500	197,799		435,487	435,487	0	870,974	230,299	3,838	0
21:00	1,105,670	209,125	197,799		349,373	349,373	0	698,746	406,924	6,782	0
22:00	1,051,258	209,125	197,799			644,335	0	644,335	406,924	6,782	0
23:00	821,379	209,125	197,799			414,456	0	406,924	406,924	6,782	0
0:00	829,989	209,125	197,799				423,065	1,253,055	406,924	6,782	0
1:00	718,996	209,125	197,799				312,072	1,031,068	406,924	6,782	0
2:00	591,425	209,125	197,799				184,502	775,927	406,924	6,782	0
3:00	526,866	209,125	197,799				119,943	646,809	406,924	6,782	0
4:00	447,466	209,125	197,799				40,543	488,009	406,924	6,782	0
5:00	395,851	209,125	197,799				0	395,851	406,924	6,782	-11,073
Totals	**17,442,217**	**2,369,625**	**4,747,168**	**1,346,948**	**3,425,317**	**4,484,107**	**1,080,125**	**13,839,559**			

Dry Creek Wastewater Treatment Plant Recycled Water Supply Analysis for Alternative C

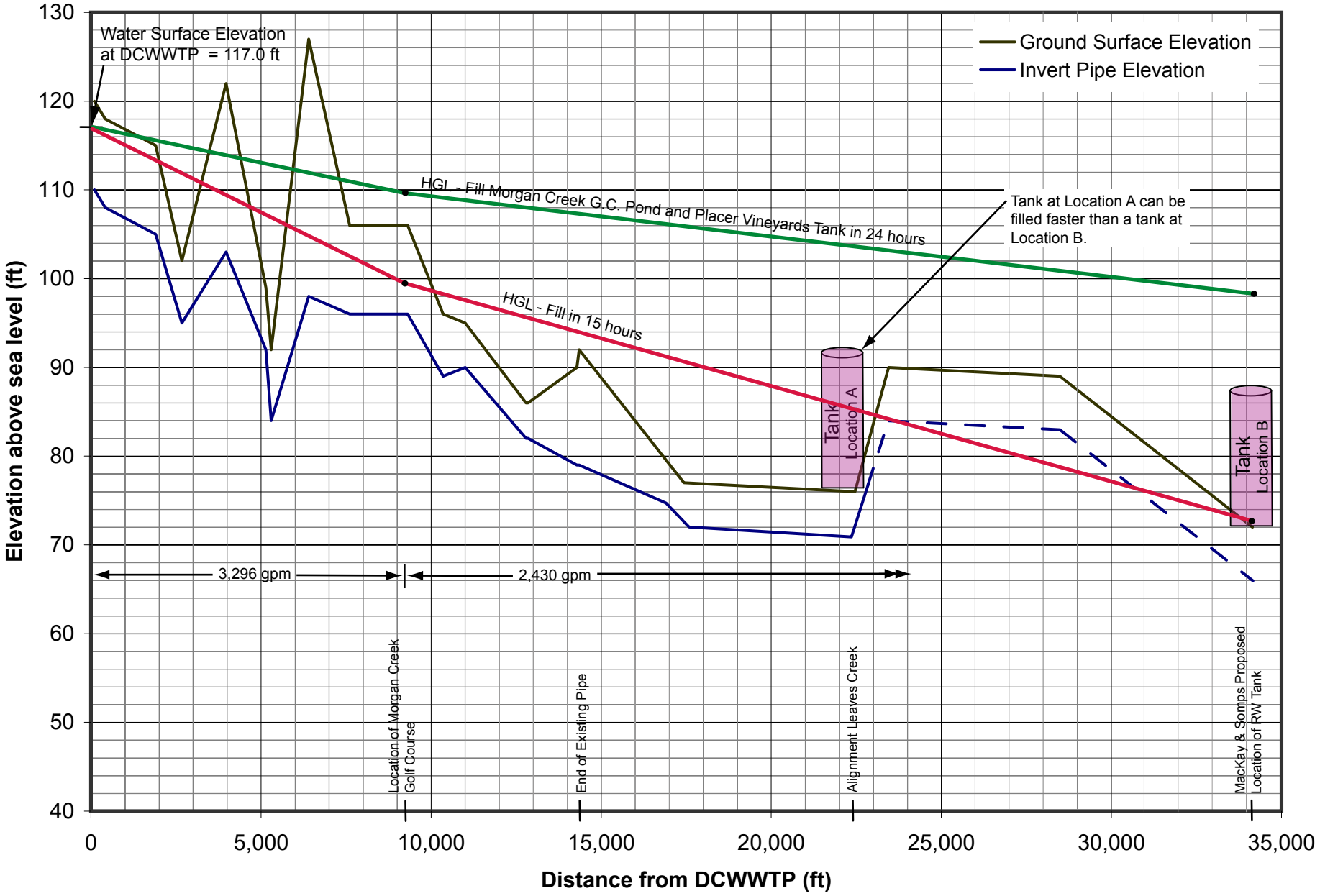
Proportional Flow to Creek Customers

		7,979,902	gpd 4,747,168	gpd 1,103,689 0.14	gpd 2,876,213 0.36	gpd 4,000,000 0.50					
Hour	Effluent Flow into Chlorine Contact Basin (gal)	RW Pumped to North & South Zone (gal)	Flow in 24" RW Line (gal)	Recycled Water to Cherry Island (gal)	Recycled Water to Gibson Ranch (gal)	Flow to meet min. Fish and Game Req. (gal)	Excess flow in Creek (gal)	Total Flow Down the Creek (gal)	Flow Leaving Plant into distribution system (gal/hr)	Flow Leaving Plant (gal/min)	Supply and Demand Check
6:00	369,449	32,500	197,799				139,150	139,150	230,299	3,838	0
7:00	348,822	32,500	197,799				118,523	118,523	230,299	3,838	0
8:00	377,171	32,500	197,799				146,873	146,873	230,299	3,838	0
9:00	469,807	32,500	197,799	33,126	86,326	120,056	0	239,508	230,299	3,838	0
10:00	600,326	32,500	197,799	51,178	133,370	185,480	0	370,027	230,299	3,838	0
11:00	684,109	32,500	197,799	62,766	163,568	227,477	0	453,811	230,299	3,838	0
12:00	855,029	32,500	197,799	86,406	225,173	313,152	0	624,730	230,299	3,838	0
13:00	885,909	32,500	197,799	90,677	236,303	328,631	0	655,610	230,299	3,838	0
14:00	837,924	32,500	197,799	84,040	219,008	304,578	0	607,625	230,299	3,838	0
15:00	915,284	32,500	197,799	94,739	246,891	343,355	0	684,985	230,299	3,838	0
16:00	885,752	32,500	197,799	90,655	236,246	328,552	0	655,453	230,299	3,838	0
17:00	847,448	32,500	197,799	85,357	222,440	309,352	0	617,149	230,299	3,838	0
18:00	795,194	32,500	197,799	78,130	203,607	283,159	0	564,896	230,299	3,838	0
19:00	979,819	32,500	197,799	103,665	270,151	375,704	0	749,521	230,299	3,838	0
20:00	1,101,273	32,500	197,799	120,463	313,927	436,584	0	870,974	230,299	3,838	0
21:00	1,105,670	209,125	197,799	96,643	251,851	350,253	0	698,746	406,924	6,782	0
22:00	1,051,258	209,125	197,799				644,335	644,335	406,924	6,782	0
23:00	821,379	209,125	197,799				414,456	414,456	406,924	6,782	0
0:00	829,989	209,125	197,799				423,065	423,065	406,924	6,782	0
1:00	718,996	209,125	197,799				312,072	312,072	406,924	6,782	0
2:00	591,425	209,125	197,799				184,502	184,502	406,924	6,782	0
3:00	526,866	209,125	197,799				119,943	119,943	406,924	6,782	0
4:00	447,466	209,125	197,799				0	0	406,924	6,782	0
5:00	395,851	209,125	197,799				0	0	406,924	6,782	-11,073
Totals	**17,442,217**	**2,369,625**	**4,747,168**	**1,077,844**	**2,808,860**	**3,906,332**	**2,502,918**	**10,295,954**			

Attachment B

24-inch Gravity Line Hydraulic Analysis

Hydraulic Analysis of 24" RW Pipe from DCWWTP to Placer Vineyards Recycled Water Tank



Attachment C

Detailed Cost Analysis

Preliminary Construction Cost Estimate for
Recycled Water System Evaluation Improvements
Alternative A

Project No.	Capital Construction Item	Size	Length	Unit Cost[1]	OH Factor[2]	Total Amount
1	18" FM Converted for RW Use from PGWWTP	18 in.	9,700 ft			n/a
1 Total			**9,700 ft**			
2	8" FM Converted for RW Use	8 in.	8,900 ft			n/a
2 Total			**8,900 ft**			
3	30" FM Converted for RW Use South of NZPS	30 in.	19,600 ft			n/a
3 Total			**19,600 ft**			
4	Creekview Pipeline	24 in.	3,300 ft	192 $/LF	1.625	$ 1,029,600
4 Total			**3,300 ft**			**$ 1,030,000**
5	Creekview to Curry Creek North	24 in.	4,600 ft	192 $/LF	1.625	$ 1,435,200
	Curry Creek North to Regional University	24 in.	2,100 ft	192 $/LF	1.625	$ 655,200
	Regional Univ. to Curry Creek S. & Sierra Vista	24 in.	8,100 ft	192 $/LF	1.625	$ 2,527,200
5 Total			**14,800 ft**			**$ 4,618,000**
6	Placer Vineyards Pipeline	24 in.	4,900 ft	192 $/LF	1.625	$ 1,528,800
6 Total			**4,900 ft**			**$ 1,529,000**
7	North from PGWWTP to "Tee"	30 in.	1,400 ft	240 $/LF	1.625	$ 546,000
	Pipeline from "Tee" to Placer Ranch PS	16 in.	5,800 ft	128 $/LF	1.625	$ 1,206,400
	From Placer Ranch Pipeline to 30” RW Stub	16 in.	1,500 ft	128 $/LF	1.625	$ 312,000
7 Total			**8,700 ft**			**$ 2,065,000**
8	DCWWTP Pump Station Improvements (1-50 HP pump)	1,900 gpm	n/a	$60,000	1.625	$ 97,500
8 Total						**$ 98,000**
9	North Zone Pump Station Improvements (1-50 HP pump)	950 gpm	n/a	$35,000	1.625	$ 56,900
9 Total						**$ 57,000**
10	PGWWTP Pump Station Improvement (3-250 HP pumps)	15,360 gpm	n/a	$375,000	1.625	$ 609,400
10 Total						**$ 610,000**
11	Addition of 30" Pipe at PGWWTP for Maximum Flow Conveyance	30 in.	1,700 ft	360 $/LF	1.625	$ 994,500
11 Total			**1,700 ft**			**$ 995,000**
Grand Total			**71,600 ft**			**$ 11,002,000**

Notes:

1 Unit costs based upon a $8/LF-in diameter for rural areas (Urban Growth Areas) and $12/LF-in diameter for urban areas (existing roadway or paving)

2 An overhead markup of 62.5% was applied based on a 25% engineering and administration factor plus a 30% construction cost contingency to calculate the capital cost. Hence, for budgeting purposes, it is assumed that the contingency and project implementation multiplier is 1.625 (1.00 x 1.25 x 1.30 = 1.625)

Preliminary Construction Cost Estimate for
Recycled Water System Evaluation Improvements
Alternative B

Project No.	Capital Construction Item	Size	Length	Unit Cost[1]	OH Factor[2]	Total Amount
1	18" FM Converted for RW Use from PGWWTP	18 in.	9,700 ft			n/a
1 Total			**9,700 ft**			
2	8" FM Converted for RW Use	8 in.	8,900 ft			n/a
2 Total			**8,900 ft**			
3	30" FM Converted for RW Use South of NZPS	30 in.	19,600 ft			n/a
3 Total			**19,600 ft**			
4	Creekview Pipeline	24 in.	3,300 ft	192 $/LF	1.625	$ 1,029,600
4 Total			**3,300 ft**			**$ 1,030,000**
5	Creekview to Curry Creek North	24 in.	4,600 ft	192 $/LF	1.625	$ 1,435,200
	Curry Creek North to Regional University	24 in.	2,100 ft	192 $/LF	1.625	$ 655,200
	Regional Univ. to Curry Creek S. & Sierra Vista	24 in.	8,100 ft	192 $/LF	1.625	$ 2,527,200
5 Total			**14,800 ft**			**$ 4,618,000**
6	Placer Vineyards to 24" Gravity Line	24 in.	19,200 ft	192 $/LF	1.625	$ 5,990,400
6 Total			**19,200 ft**			**$ 5,991,000**
7	North from PGWWTP to "Tee"	30 in.	1,400 ft	240 $/LF	1.625	$ 546,000
	Pipeline from "Tee" to Placer Ranch PS	16 in.	5,800 ft	128 $/LF	1.625	$ 1,206,400
	From Placer Ranch Pipeline to 30” RW Stub	16 in.	1,500 ft	128 $/LF	1.625	$ 312,000
7 Total			**8,700 ft**			**$ 2,065,000**
8	DCWWTP Pump Station Improvements (1-50 HP pump)	1,900 gpm	n/a	$60,000	1.625	$ 97,500
8 Total						**$ 98,000**
9	North Zone Pump Station Improvements (1-50 HP pump)	950 gpm	n/a	$35,000	1.625	$ 56,900
9 Total						**$ 57,000**
10	PGWWTP Pump Station Improvement (2-250 HP pumps)	10,240 gpm	n/a	$250,000	1.625	$ 406,300
10 Total						**$ 407,000**
11	Addition of 30" Pipe at PGWWTP for Maximum Flow Conveyance	30 in.	1,700 ft	360 $/LF	1.625	$ 994,500
11 Total			**1,700 ft**			**$ 995,000**
Grand Total			**85,900 ft**			**$ 15,261,000**

Notes:

1 Unit costs based upon a $8/LF-in diameter for rural areas (Urban Growth Areas) and $12/LF-in diameter for urban areas (existing roadway or paving)

2 An overhead markup of 62.5% was applied based on a 25% engineering and administration factor plus a 30% construction cost contingency to calculate the capital cost. Hence, for budgeting purposes, it is assumed that the contingency and project implementation multiplier is 1.625 (1.00 x 1.25 x 1.30 = 1.625)

Preliminary Construction Cost Estimate for
Recycled Water System Evaluation Improvements
Alternative C

Project No.	Capital Construction Item	Size	Length	Unit Cost[1]	OH Factor[2]	Total Amount
1	18" FM Converted for RW Use from PGWWTP	18 in.	9,700 ft			n/a
1 Total			**9,700 ft**			
2	8" FM Converted for RW Use	8 in.	8,900 ft			n/a
2 Total			**8,900 ft**			
3	30" FM Converted for RW Use South of NZPS	30 in.	19,600 ft			n/a
3 Total			**19,600 ft**			
4	Creekview Pipeline	24 in.	3,300 ft	192 $/LF	1.625	$ 1,029,600
4 Total			**3,300 ft**			**$ 1,030,000**
5	Creekview to Curry Creek North	24 in.	4,600 ft	192 $/LF	1.625	$ 1,435,200
	Curry Creek North to Regional University	24 in.	2,100 ft	192 $/LF	1.625	$ 655,200
	Regional Univ. to Curry Creek S. & Sierra Vista	24 in.	2,300 ft	192 $/LF	1.625	$ 717,600
5 Total			**9,000 ft**			**$ 2,808,000**
6	Placer Vineyards Pipeline	24 in.	9,100 ft	192 $/LF	1.625	$ 2,839,200
6 Total			**9,100 ft**			**$ 2,840,000**
7	North from PGWWTP to "Tee"	30 in.	1,400 ft	240 $/LF	1.625	$ 546,000
	Pipeline from "Tee" to Placer Ranch PS	16 in.	5,800 ft	128 $/LF	1.625	$ 1,206,400
7 Total			**7,200 ft**			**$ 1,753,000**
8	DCWWTP Pump Station Improvements (1-50 HP pump)	1,900 gpm	n/a	$60,000	1.625	$ 97,500
8 Total						**$ 98,000**
9	North Zone Pump Station Improvements (1-50 HP pump)	950 gpm	n/a	$35,000	1.625	$ 56,900
9 Total						**$ 57,000**
10	PGWWTP Pump Station Improvement (3-250 HP pumps)	15,360 gpm	n/a	$375,000	1.625	$ 609,400
10 Total						**$ 610,000**
11	Sun City Pipeline from 18" Converted Force Main	12 in.	2,700 ft	144 $/LF	1.625	$ 631,800
11 Total			**2,700 ft**			**$ 632,000**
12	Addition of 30" Pipe at PGWWTP for Maximum Flow Conveyance	30 in.	1,700 ft	360 $/LF	1.625	$ 994,500
12 Total			**1,700 ft**			**$ 995,000**
Grand Total			**71,200 ft**			**$ 10,823,000**

Notes:

1 Unit costs based upon a $8/LF-in diameter for rural areas (Urban Growth Areas) and $12/LF-in diameter for urban areas (existing roadway or paving)

2 An overhead markup of 62.5% was applied based on a 25% engineering and administration factor plus a 30% construction cost contingency to calculate the capital cost. Hence, for budgeting purposes, it is assumed that the contingency and project implementation multiplier is 1.625 (1.00 x 1.25 x 1.30 = 1.625)

Attachment D

Urban Growth Area Cost Details

Urban Growth Area Individual Recycled Water Pipeline Costs

Urban Growth Areas July Peak Day Demands and Pipeline Requirements

Segment	Location	Length (ft)	Diameter (in)	Upsize Diameter	Total Downstream Demand (mgd)	Placer Ranch Demand (mgd)	Creekview & Panhandle Demand (mgd)	Curry Creek North Demand (mgd)	Regional University Demand (mgd)	Curry Creek South Demand (mgd)	Sierra Vista Demand (mgd)	Placer Vineyards Pipe Demand (mgd)
1	PGWWTP to "Tee"	1,389	8	30	12.881	3.340	1.250	0.778	1.720	3.333	2.460	0
2	"Tee" to Creekview	3,292	8	24	9.541	0	1.250	0.778	1.720	3.333	2.460	0
3	Creekview to Curry Creek North	4,582	8	24	8.291	0	0	0.778	1.720	3.333	2.460	0
4	Curry Creek North to Regional Univ.	2,097	12	24	7.513	0	0	0	1.720	3.333	2.460	0
5	Regional Univ to Curry Creek South and Sierra Vista	4,708	24	n/a	5.793	0	0	0	0	3.333	2.460	0
6	"Tee" to Placer Ranch	5,789	16	n/a	3.340	3.340	0	0	0	0	0	0
7	Placer Vineyards Pipeline	9,100	24	n/a	3.443	0	0	0	0	0	0	3.500

UGAs Individual Costs to Install Recycled Water Pipeline *

						July Peak Day Recycled Water Demand in mgd							
						3.340	1.250	0.778	1.720	3.333	2.460		
Segment	Location	Length (ft)	Diameter (in)	Segment Cost	Cost to Upsize to Necessary Diameter	Placer Ranch Pipe Cost	Creekview Pipe Cost	Curry Creek North Pipe Cost	Regional University Pipe Cost	Curry Creek South Pipe Cost	Sierra Vista Pipe Cost	Placer Vineyards Pipe Cost	**Total Cost of Pipe Segment from UGAs**
1	PGWWTP to "Tee"	1,389	8	$88,896	$244,464	$86,442	$32,351	$20,125	$44,515	$86,261	$63,667	$0	**$333,360**
2	"Tee" to Creekview	3,292	8	$210,688	$421,376	$0	$210,688	$39,522	$87,420	$169,402	$125,031	$0	**$632,064**
3	Creekview to Curry Creek North	4,582	8	$293,248	$586,496	$0	$0	$293,248	$134,270	$260,188	$192,038	$0	**$879,744**
4	Curry Creek North to Regional Univ.	2,097	12	$201,312	$201,312	$0	$0	$0	$201,312	$115,825	$85,487	$0	**$402,624**
5	Regional Univ to Curry Creek South and Sierra Vista	4,708	16	$903,936	$0	$0	$0	$0	$0	$520,079	$383,857	$0	**$903,936**
6	"Tee" to Placer Ranch	5,789	16	$740,992	$0	$740,992	$0	$0	$0	$0	$0	$0	**$740,992**
7	Placer Vineyards Pipeline	9,100	24	$1,747,200	$0	$0	$0	$0	$0	$0	$0	$1,747,200	**$1,747,200**
	Total	**30,957**		**$4,186,272**	**$1,453,648**	**$827,434**	**$243,039**	**$352,895**	**$467,518**	**$1,151,755**	**$850,080**	**$1,747,200**	**$5,639,920**

* Costs do not include contingencies

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Appendix K – Regional Wastewater 2020 Systems Evaluation Report

The South Placer Regional Wastewater 2020 Systems Evaluation Report can be accessed at the link below.

https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Environmental%20Utilities/SPWA/Systems%20Evaluation%20Report%20Dec2020%20Final_web.pdf

Appendix L – 2015 USBR Record of Decision

RECLAMATION

Managing Water in the West

Record of Decision

Central Valley Project Municipal and Industrial Water Shortage Policy

Prepared by
United States Department of the Interior
Bureau of Reclamation
Mid Pacific Region

U.S. Department of the Interior
Bureau of Reclamation
Sacramento, California

November 2015

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Record of Decision

Central Valley Project Municipal and Industrial Water Shortage Policy

Recommended:

Richard J. Woodley
Regional Resources Manager
Mid-Pacific Region

Date Nov. 4, 2015

Concur:

Anastasia T. Leigh
Regional Environmental Officer
Mid-Pacific Region

Date 11/9/2015

Approved:

David Murillo
Regional Director
Mid-Pacific Region

Date 11/13/15

Summary of Action

The Bureau of Reclamation (Reclamation) prepared the Central Valley Project (CVP) Municipal and Industrial (M&I) Water Shortage Policy (WSP) Environmental Impact Statement (EIS) to evaluate the potential impacts of CVP M&I WSP alternatives. The M&I WSP would be used by Reclamation to: 1) define water shortage terms and conditions for applicable CVP water service contractors, as appropriate; 2) determine the quantity of water made available to CVP water service contractors from the CVP that, together with the M&I water service contractors' drought water conservation measures and other non-CVP water supplies, would assist the M&I water service contractors in their efforts to protect public health and safety (PHS) during severe or continuing droughts; and 3) provide information to CVP water service contractors for their use in water supply planning and development of drought contingency plans. The alternatives evaluated in this EIS utilize different methodologies for allocating available CVP water supplies to CVP water service contractors during a Condition of Shortage[1]. This EIS evaluates potential impacts of the M&I WSP over a 20-year period, 2010 through 2030. Reclamation's decision is the adoption of an updated M&I WSP.

Background

In January 1993, following the adoption of the Central Valley Project Improvement Act (CVPIA), many CVP M&I water service contractors expressed concerns regarding future allocations of water supplies provided by the CVP. Reclamation subsequently initiated an effort to develop an M&I WSP that would be incorporated into long-term water service contracts during the contract renewal process implemented under the CVPIA. Involved stakeholders submitted language for the M&I WSP as part of several proposed policies. In September 2001, Reclamation released a Draft M&I WSP. Reclamation initiated the preparation of an Environmental Assessment (EA) which included stakeholder input and consideration and evaluation of alternative policies developed in 1993, 1996-1997, and 2000-2001. The M&I WSP EA was released in October 2005 and a Finding of No Significant Impact was signed in December 2005. The M&I WSP currently being implemented by Reclamation is the 2001 Draft M&I WSP, as amended by Alternative 1B from the 2005 EA. Because the assumptions supporting the 2005 EA became outdated and due to significant changes in the Sacramento-San Joaquin River Delta (Delta) and CVP/State Water Project (SWP) operations, Reclamation decided in 2009 to

[1] "Condition of Shortage" is defined in Reclamation water service contracts as "...a condition respecting the Project during any Year *(March 1 through February of the following year)* such that the Contracting Officer is unable to deliver sufficient water to meet the Contract Total".

undertake the M&I WSP EIS to provide an updated M&I WSP that best recognizes the needs of various segments of the water user community and how those needs could be addressed under Conditions of Shortage.

Decision

Reclamation's decision is to implement Alternative 4, Updated M&I WSP (Preferred Alternative). This alternative comprises the updated M&I WSP developed by Reclamation with stakeholder input received during the M&I WSP stakeholder workshops held between May 2010 and January 2011, with clarifying revisions made to address comments from stakeholders received after Stakeholder Workshop 4 (November 2010) and to address public comments received on the Draft EIS (March 2015). The Updated M&I WSP will apply to the CVP water service contractors noted in Table 1. These water service contractors generally comprise those whose contracts currently reference the M&I WSP and those with a water service contract that is expected to reference the updated policy. These water users are located throughout the Sacramento River Valley, San Joaquin River Valley, Tulare Lake Region, and San Francisco Bay/Central Coast area.

Table 1. Water Service Contractors Subject to the Updated M&I WSP

General Geographical Region	CVP Division	Water Service Contractors	M&I	Ag[1]
North of Delta	Shasta and Trinity River	Bella Vista Water District	X	X
		Centerville Community Services District	X	-
		City of Redding	X	-
		City of Shasta Lake	X	-
		Clear Creek Community Services District	X	X
		Mountain Gate Community Services District	X	-
		Shasta Community Services District	X	-
		Shasta County Water Agency	X	-
		United States (U.S.) Forest Service (Shasta)	X	-
	Sacramento River	4-M Water District	X	X
		Colusa County Water District	X	X
		Corning Water District	X	X
		Cortina Water District	X	X
		County of Colusa	X	X
		County of Colusa (Stonyford)	X	-
		Davis Water District	X	X
		Dunnigan Water District	X	X
		Elk Creek Community Services District	X	-
		Glenn Valley Water District	X	X
		Glide Water District	X	X
		Holthouse Water District	X	X

General Geographical Region	CVP Division	Water Service Contractors	M&I	Ag[1]
North of Delta	Sacramento River	Kanawha Water District	X	X
		Kirkwood Water District	X	X
		La Grande Water District	X	X
		Myers-Marsh Mutual Water Company	X	X
		Orland-Artois Water District	X	X
		Proberta Water District	X	X
		Stony Creek Water District	X	X
		Thomes Creek Water District	X	X
		U.S. Forest Service (Salt Creek)	X	-
		Westside Water District	X	X
		Whitney Construction, Incorporated	X	-
	American River	City of Roseville	X	-
		East Bay Municipal Utility District	X	-
		El Dorado Irrigation District	X	-
		Placer County Water Agency	X	-
		Sacramento County Water Agency	X	-
		Sacramento Municipal Utility District	X	-
		San Juan Water District	X	-
	Delta	Banta-Carbona Irrigation District	X	X
		Byron-Bethany Irrigation District	X	X
		City of Tracy	X	X
		Coelho Family Trust	X	X
		Contra Costa Water District	X	-
		Del Puerto Water District	X	X
		Eagle Field Water District	X	X
		Fresno Slough Water District	X	X
		James Irrigation District	X	X
		Laguna Water District	X	X
		Mercy Springs Water District	X	X
		Oro Loma Water District	X	X
		Pajaro Valley Water Management Agency, Westlands Water District	X	X
		Patterson Irrigation District	X	X
		Reclamation District No. 1606	X	X
		Tranquillity Irrigation District	X	X
		Tranquillity Public Utility District	X	X
		U.S. Department of Veteran Affairs	X	-
		West Side Irrigation District	X	X
		West Stanislaus Irrigation District	X	X
		Westlands Water District Distribution Districts	X	X
South of Delta	West San Joaquin	City of Avenal	X	-
		City of Coalinga	X	-
		City of Huron	X	-
		Pacheco Water District	X	X
		Panoche Water District	X	X
		San Luis Water District	X	X
		State of California	X	-

General Geographical Region	CVP Division	Water Service Contractors	M&I	Ag[1]
South of Delta	West San Joaquin	Westlands Water District	X	X
	San Felipe	San Benito County Water District	X	X
		Santa Clara Valley Water District	X	X
	Cross Valley Canal	County of Fresno	X	X
		County of Tulare	X	X
		Hills Valley Irrigation District (includes Rag Gulch Water District)	X	X
		Kern-Tulare Water District	X	X
		Lower Tule River Irrigation District	-	X
		Pixley Irrigation District	X	X
		Tri-Valley Water District	X	X

Note:
[1] Ag = Agricultural water service contractor

Alternatives Considered

No Action Alternative

The No Action Alternative represents continued implementation of the current Draft M&I WSP. This existing draft policy is currently guiding Reclamation's allocation of CVP water to agricultural and M&I water service contractors during Conditions of Shortage and would continue if none of the action alternatives were selected.

During Conditions of Shortage when the CVP is unable to deliver sufficient water to meet the CVP water service contractors' Contract Total, M&I water service contractors allocations are maintained at 100 percent of their Contract Total as the agricultural water service contractor allocations are reduced to 75 percent of their Contract Total in incremental steps. Then, M&I water service contractor allocations are reduced to 75 percent of their historical use in incremental steps as agricultural water service contractor allocations are reduced to 50 percent of their Contract Total. The M&I water service contractor allocations are maintained at 75 percent of historical use until agricultural water service contractor allocations are reduced in incremental steps to 25 percent of Contract Total. M&I water service contractor allocations are then reduced in incremental steps to 50 percent of historical use until agricultural water service contract allocations are reduced in incremental steps from 25 percent to zero.

In years when the M&I water service contractor allocations are less than 75 percent of historical use, Reclamation would attempt to provide the amount of PHS need unmet by contractors' CVP allocation and other available non-CVP

supplies, up to 75 percent of the historical use, subject to the availability of CVP water supplies. There are some years in which allocations to agricultural water service contractors are at or near zero. In those years, CVP water deliveries for unmet PHS need to M&I water service contractors may not be fully realized. Water made available to M&I water service contractors may be reduced below 75 percent of historical use and below the unmet PHS needs when CVP water is not available.

Action Alternatives

The alternatives that moved forward for more detailed analysis in the EIS were those that responded to the National Environmental Policy Act (NEPA) purpose and need, minimized negative effects, were potentially feasible, and represented a range of reasonable alternatives. As a result of initial alternatives screening, four action alternatives were selected to move forward for analysis in the EIS (in addition to the No Action Alternative). Table 2 presents the alternatives analyzed in the EIS. Analysis of these alternatives will provide the information needed for Reclamation to make a decision.

Table 2. Alternatives Analyzed in the EIS

Alternative Number	Alternative Name	Description
Alternative 1	No Action Alternative	Represents a projection of current conditions to the most reasonable future conditions that could occur during the life of the proposed action without any action alternative being implemented. The No Action Alternative represents continued allocation of water in the same way that Reclamation currently allocates CVP water to agricultural and M&I water service contractors during Conditions of Shortage, consistent with the 2001 Draft M&I WSP, as modified by Alternative 1B of the 2005 EA.
Alternative 2	Equal Agricultural and M&I Allocation	Provides no preference for either agricultural or M&I contractors. M&I and agricultural water service contractors receive equal allocation percentages during a Condition of Shortage.
Alternative 3	Full M&I Allocation Preference	M&I water service contractors receive 100% of their Contract Total until CVP supplies are not available to meet those demands. Agricultural allocations are reduced as needed to maintain 100% allocations to M&I contractors.
Alternative 4	Updated M&I WSP (Preferred Alternative)	Similar to Alternative 1 but modified to update the definition of unconstrained years used in calculating historical use. Attempts to provide unmet PHS need, but without a guarantee. Provides implementation guidelines and procedures.
Alternative 5	M&I Contractor Suggested WSP	Similar to Alternative 4 except attempts to provide a greater quantity of unmet PHS need.

Under Alternative 2, Equal Agricultural and M&I Allocation, M&I water service contractors would receive the same allocation, as a percentage of Contract Total, as the agricultural water service contractors. This means that in years when the CVP water supplies are not adequate to provide water to all water service contractors, agricultural and M&I water service contractor allocations would be reduced by the same percentage. This allocation methodology would provide a larger volume of CVP water to agricultural water service contractors than the No Action Alternative, as there would be no reductions to agricultural contractors to provide a larger volume of CVP water to M&I water service contractors. Deliveries to both north of the Delta and south of Delta M&I contractors would be lower than under the No Action Alternative in order to provide an equal allocation to agricultural water service contractors.

Under Alternative 3, Full M&I Allocation Preference, M&I water service contractors would receive a higher allocation as compared to the No Action Alternative and other action alternatives. Under this alternative, Reclamation would attempt to provide a 100 percent allocation to M&I water service contractors during a Condition of Shortage, to the extent that adequate CVP water supplies are available. This would be achieved by reducing allocations to agricultural water service contractors as needed to maximize the frequency of 100 percent allocations to the M&I water service contractors. This allocation methodology would provide the lowest volume of CVP water to agricultural water service contractors compared to the No Action and other action alternatives. Alternative 3 would have no provisions for unmet PHS needs that would be made available by Reclamation from CVP water supplies.

Alternative 4, Updated M&I WSP, is similar to the No Action Alternative. This alternative comprises the M&I WSP developed by Reclamation with stakeholder input received during the M&I WSP stakeholder workshops held between May 2010 and January 2011, with clarifying revisions made to address comments from stakeholders received after Stakeholder Workshop 4 and to address public comments received on the Draft EIS. Reclamation used this feedback to identify elements of the 2001 Draft M&I WSP (represented in the No Action Alternative) that could be improved. The major modifications made to the 2001 Draft M&I WSP that are reflected in the Updated M&I WSP include the following:

- Reclamation deleted the reference to 1996 M&I Water Rate book.
- At the M&I water service contractors' request, Reclamation modified the method that would be used to adjust an M&I water service contractor's historical use.
- Reclamation expanded the definitions of the key terms and also defined terms not previously defined, to provide greater clarity on the intent and requirements of the M&I WSP's key terms and conditions.

- Term and Condition 1 was revised to remove the sentence stating that Reclamation intended contractors to use their non-CVP supplies first and rely on CVP water as a supplemental supply. Instead, Reclamation expects water service contractors, at their discretion, to use CVP water in conjunction with their other non-CVP supplies to meet demand during all years, including years where a Condition of Shortage exists.

- Clarified M&I allocation for contracts with both irrigation and M&I use which do not set forth individual Contract Totals for each use.

Alternative 5, M&I Contractor Suggested WSP, is similar to Alternative 4, Updated M&I WSP. This alternative was developed and recommended by several M&I water service contractors who participated in the M&I WSP workshops held between May 2010 and January 2011. Alternative 5 attempts to provide an increased quantity of CVP water allocated to M&I water service contractors to supply the unmet portion of the PHS needs during a Condition of Shortage. This would be achieved by increasing the upper limit for consideration of additional allocations to assist in meeting unmet PHS need from an initial allocation of 75 percent of historical use (under Alternative 4) to an initial allocation of 95 percent of historical use (under Alternative 5).

Environmentally Preferable Alternative

Section 1505.2(b) of NEPA requires that, in cases where an EIS has been prepared, the Record of Decision must identify all alternatives that were considered, specifying the alternative or alternatives which were considered to be environmentally preferable. The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources (Council on Environmental Quality 40 Most Asked Questions number 6(a)). It is implicit in NEPA that the environmentally preferable alternative must be reasonable and feasible to implement.

In choosing the environmentally preferable alternative, Reclamation considered impacts to all resources. On balance, Alternative 1, No Action Alternative, and Alternative 4, Updated M&I WSP, would have the least environmental effects associated with implementing a CVP M&I WSP during a Condition of Shortage. Alternative 4 would have no environmental impacts compared to the No Action Alternative. Alternatives 2 and 3 have greater environmental effects to water quality, groundwater resources, air quality, geology and soils, and agricultural resources than Alternative 4. Alternative 5 would have small but greater effects to groundwater resources and air quality compared to Alternative 4.

Basis of Decision

Reclamation's decision to move forward is based on how the alternatives meet the project's purpose and need and the magnitude of environmental effects. While the alternatives would affect different resources in different ways, Alternative 4 provides Reclamation with the greatest degree of flexibility to address CVP water service contractors' needs during Conditions of Shortage while recognizing that CVP deliveries are subject to the amount of CVP water available and cannot be guaranteed, and provides clarity to the terms, conditions, and procedures of the CVP M&I WSP. Additionally, Alternative 4 has no environmental effects compared to the No Action Alternative; therefore, no mitigation measures are necessary.

Purpose and Need

The purpose of updating the 2001 Draft M&I WSP, as amended, is to provide detailed, clear, and objective guidelines for the allocation of available CVP water supplies to CVP water service contractors during a Condition of Shortage. The update to the M&I WSP is needed by water managers and CVP water service contractors to help them better plan for and manage available CVP water supplies, and to better integrate the use of CVP water with the use of other available non-CVP water supplies. The update to the M&I WSP is also needed to clarify certain terms and conditions with regard to the applicability and implementation process of the M&I WSP.

The updated M&I WSP would be used by Reclamation to:

- Define water shortage terms and conditions for applicable CVP water service contracts, as appropriate;
- Determine the quantity of water made available to CVP water service contractors from the CVP, that together with the M&I water service contractors' drought water conservation measures and other non-CVP water supplies, would assist the M&I water service contractors in their efforts to protect PHS during severe or continuing droughts; and
- Provide information to CVP water service contractors for their use in water supply planning and development of drought contingency plans.

All action alternatives meet the purpose and need, but the No Action Alternative does not meet the purpose and need.

Environmental Issues Evaluated

During March 2011, public scoping sessions on the development of the CVP M&I WSP EIS were held in Sacramento, Willows, Fresno, and Oakland, California. Key issues raised during the public scoping process that are applicable for inclusion in the EIS are listed below.

- The final M&I WSP should be a single document that clearly states how Reclamation interprets and implements the M&I WSP.
- Any additional water provided to M&I water service contractors is viewed as water "taken" from agricultural contractors.
- M&I water service contractors would like a guaranteed quantity of CVP water to meet PHS needs and do not want their use of non-CVP supplies to count against their deliveries of CVP water in Conditions of Shortage.
- The analysis should use an appropriate baseline given ongoing regulatory issues regarding CVP/SWP operations.
- The effects analysis should include a cumulative impact discussion in the context of other reasonably foreseeable past, present, and future actions potentially affecting the allocation of CVP water, including the Bay Delta Conservation Plan.
- The EIS should analyze the impacts to water service contractors who have limited access to alternative water supplies and to "mixed use" contractors.
- The M&I WSP EIS should specifically state the agencies that are and are not affected by the policy, and state that the M&I WSP will apply equally to all M&I contractors, including the American River Division contractors.
- Certain American River Division contractors (City of Roseville, Placer County Water Agency, Sacramento Municipal Utility District, and San Juan Water District) disagree with Reclamation's interpretation of Term 14 of State Water Resources Control Board Decision 893 and believe it should provide them with additional supply reliability beyond what the M&I WSP provides in their water service contracts.

The alternatives were evaluated to address issues raised and potential impacts to the range of environmental and socioeconomic resources relevant to NEPA. The action alternatives have the potential to result in impacts to several resources, including surface water, water quality, groundwater, geology and soils, air quality, greenhouse gases (GHGs) and climate change, agricultural

resources, socioeconomics, and power[2]. The differences between the action alternatives for these impacts include:

- *Surface Water*: Alternative 2 would increase CVP deliveries to agricultural water service contractors and decrease CVP deliveries to M&I water service contractors, compared to the No Action Alternative. Alternative 3 would decrease CVP deliveries to agricultural water service contractors and increase CVP deliveries to M&I water service contractors, compared to the No Action Alternative. Alternatives 4 and 5 would have no change in CVP deliveries compared to the No Action Alternative. PHS needs would be met for the Sacramento River Division under all alternatives. The American River, Delta, and San Felipe Divisions would have unmet PHS needs under Alternative 2. There would be unmet PHS needs for the Shasta/Trinity River and West San Joaquin Divisions under Alternatives 2, 3, and 4. The Cross Valley Canal Unit would have unmet PHS needs under all alternatives.

  There are only relatively small to no changes to Shasta and Trinity lakes storages, upper Sacramento River flows, and Lake Oroville storage as a result of action alternatives, which do not result in substantial impacts. The effects of changes to other reservoirs' storage and rivers' flows are addressed under other appropriate resource areas (e.g., water quality, recreation, flood hydrology, water quality, etc.).

- *Water Quality:* Changes in CVP deliveries could affect the salinity and bromide concentrations in the Delta Division. Alternative 5 would have only very minimal changes in reservoir or river flows compared to the No Action Alternative that would not affect salinity and bromide concentrations. Alternatives 2 and 3 would cause an increase in electrical conductivity which could affect water quality in the Delta Division.

- *Groundwater*: A reduction in CVP deliveries to agricultural water service contractors could cause these contractors to supplement their surface water supplies through increased groundwater pumping. Alternative 2 would reduce agricultural groundwater pumping in all regions due to increases in CVP deliveries to agricultural water service contractors, while Alternative 3 would increase agricultural groundwater pumping in all regions due to decreases in CVP deliveries to agricultural contractors. M&I water service contractors may need to make use of all their available groundwater supplies under Alternative 2 in order to meet PHS needs in certain years. Alternatives 4 and 5 would have little to no change in groundwater pumping by CVP water service contractors compared to the No Action Alternative.

[2] It was determined that no impacts or only minor impacts would occur to aquatic resources, terrestrial resources, environmental justice, cultural resources, Indian sacred sites, recreation, flood hydrology, and visual resources.

Increased pumping caused by change in deliveries to supplement supply shortages may cause groundwater level declines that could lead to land subsidence. Alternative 2 would cause a net increase in pumping that could potentially increase land subsidence in the San Francisco Bay/Central Coast region. Alternative 3 would cause a net increase in pumping that could potentially increase land subsidence in the Sacramento Valley, San Joaquin Valley, and Tulare Lake regions.

- *Geology and Soils:* Under Alternative 3, reduced CVP deliveries to agricultural water service contractors could indirectly lead to wind erosion if agricultural water service contractors implement crop idling to manage their water supplies.

- *Air Quality*: Increases in CVP deliveries to agricultural water service contractors under Alternative 2 would result in decreased pollutant emissions from reduced groundwater pumping. Decreases in CVP deliveries to agricultural water service contractors under Alternative 3 would result in increased pollutant emissions due to increased groundwater pumping. Under Alternative 3, the general conformity *de minimis* threshold would be exceeded in the San Joaquin Valley Air Basin. Alternatives 4 and 5 would have little to no changes compared to the No Action Alternative.

- *GHGs and Climate Change:* Changes in CVP deliveries to agricultural water service contractors would decrease GHG emissions under Alternative 2 and increase GHG emissions under Alternatives 3 and 5. Alternative 4 would have no change compared to the No Action Alternative.

- *Agricultural Resources*: Alternative 3 would reduce agricultural acreage primarily in the Tulare Lake Region, but minimally to other regions in the study area.

- *Socioeconomics*: Changes in CVP deliveries for CVP water service contractors would have differing effects for agricultural and M&I water service contractors in Alternatives 2 and 3. Generally, effects would be positive for agricultural water service contractors under Alternative 2 and negative under Alternative 3, while the opposite would be true for M&I water service contractors. Alternatives 4 and 5 would have no change compared to the No Action Alternative.

- Power: Changes in CVP deliveries may cause changes in power generation from hydroelectric power generation facilities by changing reservoir releases or by changing reservoir storage, as represented by changes in reservoir elevations. Alternative 2 and 3 would experience minimal reductions to the amount of power generated at the Folsom and Nimbus power plants and slight fluctuations in the amount of

power generated at San Luis Reservoir. Alternatives 4 and 5 would have no change compared to the No Action Alternative.

- *Indian Trust Assets*: Under Alternatives 2 and 3, the magnitudes of groundwater level fluctuations are very small compared to overall groundwater supplies and would not be substantial enough to create a noticeable change to water supply at existing wells near Indian Trust Asset sites. Therefore, Alternatives 2 and 3 would not interfere with the exercise of federally-reserved water rights and/or reduce the health of tribal members by decreasing water supplies. Alternatives 4 and 5 would have no change compared to the No Action Alternative, and would not result in impacts to Indian Trust Assets.

Section 7 of the Federal Endangered Species Act (ESA)

Reclamation coordinated with the U.S. Fish & Wildlife Service during development of the Draft EIS regarding the impact analysis on special status species and environmental commitments. Reclamation further coordinated with National Oceanic and Atmospheric Administration National Marine Fisheries Service in preparing the Final EIS. A full consultation under Section 7 of the ESA with U.S. Fish & Wildlife Service or National Oceanic and Atmospheric Administration National Marine Fisheries Service was determined not to be needed for this action because the potential impacts are within the range of impacts already observed under current operations of the CVP and are covered by the Biological Opinions on the Coordinated Long-Term Operations of the CVP and SWP.

Section 106 Compliance

Reclamation is responsible for complying with Section 106 of the National Historic Preservation Act. Alternative 4 would not result in the disturbance of land or require any construction activities; therefore, there are no impacts to cultural resources. Under Section 106 of the National Historic Preservation Act, Alternative 4 is the type of activity that does not have the potential to affect historic properties and there are no further obligations under Section 106 [36 Code of Federal Regulations Sec. 800.3(a)(1)].

Comments Received on the Final EIS

Reclamation's Notice of Availability of the Final EIS was published in the Federal Register on September 10, 2015, and the Environmental Protection Agency's Notice of Availability was published on September 18, 2015. The EIS was posted on Reclamation's website, and copies were distributed to those who requested a copy. A press release was released on September 10, 2015, and was sent to participants in public meetings and commenters on the Draft EIS.

Reclamation received comments from three entities after release of Final EIS. The commenters were: Somach Simmons & Dunn for Glenn-Colusa Irrigation District (Kelley Taber); East Bay Municipal Utility District (Michael Tognolini); and Santa Clara Valley Water District (Cindy Kao). These comments either reiterated comments previously provided during the public comment period, or supported Reclamation's choice of the Preferred Alternative. Reclamation had adequately addressed the previous comments in the Final EIS. The comments consisted of the following:

- Glenn-Colusa Irrigation District (GCID) did not agree that their comments on the Draft EIS were adequately addressed in Appendix I of the Final EIS. GCID was concerned that the M&I WSP's definition of PHS is too broad and would allow a greater amount of water than necessary for domestic use and essential public services to be included in the calculation, thereby overestimating system demands during Conditions of Shortage and influencing the allocation of water within the CVP system. Additionally, GCID was concerned that implementation of the M&I WSP could affect water supply reliability under their Settlement Contract. As described in the Final EIS, the determination of any additional CVP water supplied to M&I water service contractors during a Condition of Shortage to assist in meeting PHS needs would take into account a contractor's estimated PHS demand, as well as their non-CVP supplies available in that year, and, most importantly, the availability of CVP water in that year. Reclamation would closely review the data provided by an M&I water service contractor so that CVP water provided for PHS needs is estimated in accordance with California criteria and used appropriately during a Condition of Shortage. The Final EIS also states in Appendix B that Reclamation does not have discretion to determine water supply allocations to Sacramento River Settlement Contractors, San Joaquin River Exchange Contractors, certain named State Wildlife Areas and National Wildlife Refuges, and the privately owned/managed wetlands comprising the Grassland Resources Conservation District as identified under the CVPIA Section 3406(d). Water supply allocations for these water service contractors are determined annually based on the forecasted full natural inflow to Shasta Lake. CalSim II simulates

water supply allocations to these water service contractors based on inflow to Shasta Lake.

- East Bay Municipal Utility District (EBMUD) supports Reclamation's selection of Alternative 4 as the Preferred Alternative for the M&I WSP. However, EBMUD requested that their contractual historic use of 133,000 acre-feet (AF), per their Long Term Renewal Contract, be noted in the M&I WSP as an exception to the methodology used for calculating historical use. Reclamation, when applying the M&I WSP to EBMUD, would use EBMUD's contractual historic use of 133,000 AF as the basis for making adjustments for population growth, extraordinary water conservation measures, and use of non-CVP water supplies. But, Reclamation believes it inappropriate to specifically state or call out such an exception in the M&I WSP.

- Santa Clara Valley Water District (SCVWD) supports Reclamation's selection of Alternative 4 as the Preferred Alternative for the M&I WSP. SCVWD believes an adopted M&I WSP is critically important for water supply reliability in support of the communities and businesses in its service area.

Appendix M – Water Shortage Contingency Plan

Appendix N – Roseville Municipal Code 14.09

Roseville Municipal Code

Title 14 PUBLIC UTILITIES

Chapter 14.09 WATER CONSERVATION

§ 14.09.010. Short title.

This chapter may be cited as the Water Conservation and Drought Mitigation Ordinance. (Ord. 2413 § 2, 1991; Ord. 5311 § 2, 2014)

§ 14.09.020. General provisions.

A. Purpose. The purpose of this chapter is to ensure compliance with all federal, state and local requirements relating to water conservation and drought mitigation for the protection of public health, safety and welfare by:

1. Reducing the per capita water consumption throughout the City of Roseville (the "city") during years of normal precipitation and during years of drought;

2. Protecting and conserving the city's supply of water during specified times of emergency and/or crisis;

3. Minimizing and/or eliminating the waste of water through voluntary compliance or punitive action, if necessary;

4. Promoting the use of drip irrigation and other low volume irrigation methods that reduce outdoor water use by applying water more efficiently than traditional irrigation methods;

5. No person shall use, or cause to be used, any city water for landscape irrigation between the hours of 10:00 a.m. and 8:00 p.m., unless the city manager, or designee provides prior written consent to a different time limitation. A waiver may be granted for turf areas if the landscape contains too many irrigation valves to complete an irrigation event within the watering window.

6. Upon city declaration of a water shortage, the city manager, or designee, may impose revised and/or additional limitations on outdoor water use, as specified in Section 14.09.040, and no person shall use, or cause to be used, city water in violation of such limitations while the water shortage remains in effect.

B. Scope. The provisions of this chapter shall apply to all customers, users and/or recipients (hereinafter "users") of the city's potable and recycled water service within the city's territorial limits.

C. Administration and Enforcement. The city manager, or designee, including, but not limited to, an enforcement officer as defined herein, shall administer, implement, and enforce the provisions of this chapter. For purposes of this chapter an "enforcement officer" means any city employee or agent of the city with the authority to enforce any provision of this chapter and the authority to make any decision on behalf of the city manager required or called for by this chapter.

D. Compliance. All provisions of this chapter are subject to the compliance procedures set forth in this chapter unless otherwise expressly stated herein.

E. Notification. The city manager, or designee, shall determine the means by which the city shall notify its water users of drought stage determinations and any

applicable upgrade or downgrade of such determinations or restrictions. Notification may be achieved through mass media, newspaper, public notice, mailings, utility billings or by any combination of such notice, or by other means as determined by the city manager, or designee.

(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014; Ord. 5491 § 1, 2015)

§ 14.09.030. Definition of water waste.

Any of the following acts or omissions, whether willful or negligent, shall constitute the waste of water:

A. Causing or permitting water to leak, discharge, flow or run to waste into any gutter, sanitary sewer, watercourse or public or private storm drain, or to any adjacent property, from any tap, hose, faucet, pipe, sprinkler, pond, pool, waterway, fountain or nozzle. In the case of irrigation, "discharge," "flow" or "run to waste" means that the earth intended to be irrigated has been saturated with water to the point that excess water flows over or through the earth to waste. In the case of washing, "discharge," "flow" or "run to waste" means that water in excess of that necessary to wash, wet or clean the dirty or dusty object, such as an automobile, sidewalk, or parking area, flows to waste.

B. Allowing water fixtures (including, but not limited to, toilets, faucets, shower heads) or heating or cooling devices to leak or run to waste.

C. Maintaining ponds, waterways, decorative basins or swimming pools without water recirculation devices.

D. Backwashing so as to discharge to waste swimming pools, decorative basins or ponds in excess of the frequency necessary to ensure the healthful condition of the water or in excess of that required by standards for professionally administered maintenance or to address structural considerations, as determined by the city manager, or designee.

E. Operation of an irrigation system that applies water to an impervious surface or that is in disrepair.

F. Use of a water hose not equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure is applied.

G. Irrigation of landscaping during rainfall or 48 hours after a measurable rain event. A measurable rain event is the equivalent of ¼ inch of rain in an hour.

H. Overfilling of any pond, pool or fountain which results in water discharging to waste.

(Ord. 2413 § 2, 1991; Ord. 3834 § 3, 2002; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014; Ord. 5491 § 2, 2015; Ord. 6500 § 3, 2022)

§ 14.09.040. Water conservation and drought stages.

The following water conservation and drought stages are hereby established:

A. Basic Water Conservation Stage ("Basic Stage"). The basic stage shall exist when the city's water supply is adequate to meet all projected demands as determined by the city manager, or designee.

B. Stage One Drought. A stage one drought shall exist when the city's water supply is adequate to meet 90 percent of projected demands as determined by the city manager, or designee. An objective of a stage one drought condition is to reduce water usage up to 10 percent. Water shortage surcharges shall be implemented as set forth in Section 14.08.095.

C. Stage Two Drought. A stage two drought shall exist when the city's water supply is adequate to meet 80 percent of projected demands as determined by the city manager, or designee. An objective of a stage two drought condition is to reduce water usage up to 20 percent. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

D. Stage Three Drought. A stage three drought shall exist when the city's water supply is adequate to meet 70 percent of projected demands as determined by the city manager or designee. An objective of a stage three drought condition is to reduce water usage up to 30 percent. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

E. Stage Four Drought. A stage four drought shall exist when the city's water supply is adequate to meet 60 percent of projected demands as determined by the city manager or designee. An objective of a stage four drought condition is to reduce water usage up to 40 percent. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

F. Stage Five Drought. A stage five drought shall exist when the city's water supply is adequate to meet 50 percent or less of projected demands as determined by the city manager, or designee. An objective of a stage five drought condition is to reduce water usage up to 50 percent. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 4724 § 3, 2009; Ord. 5311 § 2, 2014; Ord. 5491 § 3, 2015)

§ 14.09.050. Groundwater use as an alternate supply.

While the city routinely pumps relatively small volumes of groundwater during all water year types for maintenance purposes, the city may use groundwater as an alternate source of water supply to aid in meeting demands associated with dry periods, peak demands, or due to surface water supply curtailments. The city may also use groundwater as an alternate source of water supply to achieve obligations associated with the Sacramento Water Forum, American River flow standards, or when participating in groundwater banking to achieve California Water Code obligations under the Sustainable Groundwater Management Act or to be consistent with other regional or statewide objectives.

(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014; Ord. 6500 § 4, 2022)

§ 14.09.060. Basic stage restrictions.

During the basic water conservation stage, the following restrictions shall be in force:

Water shall be used for beneficial purposes only; all unnecessary and wasteful uses (as defined in Section 14.09.030) of water are prohibited.

A. Water shall be confined to the user's property and shall not be allowed to run off to adjoining properties, or to the roadside or to the gutter. Care shall be taken not to water past the point of saturation.

B. Free-flowing hoses for all uses are prohibited. Automatic shut-off devices shall be attached on any hose or filling apparatus in use.

C. All leaks (including irrigation systems, pipes, fixtures, pools, ponds, fountains and waterways) shall be repaired within five calendar days or less if warranted by the severity of the problem as determined in the discretion of the city manager, or designee.

D. All pools, spas, and ornamental fountains/ponds shall be equipped with a recirculation pump and shall be constructed to be leak-proof. Pool draining and refilling shall be allowed only to the extent required for health, maintenance, or structural considerations, and must otherwise comply with all applicable federal, state and local stormwater management program requirements, including, but not limited to, the urban stormwater quality management and discharge control ordinance set forth in Chapter 14.20 of Title 14 of the City of Roseville Municipal Code.

E. Landscaping.

1. All landscaping installed in the City of Roseville shall comply with the water efficient landscape requirements adopted by resolution of the city council.

2. Irrigation of new landscaping shall be allowed on any day of the week for a period of 30 days after the new landscaping is planted, unless the city manager, or designee, provides prior written consent to extend this time period based on plant type and the season when the new landscaping is planted. After the 30 days, irrigation days and run times should be decreased to settings appropriate for an established landscape.

3. Upon city declaration of a water shortage, the city manager or designee may impose revised and/or additional limitations on the irrigation of new landscaping, as specified in Sections 14.09.060 through 14.09.100, and no person shall use, or cause to be used, city water in violation of such limitations while the water shortage remains in effect. A waiver may be granted to irrigate during an establishment period for actively used turf areas and/or sports fields or as approved by the city manager or designee. Allowance shall also be made for irrigation testing and repairs.

F. All site reviews shall include an evaluation of using recycled water. Recycled water

shall be required if economically feasible.
(Ord. 2413 § 2, 1991; Ord. 2762 § 1, 1993; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014; Ord. 5491 § 4, 2015; Ord. 6500 § 5, 2022)

§ 14.09.070. Stage one drought restrictions.

During a stage one drought, the following restrictions may be required, as determined by the city manager and upon notification pursuant to Section 14.09.020(E):

A. All basic stage restrictions required by Sections 14.09.030 and 14.09.060 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Residential users and nonresidential users shall reduce water usage up to 10 percent.

C. Residential water users shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written consent to a different irrigation pattern:

1. 1st day of November – last day of February: up to one day per week irrigation on Monday of each week, if needed.

2. 1st day of March – last day of April and 1st day of September – last day of October: up to two days per week irrigation on Monday and Friday of each week, if needed.

3. 1st day of May – last day of August: up to three days per week irrigation on Monday, Wednesday and Friday of each week, if needed.

D. Nonresidential water users (including, without limitation, commercial, industrial, church, cemeteries, and publicly owned users) shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written consent to a different irrigation pattern:

1. 1st day of November – last day of February: up to one day per week irrigation on Tuesday of each week, if needed.

2. 1st day of March – last day of April and 1st day of September – last day of October: up to two days per week irrigation on Tuesday and Thursday of each week, if needed.

3. 1st day of May – last day of August: up to three days per week irrigation on Tuesday, Thursday and Saturday of each week, if needed.

E. The limitations specified in subsections C and D shall not apply to a properly functioning low volume landscape irrigation system, the irrigation on container plants, or to the irrigation of new landscaping that is subject to the provisions of Section 14.09.060(E). Low volume irrigation means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as point source drip and in-line drip lines or soaker hose. These systems are specifically designed to apply small volumes of water slowly at or near

the root zone of plants.

F. References in this section to any day of the week shall mean the period beginning at 12:00 a.m. on that day and ending 24 hours later.

G. City park sites shall, as an aggregate, reduce usage up to 10 percent.

H. Washing streets, parking lots, driveways, sidewalks or buildings, except as necessary for health or sanitary purposes or pursuant to a term or condition in a permit issued by a state or federal agency, is prohibited.

I. Water shall not be served at restaurants except by request.

J. Water shortage surcharges shall be implemented as set forth in Section 14.08.095.
(Ord. 2413 § 2, 1991; Ord. 2636 § 1, 1992; Ord. 2817 § 1, 1994; Ord. 4629 § 1, 2008; Ord. 4724 § 3, 2009; Ord. 5311 § 2, 2014; Ord. 5491 § 5, 2015; Ord. 6500 § 6, 2022)

§ 14.09.080. Stage two drought restrictions.

During a stage two drought, the following restrictions may be required, as determined by the city manager and upon notification pursuant to Section 14.09.020(E):

A. All basic stage and stage one restrictions required by Sections 14.09.060 and 14.09.070 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Residential users and nonresidential landscapes shall reduce water usage up to 20 percent.

C. City park sites shall, as an aggregate, reduce usage up to 20 percent.

D. Residential water users shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written consent to a different irrigation pattern:

1. 1st day of November – last day of February: up to one day per week irrigation on Monday of each week, if needed.

2. 1st day of March – last day of April and 1st day of September – last day of October: up to two days per week irrigation on Monday and Friday of each week, if needed.

3. 1st day of May – last day of August: up to three days per week irrigation on Monday, Wednesday and Friday of each week, if needed.

E. Nonresidential water users (including, without limitation, commercial, industrial, church, cemeteries, and publicly owned users) shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written consent to the Environmental Utilities-Water Efficiency Section for a different irrigation pattern:

1. 1st day of November – last day of February: up to one day per week irrigation

on Tuesday of each week, if needed.

2. 1st day of March – last day of April and 1st day of September – last day of October: up to two days per week irrigation on Tuesday and Thursday of each week, if needed.

3. 1st day of May – last day of August: up to three days per week irrigation on Tuesday, Thursday and Saturday of each week, if needed.

F. The limitations specified in subsections D and E shall not apply to a properly functioning low volume landscape irrigation system, the irrigation on container plants, or to the irrigation of new landscaping that is subject to the provisions of Section 14.09.060(E). Low volume irrigation means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as point source drip and in-line drip lines or soaker hose. These systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

G. References in this section to any day of the week shall mean the period beginning at 12:00 a.m. on that day and ending 24 hours later.

H. Washing of vehicles or boats is prohibited except:

1. When using a hose that is equipped with a control nozzle capable of completely shutting off the flow of water except when positive action or pressure to maintain the flow of water is applied; or

2. When washed in either an automatic or manual commercial car wash that recirculates its water and uses high pressure/low volume wash systems.

3. Temporary car washes, held for fundraising purposes, are encouraged to partner with an automatic commercial car wash that recirculates its water and uses high pressure/low volume wash systems. If run independently, the participants must use a hose nozzle that completely shuts off the flow of water when not in use and must comply with all applicable federal, state and local stormwater management program requirements, including, but not limited to, the urban stormwater quality management and discharge control ordinance set forth in Chapter 14.20 of Title 14 of the City of Roseville Municipal Code.

I. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

(Ord. 2611 § 1, 1992; Ord. 4629 § 1, 2008; Ord. 4724 § 3, 2009; Ord. 5311 § 2, 2014; Ord. 5491 § 6, 2015; Ord. 6500 § 7, 2022)

§ 14.09.090. Stage three drought restrictions.

During a stage three drought, the following restrictions may be required, as determined by the city manager and upon notification pursuant to Section 14.09.020(E):

A. All basic stage, stage one, and stage two restrictions required by Sections

14.09.060, 14.09.070 and 14.09.080 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Residential users and nonresidential landscapes are to reduce water usage up to 30 percent.

C. City park sites shall, as an aggregate, reduce usage up to 30 percent.

D. Residential water users shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written consent to a different irrigation pattern:

1. 1st day of September – last day of April: up to one day per week irrigation on Monday of each week, if needed.

2. 1st day of May – last day of August: up to two days per week irrigation on Monday and Friday of each week, if needed.

E. Nonresidential water users (including, without limitation, commercial, industrial, church, cemeteries, and publicly owned users) shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written consent to a different irrigation pattern:

1. 1st day of September – last day of April: up to one day per week irrigation on Tuesday of each week, if needed.

2. 1st day of May – last day of August: up to two days per week irrigation on Tuesday and Thursday of each week, if needed.

F. The limitations specified in subsections D and E shall not apply to a properly functioning low volume landscape irrigation system, the irrigation on container plants, or to the irrigation of new landscaping that is subject to the provisions of Section 14.09.060(E). Low volume irrigation means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as point source drip and in-line drip lines or soaker hose. These systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

G. References in this section to any day of the week shall mean the period beginning at 12:00 a.m. on that day and ending 24 hours later.

H. New or expanded landscaping is limited to drought-tolerant trees, shrubs, and ground-cover and be irrigated using a low volume irrigation system. No new turf shall be planted, hydroseeded, or laid, unless prior written consent is received from the city manager or designee. Low volume irrigation means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as point source drip and in-line drip lines or soaker hose. These systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

I. Except where recycled water is used, golf courses shall reduce irrigation up to 30

percent.

J. All decorative fountains, decorative (i.e., nonswimming) pools, and decorative waterways shall be shut off. Such fountains, pools, and waterways shall not be refilled until the city has returned to the basic water conservation stage unless for preventative maintenance. Fountains, ponds or pools that are filled with recycled water are not subject to this provision. Decorative ponds that contain fish as a feature shall be exempt from this restriction as long as the system is maintained in good working order with measures taken to reduce the volume of makeup water required for evaporative losses.

K. Except where recycled or other non-potable water is used or as otherwise provided in this subsection, use of water for dust control is prohibited. Dust control shall be augmented by hardened, temporary travel routes with materials that are accepted by the city manager, city engineer, or designee. Potable water is allowed for construction water only where and to the extent required for public health and safety reasons.

L. New swimming pools and spas may be filled after construction using customer's metered water at then existing water rates. All new pools must include a means for minimizing evaporative loss, such as a pool cover, at time of final inspection by the city. After being filled with water for the first time, all pools and spas shall be subject to the requirements of Section 14.09.060(D).

M. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

N. Automobiles or equipment shall be washed only at commercial establishments that recycle their water or by equipment and means that separates debris and revives wash water for continual use.

(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 4724 § 3, 2009; Ord. 5311 § 2, 2014; Ord. 5491 § 7, 2015; Ord. 6500 § 8, 2022)

§ 14.09.100. Stage four drought restrictions.

During a stage four drought, the following restrictions may be required, as determined by the city manager and upon notification pursuant to Section 14.09.020(E):

A. All basic stage, stage one, stage two, and stage three restrictions required by Sections 14.09.060, 14.09.070, 14.09.080 and 14.09.090 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Residential customers and nonresidential landscapes are to reduce water usage up to 40 percent.

C. City park sites shall, as an aggregate, reduce usage up to 40 percent.

D. Residential water users shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written

consent to a different irrigation pattern:

1. 1st day of September – last day of April: No irrigation allowed.

2. 1st day of May – last day of August: up to one day per week irrigation on Monday, if needed.

E. Nonresidential water users (including, without limitation, commercial, industrial, church, cemeteries, and publicly owned users) shall be permitted to irrigate with city water on the following schedule, unless the city manager, or designee, provides prior written consent to a different irrigation pattern:

1. 1st day of September – last day of April: No irrigation allowed.

2. 1st day of May – last day of August: up to one day per week irrigation on Tuesday of each week, if needed.

F. The limitations specified in subsections D and E shall not apply to a properly functioning low volume landscape irrigation system, the irrigation on container plants, trees or to the irrigation of new landscaping that is subject to the provisions of Section 14.09.060(E). Low volume irrigation means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as point source drip and in-line drip lines or soaker hose. These systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

G. References in this section to any day of the week shall mean the period beginning at 12:00 a.m. on that day and ending 24 hours later.

H. Installation of any new landscaping is prohibited unless irrigation is provided through connection to an active recycled water system. In the case of new construction, the city's building official will issue a temporary final upon completion of the structural development of the property. When the city has returned to a stage two drought restriction, landscaping installation can be completed and a building final will become available upon inspection by the city.

I. Except where recycled water is used, golf courses shall reduce irrigation up to 40 percent.

J. Automobiles or equipment shall be washed only at commercial establishments that recycle their water or by equipment and means that separates debris and recycles wash water for continual use.

K. Existing pools shall not be emptied and refilled using city water unless required for health or safety reasons until the city has returned to a stage two drought restriction. Pools may be refilled only to the extent necessary to replace evaporative losses.

L. No commitments shall be made to provide water service as part of any new land use entitlement (general plan, specific plan or amendments requesting new water allocations) until the city has returned to a stage two drought restriction. Currently approved specific plans with accompanying development agreements and projects

or properties that have received water allocations in advance of full entitlements may be issued building permits so long as they comply with the remainder of this chapter.

M. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 4724 § 3, 2009; Ord. 5311 § 2, 2014; Ord. 5491 § 8, 2015; Ord. 6500 § 9, 2022)

§ 14.09.110. Stage five drought restrictions.

During a stage five drought, the following restrictions may be required, as determined by the city manager and upon notification pursuant to Section 14.09.020(E):

A. All basic stage, or stage one, stage two, stage three and stage four restrictions required by Sections 14.09.060, 14.09.070, 14.09.080, 14.09.090 and 14.09.100 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Residential customers and nonresidential landscapes are to reduce water usage up to 50 percent.

C. Except where recycled water is used, water users shall reduce landscape irrigation as follows:

1. Turf shall not be irrigated.

2. Trees and shrubs may be irrigated with a properly functioning low volume landscape irrigation system or by use of a handheld hose equipped with a nozzle capable of completely shutting off the flow of water except when positive action or pressure to maintain the flow of water is applied. Low volume irrigation means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as point source drip and in-line drip lines or soaker hose. These systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

D. Filling new or existing swimming pools and spas with city water is prohibited.

E. Water shortage surcharges and excess water use charges shall be implemented as set forth in Section 14.08.095.

(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 4724 § 3, 2009; Ord. 5311 § 2, 2014; Ord. 5491 § 9, 2015; Ord. 6500 § 10, 2022)

§ 14.09.120. Determination of drought tolerance.

Where this chapter permits or prohibits acts based upon whether or not a planting, tree, shrub, or groundcover is "drought tolerant" the determination shall be made based upon Sunset's *Western Garden Book* (most recent edition), or UC Davis Arboretum's "All Stars" plant database (www.arboretum.ucdavis.edu). Where this chapter permits or

prohibits acts based upon whether a form of irrigation is "low volume drip irrigation" the determination shall be made by the director, or designee, whose determination shall be final.
(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014; Ord. 6500 § 11, 2022)

§ 14.09.130. Determination of landscape water consumption reductions.

Whenever this chapter requires a reduction in consumption of water for irrigation purposes, the base year for measurement shall be the last year that the basic water conservation stage was in effect or a date specified by the Governor or state agency. If that data is not available for a property, allocations will be based on water use for similar properties. The city manager or designee may elect to base a reduction on the base year or on a landscape water consumption calculation if use was, in the city manager's or designee's, sole opinion, either excessive or extraordinarily low. For landscaping installed subsequent to the base year, the calculations shall be based on landscape water consumption calculations submitted with the landscape plan, or water consumption the previous year, whichever is less.
(Ord. 2413 § 2, 1991; Ord. 2817 § 1, 1994; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014; Ord. 5491 § 10, 2015)

§ 14.09.140. Violations.

It is unlawful for any user and/or person to violate any provision or fail to comply with any of the requirements of this chapter. Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of this chapter. A violation of the provisions of this chapter shall occur irrespective of the negligence or intent of the violator and a violation of or failure to comply with any of the requirements of this chapter may be charged as either an infraction or a misdemeanor in the discretion of the city attorney.
(Ord. 2413 § 2, 1991; Ord. 3834 § 3, 2002; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014)

§ 14.09.150. Enforcement authority.

A. Whenever the city manager, or designee (including, but not limited to, an enforcement officer), determines that a user and/or person has violated any provision of, or failed to meet a requirement of, this chapter, an administrative citation pursuant to Chapter 2.50 or a written compliance order pursuant to Chapter 2.52 may be issued to any user and/or person responsible for the violation.

B. Any compliance order issued may require without limitation any or all of the following:

   1. The allocation of a particular amount of water to a given user and/or person responsible for the violation;

   2. The issuance of a fine;

   3. The installation of a flow restriction device;

4. The performance of monitoring, analyses, and reporting;

5. That violations shall cease and desist; and/or

6. The discontinuation of water service.

The compliance order shall set forth a deadline within which the requirements of the compliance order must be completed. Said compliance order shall further advise that, should the violator fail to comply with the compliance order within the established deadline, a hearing on the compliance order shall be set.

(Ord. 2413 § 2, 1991; Ord. 2817 § 1, 1994; Ord. 3034 § 3, 2002; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014; Ord. 5491 § 11, 2015)

§ 14.09.160. Hearing.

If full compliance is not achieved within the time specified in the compliance order, a hearing on the compliance order shall be set pursuant to Chapter 2.52. All penalties and remedies authorized by Chapter 2.52 shall apply to violations of this chapter.
(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014)

§ 14.09.170. Appeal.

Any user and/or person receiving a compliance order under Section 14.09.150 may appeal the determination of the director, or designee, to a hearing panel drawn from the membership of the board of appeals. The notice of appeal must be received by the city's environmental utilities department within 10 days from the date of the compliance order. Notice of hearing and hearing on the appeal will be conducted pursuant to the requirements of Chapter 2.52.
(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014)

§ 14.09.180. Separate offense for each day.

Any user and/or person that violates any provision of this chapter shall be guilty of a separate offense for each and every day during any portion of which any such user and/or person commits, continues, permits, or causes a violation thereof, and shall be punished accordingly.
(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014)

§ 14.09.190. Public nuisance.

In addition to the enforcement processes and penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored by the city at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be initiated and/or taken by the city.
(Ord. 2413 § 2, 1991; Ord. 4629 § 1, 2008; Ord. 5311 § 2, 2014)

§ 14.09.200. Remedies not exclusive.

Remedies under this chapter are in addition to and do not supersede or limit any and all other remedies, civil or criminal. The remedies provided for herein shall be cumulative and not exclusive.
(Ord. 4629 § 2, 2008; Ord. 5311 § 2, 2014)

§ 14.09.210. Judicial review.

Any decision of the hearing panel shall be final. Any user and/or person aggrieved by an order of the hearing panel may obtain review of the order in the Superior Court by filing with the Court a petition for writ of mandate within 90 days pursuant to California Code of Civil Procedure Section 1094.6.
(Ord. 4629 § 2, 2008; Ord. 5311 § 2, 2014)

§ 14.09.220. Chapter severable.

The provisions of this chapter are severable. The city council declares that it would have adopted the remainder of this chapter even if any of its provisions are declared unlawful or unenforceable.
(Ord. 4629 § 2, 2008.; Ord. 5311 § 2, 2014)

Appendix O – Roseville Municipal Code 14.08.090, 14.08.095, 14.08.100

Roseville Municipal Code

Title 14 PUBLIC UTILITIES

Chapter 14.08 WATER

§ 14.08.090. Service charges for metered service.

There shall be due and payable the following monthly charges, upon submission of the bill by the city to the owner of the property supplied with service, for all treated water measured by meters for residential, commercial, industrial and manufacturing or other purposes:

A. Monthly Quantity Rates. Effective July 4, 2025 and July 1, 2026, the monthly quantity rates on billings shall be as follows:

	Effective 7/4/2025	Effective 7/1/2026
Potable water usage (per cubic foot)	$0.0174	$0.0181
Recycled water usage (per cubic foot)	$0.0112	$0.0117

B. Monthly Service Charges. Effective July 4, 2025 and July 1, 2026, the monthly service charges on billings shall be as follows:

Meter Size (inches)	Peak Flow Rate (gallons per minute)	Effective 7/4/2025	Effective 7/1/2026
Up to 3/4	30	$31.63	$32.90
1	50	$49.47	$51.45
1-1/2	100	$94.07	$97.83
2	160	$147.59	$153.49
3	350	$317.07	329.75
4	630	$566.83	$589.50
6	1300	$1,164.47	$1,211.05
8	2800	$2,502.47	$2,602.57
10	4200	$3,751.27	$3,901.32

C. The total amount due and payable shall be the sum of the monthly service charge plus the quantity rate. The monthly service charge is due and payable regardless of whether water has been consumed. The service charge shall be the greater of the charge based on the meter size or flow rate, with the following exceptions:

1. No service charge shall be made for fire service that has backflow prevention with detector check devices approved by the environmental utilities director.

D. No service charge shall be made for recycled water utility back-up systems that are required for reliability only and have backflow prevention and metering approved by the environmental utilities director. This exclusion does not extend to systems that are regularly required as part of normal operation. The recycled water operation shall be responsible for water volumetric charges for these services and any costs

associated with meter maintenance. For purposes of charging for treated water measured by meters:

1. A residential account is defined as a single metered water service which serves three or less dwelling units.

2. A nonresidential account is defined as a single metered water service which serves more than three dwelling units, or serves commercial, industrial, manufacturing, irrigation or other nonresidential land uses.

E. For single-family residential services that require automatic fire protection systems pursuant to Section 16.16.110, the increased meter size will not be assessed an additional charge associated with the fire protection system requirement. Service charges shall be based on the required service size as determined by the Uniform Plumbing Code without consideration for any fire protection system required by Section 16.16.110.

(Prior code § 27.14; Ord. 1239 § 1, 1974; Ord. 1418 § 8, 1978; Ord. 1918 § 1, 1985; Ord. 1953 § 1, 1986; Ord. 2708 § 1, 1993; Ord. 3101 § 1, 1997; Ord. 3687 § 1, 2001; Ord. 3756 § 1, 2001; Ord. 3964 § 1, 2003; Ord. 4001 § 3, 2003; Ord. 4263 § 2, 2005; Ord. 4473 § 1, 2006; Ord. 4508 § 1, 2007; Ord. 4639 § 1, 2008; Ord. 4680 § 1, 2008; Ord. 4724 § 2, 2009; Ord. 4957 § 1, 2011; Ord. 5174 § 2, 2013; Ord. 5610 § 2, 2016; Ord. 5837 § 2, 2017; Ord. 6100 § 3, 2019; Ord. 6367 § 2. 2021; Ord. 6660 § 1, 2023; Ord. 6953, 6/4/2025)

§ 14.08.095. Water rate surcharge and excess water use charge.

Effective on billings as of May 1, 2009, all quantity rates identified in Section 14.08.090, but not recycled water, will be subject to the water shortage surcharges and excess water use charges identified as follows when the drought stages identified and set forth in Sections 14.09.070 through 14.09.110 are declared, provided that the city manager determines that imposition of such charges is required under the identified drought stage.

Summary of Water Shortage Rate Charges			
Stage	Water Use Restriction	Water Shortage Surcharge (*1)	Excess Water Use Charge (*2)
First Year of a Water Shortage			
Stage 1	10%	None	None
Stage 2	20%	15%	None
Stage 3	30%	33%	25%
Stage 4	40%	45%	50%
Stage 5	50%	60%	100%
Subsequent Year(s) of a Water Shortage			
Stage 1	10%	15%	None
Stage 2	20%	20%	25%
Stage 3	30%	40%	50%
Stage 4	40%	50%	100%
Stage 5	50%	75%	200%

Notes:

(*1) The water shortage surcharge (identified hereafter) shall be added to all quantity rates identified in Section 14.08.090 as applicable, according to drought stage.

(*2) In addition to the applicable water shortage surcharge, an excess water use charge shall be added to water rates identified in Section 14.08.090, according to drought stage.

(Ord. 2414 § 1, 1991; Ord. 3101 § 1, 1997; Ord. 4724 § 2, 2009; Ord. 5311 § 1, 2014; Ord. 5837 § 3, 2017)

§ 14.08.100. Flat water rates.

The following service charges shall apply to flat rate consumers that the environmental utilities director determines are not cost effective to assign metered rates. The environmental utilities director shall conduct a water use study for consumers whom he or she determines may not be reasonably metered, and the director shall assign such consumers to an appropriate service rate level as set forth in this section. Water service rates for flat rate residential consumers shall be due and payable on a monthly basis according to the appropriate grouping set out in this section.

Effective July 4, 2025, and July 1, 2026, the flat rates on billings shall be as follows:

Nonmetered or Flat Service Charges	Effective 7/4/2025	Effective 7/1/2026
Single-family lots under 4,900 square feet; each mobile home unit not within a park maintaining its own distribution system and service; each dwelling unit of duplexes, triplexes, fourplexes, unmetered apartments and other multiple living units; other detached living units; and offices and stores with less than peak use of 250 gallons per day	$52.95	$55.07
Single-family lots 4,901 to 8,900 square feet	$56.79	$59.06
Single-family lots 8,901 to 12,000 square feet	$66.39	$69.05
Single-family lots 12,001 to 15,000 square feet	$73.59	$76.53

(Prior code § 27.15; Ord. 1239 § 2, 1974; Ord. 1418 § 9, 1978; Ord. 1918 § 1, 1985; Ord. 2708 § 1, 1993; Ord. 3101 § 1, 1997; Ord. 3687 § 1, 2001; Ord. 3756, § 2, 2001; Ord. 3964 § 1, 2003; Ord. 4263 § 2, 2005; Ord. 4508 § 1, 2007; Ord. 4724 § 2, 2009; Ord. 4957 § 1, 2011; Ord. 5174 § 2, 2013; Ord. 5610 § 3, 2016; Ord. 5837 § 4, 2017; Ord. 6100 § 5, 2019; Ord. 6367 § 3, 2021; Ord. 6660 § 2, 2023; Ord. 6953, 6/4/2025)

Appendix P – CalWEP BMP Compliance Reports

The CalWEP BMP compliance reports for 2020, 2022, 2023, 2024, and 2025 are provided below. A compliance report for 2021 was not required by USBR and therefore is not provided.

Submit Form

RECLAMATION
Managing Water in the West

Contact Information Update

Date	04/27/26
Water District	City of Roseville
District Address	2005 Hilltop Circle, Roseville, CA 95747
District Website	www.roseville.ca.us

Conservation Coordinator

First Name	Bobby
Last Name	Alvarez
Title	Water Conservation Administrator
Phone	(916) 746-1710
Email	balvarez@roseville.ca.us

General Manager

First Name	George
Last Name	Hanson
Title	Water Utility Manager
Phone	(916) 746-1764
Email	ghanson@roseville.ca.us

Other Contact

First Name	Sara
Last Name	Feusi
Title	Administrative Technician - Water Efficiency
Phone	(916) 746-1739
Email	sfeusi@roseville.ca.us

Gallons Per Capita Water Reduction

Reporting Year	2026
Data Year	2025

What was your GPCD the last 5 years?

Year	GPCD
2025	161.31
2024	176.38
2023	173.29
2022	183.64
2021	195.97

If not using programmatic method of water efficiency, what is your district implementing to reduce water use? Provide a brief narrative.

City of Roseville does use a programmatic method of water efficiency.

If your district's GPCD is not declining, please provide a narrative of why and what your district will be doing to accomplish water usage savings.

The City of Roseville's GPCD is generally declining.

Metering With Commodity Rates

Are all connections metered? ○ Yes ◉ No ○ NA

If not 100% metered, please provide a narrative of why and when your district will be fully metered.

The City of Roseville implemented a Meter Retrofit Program beginning in 2001 and concluding in 2011, whereby 99%+ of the City's service connections were retrofitted with meters, either individually or with master meters. In general, accounts were left unmetered where site plumbing issues make it challenging, if not practically impossible, to provide an individual meter to the account location at that time.

Currently, the remaining <1% of unmetered services are retrofitted as part of an ongoing

Are all metered connections billed by water usage? ◉ Yes ○ No ○ NA

If no, please provide a brief narrative of why and when your district will be billing by water usage?

Retail Conservation Pricing

Is your district billing utilizing conserving rate structure? ○ Yes ◉ No ○ NA

Website to billing rate structure	https://ecode360.com/RO4998

If no, please provide a brief narrative of why or when your district will be implementing a conserving rate structure.

As a component of its meter retrofit program, the City adopted conservation pricing for water on all metered accounts from 2011 through 2015. To comply with Proposition 218 requirements, a law passed in California, the City transitioned to a per-use, uniform rate billing structure in February 2016 which remains in place.

Water Waste Prohibition

Water Waste Ordinance ◉ Yes ○ No ○ NA

Ordinance Website Address	https://ecode360.com/RO4998

Other Pertinent Links

	Title	Website
1	City of Roseville Water Efficiency Website	https://www.roseville.ca.gov/environmental_utilities/programs/water_efficiency/index.php
2	City of Roseville Water Efficiency - Report Water Waste	https://survey123.arcgis.com/share/c272fa5f05264b5682c21dcdfb0c1ffc
3		
4		
5		

Brief Comments/Narrative

The City currently restricts water waste within its service area. Roseville Municipal Code Chapter 14.09, Water Conservation Ordinance, defines water waste and associated penalties of continued infractions. Per the ordinance, customers in violation are provided a series of notifications at one week intervals: first a courtesy notice, second an administrative warning, and finally a formal citation. If the situation is not remedied by the time specified in the formal citation, additional measures can be taken to force compliance. These measures include fines, water restrictions, low flow devices, or discontinued service.

Water Loss Control

Water Loss Program? ◉ Yes ○ No ○ NA

If not using AWWA Water Audit Software, brief description of program and/or link to website.

City of Roseville uses the latest version of AWWA Water Audit Software (V6).

AWWA Water Audit Software? ◉ Yes ○ No ○ NA

Water Audit Data Validity Score	74/100
Data Validity Level	IV (71-90)
Date of Last Analysis	2024

Brief Comments/Narrative

In 2009 the City began using AWWA Water Loss software to develop an annual water loss audit. Results from the audit have helped the City identify where in the distribution process leaks are occurring. When coupled with detailed pipeline information stored in the City's asset management system, audit information helps identify leak-prone areas of the City's distribution system.

These areas are then targeted for annual visual and auditory leak detection surveys to isolate individual areas of leakage. Once isolated, the City's responses include corrosion monitoring programs, service cathodic protection and/or replacement. The City's asset management software is then updated with identified leaks, which in turn provides more information useful for prioritization of future rehabilitation programs.

Public Outreach

Briefly list/describe your Public Outreach Programs:

	Title	Website
1	News stories on main page	http://roseville.ca.gov/
2	Mulch Mayhem	tps://www.roseville.ca.gov/calendar/index.php?view=month&month=05&day=01&year=2026&event=5
3	Water Efficiency Rebates	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
4	Regional Water Authority's Water Efficiency Program	www.bewatersmart.info
5	EPA Water Sense Partner, Fix-a-Leak Week	www.epa.gov
6		
7		
8		
9		
10		

Brief Comments/Narrative

See website links for additional information.

School Education Programs

Briefly list/describe your School Education Programs:

	Title	Website
1	Be Water Smart News	www.bewatersmart.info
2	Elementary School Programs	https://www.roseville.ca.gov/utility_exploration_center/school_programs/index.php
3	Middle School Programs	https://www.roseville.ca.gov/utility_exploration_center/school_programs/index.php
4	High School Programs	https://www.roseville.ca.gov/utility_exploration_center/school_programs/index.php
5	Utility Exploration Center Exhibits	https://www.roseville.ca.gov/utility_exploration_center/school_programs/index.php
6		
7		
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10		

Brief Comments/Narrative

Utility Exploration Center interactive exhibits teaching about water efficiency; website resources and links; teacher training workshops; other educational initiatives for various school-age groups.

The websites listed above detail individual programs for each different school age group including Elementary, Middle School, and High School students.

Residential Programs

Briefly list/describe your Residential Programs:

	Title	Website
1	Cash for Grass Rebate	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
2	Showerhead Replacement	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
3	Water Waste Patrols	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
4	Toilet Flapper Replacement	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
5	Water Wise Housecalls	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
6	Door Hangers	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
7		
8		
9		
10		

Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1,500 residences per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management.

The City continues its effort to reach residents via water efficiency rebate programs, free water wise house call services, water waste patrol and outreach.

Commercial, Institutional, and Industrial Programs

Briefly list/describe your CII Programs:

	Title	Website
1	Landscape Conversion and Irrigation Upgrade Rebate	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
2	Food Service One Stop Water Efficiency Rebate	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
3	Customized Rebate Program	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
4	Water Wise Evaluation Interior	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
5	Water Wise Evaluation Exterior	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
6	Water Budget Evaluation	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
7		
8		

Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City continues its water efficiency efforts by engaging the commercial community with multiple programs and outreach. Our water wise evaluations are one of our most valuable water saving services.

Landscape Programs

Briefly list/describe your Landscape Programs:

	Title	Website
1	Cash for Grass Rebate	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
2	Green Gardening Events	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
3	Water Wise Evaluation Exterior	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
4	DIY Landscape Workshops	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
5	Landscape Conversion and Irrigation Upgrade Rebate	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
6	Water Efficient Landscape Ordinance (WELO)	https://www.roseville.ca.gov/environmental_utilities/utility_rebates.php
7		
8		
9		
10		

Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1,500 residences and approximately 900 commercial sites for landscape-related visits per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management. The City continues its effort to reach residents and commercial customers via water efficiency rebate programs, free water wise house call services, commercial site evaluations, water waste patrol and outreach.

Submit Form

RECLAMATION
Managing Water in the West

Contact Information Update

Date	05/07/25
Water District	City of Roseville
District Address	2005 Hilltop Circle, Roseville, CA 95747
District Website	www.roseville.ca.us

Conservation Coordinator

First Name	Bobby
Last Name	Alvarez
Title	Water Conservation Administrator
Phone	(916) 746-1710
Email	balvarez@roseville.ca.us

General Manager

First Name	George
Last Name	Hanson
Title	Water Utility Manager
Phone	(916) 746-1764
Email	ghanson@roseville.ca.us

Other Contact

First Name	Sara
Last Name	Feusi
Title	Administrative Technician - Water Efficiency
Phone	(916) 746-1739
Email	sfeusi@roseville.ca.us

Gallons Per Capita Water Reduction

Reporting Year	2025
Data Year	2024

What was your GPCD the last 5 years?

Year	GPCD
2024	176.38
2023	173.29
2022	183.64
2021	195.97
2020	206.77

If not using programmatic method of water efficiency, what is your district implementing to reduce water use? Provide a brief narrative.

City of Roseville does use a programmatic method of water efficiency.

If your district's GPCD is not declining, please provide a narrative of why and what your district will be doing to accomplish water usage savings.

The City of Roseville's GPCD is generally declining or staying steady; however, in 2020 due to quarantine measures resulting from the COVID-19 pandemic, there was a noted increase in indoor usage. This period of greater presence within residential homes caused an overall increase in GPCD for the year. This increase resulting from a change in customer behavior has not been observed to persist beyond the point that quarantine requirements were fully removed.

Metering With Commodity Rates

Are all connections metered? ○ Yes ◉ No ○ NA

If not 100% metered, please provide a narrative of why and when your district will be fully metered.

The City of Roseville implemented a Meter Retrofit Program beginning in 2001 and concluding in 2011, whereby 99%+ of the City's service connections were retrofitted with meters, either individually or with master meters. In general, accounts were left unmetered where site plumbing issues make it challenging, if not practically impossible, to provide an individual meter to the account location at that time.

Currently, the remaining <1% of unmetered services are retrofitted as part of an ongoing

Are all metered connections billed by water usage? ◉ Yes ○ No ○ NA

If no, please provide a brief narrative of why and when your district will be billing by water usage?

Retail Conservation Pricing

Is your district billing utilizing conserving rate structure? ○ Yes ◉ No ○ NA

Website to billing rate structure	https://ecode360.com/RO4998

If no, please provide a brief narrative of why or when your district will be implementing a conserving rate structure.

As a component of its meter retrofit program, the City adopted conservation pricing for water on all metered accounts from 2011 through 2015. To comply with Proposition 218 requirements, a law passed in California, the City transitioned to a per-use, uniform rate billing structure in February 2016.

Water Waste Prohibition

Water Waste Ordinance ◉ Yes ○ No ○ NA

Ordinance Website Address	https://ecode360.com/RO4998

Other Pertinent Links

	Title	Website
1	City of Roseville Water Efficiency Website	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	City of Roseville Water Efficiency - Report Water Waste	https://survey123.arcgis.com/share/c272fa5f05264b5682c21dcdfb0c1ffc
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Brief Comments/Narrative

The City currently restricts water waste within its service area. Roseville Municipal Code Chapter 14.09, Water Conservation Ordinance, defines water waste and associated penalties of continued infractions. Per the ordinance, customers in violation are provided a series of notifications at one week intervals: first a courtesy notice, second an administrative warning, and finally a formal citation. If the situation is not remedied by the time specified in the formal citation, additional measures can be taken to force compliance. These measures include fines, water restrictions, low flow devices, or discontinued service.

Water Loss Control

Water Loss Program? ◉ Yes ○ No ○ NA

If not using AWWA Water Audit Software, brief description of program and/or link to website.

City of Roseville uses the latest version of AWWA Water Audit Software (V6).

AWWA Water Audit Software? ◉ Yes ○ No ○ NA

Water Audit Data Validity Score	74/100
Data Validity Level	IV (71-90)
Date of Last Analysis	2023

Brief Comments/Narrative

In 2009 the City began using AWWA Water Loss software to develop an annual water loss audit. Results from the audit have helped the City identify where in the distribution process leaks are occurring. When coupled with detailed pipeline information stored in the City's asset management system, audit information helps identify leak-prone areas of the City's distribution system.

These areas are then targeted for annual visual and auditory leak detection surveys to isolate individual areas of leakage. Once isolated, the City's responses include corrosion monitoring programs, service cathodic protection and/or replacement. The City's asset management software is then updated with identified leaks, which in turn provides more information useful for prioritization of future rehabilitation programs.

Public Outreach

Briefly list/describe your Public Outreach Programs:

	Title	Website
1	News stories on main page	http://roseville.ca.us/
2	Mulch Mayhem	ces/One.aspx?contextId=9754960&parentId=9754960&returnTo=9754960&objectId=20743848&curr
3	Water Efficiency Rebates	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
4	Regional Water Authority's Water Efficiency Program	www.bewatersmart.info
5	EPA Water Sense Partner, Fix-a-Leak Week	www.epa.gov
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Brief Comments/Narrative

See website links for additional information.

School Education Programs

Briefly list/describe your School Education Programs:

	Title	Website
1	Be Water Smart News	www.bewatersmart.info
2	Elementary School Programs	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19407447
3	Middle School Programs	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19407471
4	High School Programs	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19407474
5	Utility Exploration Center Exhibits	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
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Brief Comments/Narrative

Utility Exploration Center interactive exhibits teaching about water efficiency; website resources and links; teacher training workshops; other educational initiatives for various school-age groups.

The websites listed above detail individual programs for each different school age group including Elementary, Middle School, and High School students.

Residential Programs

Briefly list/describe your Residential Programs:

	Title	Website
1	Cash for Grass Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	Showerhead Replacement	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
3	Water Waste Patrols	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
4	Toilet Flapper Replacement	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
5	Water Wise Housecalls	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
6	Door Hangers	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1,100 residences per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management.

The City continues its effort to reach residents via water efficiency rebate programs, free water wise house call services, water waste patrol and outreach.

Commercial, Institutional, and Industrial Programs

Briefly list/describe your CII Programs:

	Title	Website
1	Landscape Conversion and Irrigation Upgrade Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
2	Food Service One Stop Water Efficiency Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
3	Customized Rebate Program	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
4	Water Wise Evaluation Interior	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
5	Water Wise Evaluation Exterior	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
6	Water Budget Evaluation	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City continues its water efficiency efforts by engaging the commercial community with multiple programs and outreach. Our water wise evaluations are one of our most valuable water saving services.

Landscape Programs

Briefly list/describe your Landscape Programs:

	Title	Website
1	Cash for Grass Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	Green Gardening Events	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
3	Water Wise Evaluation Exterior	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
4	DIY Landscape Workshops	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
5	Landscape Conversion and Irrigation Upgrade Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
6	Water Efficient Landscape Ordinance (WELO)	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1,100 residences and approximately 900 commercial sites for landscape-related visits per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management. The City continues its effort to reach residents and commercial customers via water efficiency rebate programs, free water wise house call services, commercial site evaluations, water waste patrol and outreach.

Contact Information Update

Date	04/30/24
Water District	City of Roseville
District Address	2005 Hilltop Circle, Roseville, CA 95747
District Website	www.roseville.ca.us

Conservation Coordinator

First Name	Bobby
Last Name	Alvarez
Title	Water Conservation Administrator
Phone	(916) 746-1710
Email	balvarez@roseville.ca.us

General Manager

First Name	George
Last Name	Hanson
Title	Water Utility Manager
Phone	(916) 746-1764
Email	ghanson@roseville.ca.us

Other Contact

First Name	Sara
Last Name	Feusi
Title	Administrative Technician - Water Efficiency
Phone	(916) 746-1739
Email	sfeusi@roseville.ca.us

Gallons Per Capita Water Reduction

Reporting Year	2024
Data Year	2023

What was your GPCD the last 5 years?

Year	GPCD
2023	173.29
2022	183.64
2021	195.97
2020	206.77
2019	190.50

If not using programmatic method of water efficiency, what is your district implementing to reduce water use? Provide a brief narrative.

City of Roseville does use a programmatic method of water efficiency.

If your district's GPCD is not declining, please provide a narrative of why and what your district will be doing to accomplish water usage savings.

The City of Roseville's GPCD is generally declining; however, in 2020 due to quarantine measures resulting from the COVID-19 pandemic, there was a noted increase in indoor usage. This period of greater presence within residential homes caused an overall increase in GPCD for the year. It is not expected that this increase will remain beyond the point that quarantine requirements are fully removed.

Metering With Commodity Rates

Are all connections metered? ○ Yes ◉ No ○ NA

If not 100% metered, please provide a narrative of why and when your district will be fully metered.

The City of Roseville implemented a Meter Retrofit Program beginning in 2001 and concluding in 2011, whereby 99%+ of the City's service connections were retrofitted with meters, either individually or with master meters. In general, accounts were left unmetered where site plumbing issues make it challenging, if not practically impossible, to provide an individual meter to the account location at that time.

Currently, the remaining <1% of unmetered services are retrofitted as part of an ongoing

Are all metered connections billed by water usage? ◉ Yes ○ No ○ NA

If no, please provide a brief narrative of why and when your district will be billing by water usage?

Retail Conservation Pricing

Is your district billing utilizing conserving rate structure? ○ Yes ◉ No ○ NA

Website to billing rate structure	https://ecode360.com/RO4998

If no, please provide a brief narrative of why or when your district will be implementing a conserving rate structure.

As a component of its meter retrofit program, the City adopted conservation pricing for water on all metered accounts from 2011 through 2015. To comply with Proposition 218 requirements, a law passed in California, the City transitioned to a per-use, uniform rate billing structure in February 2016.

Water Waste Prohibition

Water Waste Ordinance ◉ Yes ○ No ○ NA

Ordinance Website Address	https://ecode360.com/RO4998

Other Pertinent Links

	Title	Website
1	City of Roseville Water Efficiency Website	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	City of Roseville Water Efficiency - Report Water Waste	https://survey123.arcgis.com/share/c272fa5f05264b5682c21dcdfb0c1ffc
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Brief Comments/Narrative

The City currently restricts water waste within its service area. Roseville Municipal Code Chapter 14.09, Water Conservation Ordinance, defines water waste and associated penalties of continued infractions. Per the ordinance, customers in violation are provided a series of notifications at one week intervals: first a courtesy notice, second an administrative warning, and finally a formal citation. If the situation is not remedied by the time specified in the formal citation, additional measures can be taken to force compliance. These measures include fines, water restrictions, low flow devices, or discontinued service.

Water Loss Control

Water Loss Program? ◉ Yes ○ No ○ NA

If not using AWWA Water Audit Software, brief description of program and/or link to website.

City of Roseville uses the latest version of AWWA Water Audit Software (V6).

AWWA Water Audit Software? ◉ Yes ○ No ○ NA

Water Audit Data Validity Score	74/100
Data Validity Level	IV (71-90)
Date of Last Analysis	2022

Brief Comments/Narrative

In 2009 the City began using AWWA Water Loss software to develop an annual water loss audit. Results from the audit have helped the City identify where in the distribution process leaks are occurring. When coupled with detailed pipeline information stored in the City's asset management system, audit information helps identify leak-prone areas of the City's distribution system.

These areas are then targeted for annual visual and auditory leak detection surveys to isolate individual areas of leakage. Once isolated, the City's responses include corrosion monitoring programs, service cathodic protection and/or replacement. The City's asset management software is then updated with identified leaks, which in turn provides more information useful for prioritization of future rehabilitation programs.

Public Outreach

Briefly list/describe your Public Outreach Programs:

	Title	Website
1	News stories on main page	http://roseville.ca.us/
2	Mulch Mayhem	http://roseville.ca.us/workspaces/One.aspx?objectId=12537136&contextId=9754960
3	Water Efficiency Rebates	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
4	Regional Water Authority's Water Efficiency Program	www.bewatersmart.info
5	EPA Water Sense Partner, Fix-a-Leak Week	www.epa.gov
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Brief Comments/Narrative

In 2020, the City's public facility access and interactive programs were amended according to state and local guidance pertaining to the COVID-19 pandemic. As much as was possible, exhibits and programs remained in effect and have been reinstated.

See website links for additional information.

School Education Programs

Briefly list/describe your School Education Programs:

	Title	Website
1	Be Water Smart News	www.bewatersmart.info
2	Water, the Never Ending Cycle (water cycle program)	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19402906
3	Hydro Heroes (1st-3rd grade program)	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19402906
4	Water Warriors (1st-3rd grade program)	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19402906
5	H2Own (4th-6th grade program)	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19402906
6	Keepin' It Clean (4th-6th grade program)	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19402906
7	Planet Protectors comic books and lesson plans for Kindergarten	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19402906
8	Water Spots video contest for high school students	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=19402906
9	Living Rivers of the Sacramento Valley Program	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
10	Utility Exploration Center Exhibits	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907

Brief Comments/Narrative

In 2020, the City's public facility access and interactive programs were amended according to state and local guidance pertaining to the COVID-19 pandemic. As much as was possible, exhibits and programs remained in effect.

Utility Exploration Center interactive exhibits teaching about water efficiency; website resources and links; teacher training workshops; other educational initiatives for various school-age groups.

Planet Protectors comic books and lesson plans (pre/post activities) for our Kindergarten Program, Hydro Heroes, Water Warriors, H2Own and Keepin it Clean;

Residential Programs

Briefly list/describe your Residential Programs:

	Title	Website
1	Cash for Grass Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	Showerhead Replacement	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
3	Faucet Aerators Replacement	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
4	Toilet Flapper Replacement	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
5	Water Wise Housecalls	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
6	Door Hangers	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
7	Water Waste Patrols	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 900 residences per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management.

The City continues its effort to reach residents via water efficiency rebate programs, free water wise house call services, water waste patrol and outreach.

Commercial, Institutional, and Industrial Programs

Briefly list/describe your CII Programs:

	Title	Website
1	Landscape Conversion and Irrigation Upgrade Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	Food Service One Stop Water Efficiency Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
3	Customized Rebate Program	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
4	Water Wise Evaluation Interior	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
5	Water Wise Evaluation Exterior	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
6	Water Budget Evaluation	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City continues its water efficiency efforts by engaging the commercial community with multiple programs and outreach. Our water wise evaluations are one of our most valuable water saving services.

Landscape Programs

Briefly list/describe your Landscape Programs:

	Title	Website
1	Cash for Grass Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	Green Gardening Events	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
3	Water Wise Evaluation Exterior	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
4	DIY Landscape Workshops	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
5	Landscape Conversion and Irrigation Upgrade Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
6	Water Efficient Landscape Ordinance (WELO)	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 900 residences and approximately 800 commercial sites for landscape-related visits per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management. The City continues its effort to reach residents and commercial customers via water efficiency rebate programs, free water wise house call services, commercial site evaluations, water waste patrol and outreach.

RECLAMATION
Managing Water in the West

Contact Information Update

Date	04/13/23
Water District	City of Roseville
District Address	2005 Hilltop Circle, Roseville, CA 95747
District Website	www.roseville.ca.us

Conservation Coordinator

First Name	Bobby
Last Name	Alvarez
Title	Water Conservation Administrator
Phone	(916) 746-1710
Email	balvarez@roseville.ca.us

General Manager

First Name	Sean
Last Name	Bigley
Title	Environmental Utilities Assistant Director
Phone	(916) 774-5513
Email	sbigley@roseville.ca.us

Other Contact

First Name	Justin
Last Name	Black
Title	Water Conservation Specialist
Phone	(916) 746-1763
Email	wblack@roseville.ca.us

Gallons Per Capita Water Reduction

Reporting Year	2023
Data Year	2022

What was your GPCD the last 5 years?

Year	GPCD
2022	183.64
2021	208.01
2020	206.77
2019	190.50
2018	190.90

If not using programmatic method of water efficiency, what is your district implementing to reduce water use? Provide a brief narrative.

City of Roseville does use a programmatic method of water efficiency.

If your district's GPCD is not declining, please provide a narrative of why and what your district will be doing to accomplish water usage savings.

The City of Roseville's GPCD is generally declining. In 2020 and 2021 due to quarantine measures resulting from the COVID-19 pandemic, there was a noted increase in indoor usage. This period of greater presence within residential homes caused an overall increase in GPCD for those years. In 2022 the City of Roseville's GPCD resumed its downward trend.

Metering With Commodity Rates

Are all connections metered? ○ Yes ◉ No ○ NA

If not 100% metered, please provide a narrative of why and when your district will be fully metered.

The City of Roseville implemented a Meter Retrofit Program beginning in 2001 and concluding in 2011, whereby 99%+ of the City's service connections were retrofitted with meters, either individually or with master meters. In general, accounts were left unmetered where site plumbing issues make it challenging, if not practically impossible, to provide an individual meter to the account location at that time.

Currently, the remaining <1% of unmetered services are retrofitted as part of an ongoing

Are all metered connections billed by water usage? ◉ Yes ○ No ○ NA

If no, please provide a brief narrative of why and when your district will be billing by water usage?

Retail Conservation Pricing

Is your district billing utilizing conserving rate structure? ○ Yes ◉ No ○ NA

Website to billing rate structure	http://qcode.us/codes/roseville/

If no, please provide a brief narrative of why or when your district will be implementing a conserving rate structure.

As a component of its meter retrofit program, the City adopted conservation pricing for water on all metered accounts from 2011 through 2015. To comply with Proposition 218 requirements, a law passed in California, the City transitioned to a per-use, uniform rate billing structure in February 2016.

Water Waste Prohibition

Water Waste Ordinance (●) Yes ( ) No ( ) NA

Ordinance Website Address	http://qcode.us/codes/roseville/

Other Pertinent Links

	Title	Website
1	City of Roseville Water Efficiency Website	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	City of Roseville Water Efficiency - Report Water Waste	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=8916755
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Brief Comments/Narrative

The City currently restricts water waste within its service area. Roseville Municipal Code Chapter 14.09, Water Conservation Ordinance, defines water waste and associated penalties of continued infractions. Per the ordinance, customers in violation are provided a series of notifications at one week intervals: first a courtesy notice, second an administrative warning, and finally a formal citation. If the situation is not remedied by the time specified in the formal citation, additional measures can be taken to force compliance. These measures include fines, water restrictions, low flow devices, or discontinued service.

Water Loss Control

Water Loss Program? (●) Yes ( ) No ( ) NA

If not using AWWA Water Audit Software, brief description of program and/or link to website.

City of Roseville uses the latest version of AWWA Water Audit Software.

AWWA Water Audit Software? (●) Yes ( ) No ( ) NA

Water Audit Data Validity Score	72/100
Data Validity Level	IV (71-90)
Date of Last Analysis	2021

Brief Comments/Narrative

In 2009 the City began using AWWA Water Loss software to develop an annual water loss audit. Results from the audit have helped the City identify where in the distribution process leaks are occurring. When coupled with detailed pipeline information stored in the City's asset management system, audit information helps identify leak-prone areas of the City's distribution system.

These areas are then targeted for annual visual and auditory leak detection surveys to isolate individual areas of leakage. Once isolated, the City's responses include corrosion monitoring programs, service cathodic protection and/or replacement. The City's asset management software is then updated with identified leaks, which in turn provides more information useful for prioritization of future rehabilitation programs.

Public Outreach

Briefly list/describe your Public Outreach Programs:

	Title	Website
1	News stories on main page	http://roseville.ca.us/
2	Green Living Workshops	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=15390262
3	Mulch Mayhem	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=12562310
4	Water Efficiency Rebates	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
5	Earth Night	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8717422
6	Inspiration Garden	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
7	Regional Water Authority's Water Efficiency Program	www.bewatersmart.info
8	EPA Water Sense Partner, Fix-a-Leak Week	www.epa.gov
9	Water Conservation Challenge	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8717422
10		

Brief Comments/Narrative

In 2020 and 2021, the City's public facility access and interactive programs were amended according to state and local guidance pertaining to the COVID-19 pandemic. As much as was possible, exhibits and programs remained in effect. As of 2022 the normal operations have mostly resumed.

See website links for additional information.

School Education Programs

Briefly list/describe your School Education Programs:

	Title	Website
1	Be Water Smart News	www.bewatersmart.info
2	Water, the Never Ending Cycle (water cycle program)	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
3	Hydro Heroes (1st-3rd grade program)	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
4	Water Warriors (1st-3rd grade program)	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
5	H2Own (4th-6th grade program)	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
6	Keepin' It Clean (4th-6th grade program)	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
7	Planet Protectors comic books and lesson plans for Kindergarten	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
8	Water Spots video contest for high school students	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
9	Living Rivers of the Sacramento Valley Program	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
10	Utility Exploration Center Exhibits	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907

Brief Comments/Narrative

In 2020 and 2021, the City's public facility access and interactive programs were amended according to state and local guidance pertaining to the COVID-19 pandemic. As much as was possible, exhibits and programs remained in effect. As of 2022 the normal operations have mostly resumed.

Utility Exploration Center interactive exhibits teaching about water efficiency; website resources and links; teacher training workshops; other educational initiatives for various school-age groups.

Planet Protectors comic books and lesson plans (pre/post activities) for our

Residential Programs

Briefly list/describe your Residential Programs:

	Title	Website
1	Cash for Grass Rebate	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	Showerhead Replacement	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10783212
3	Faucet Aerators Replacement	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10783212
4	Toilet Flapper Replacement	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10783212
5	Water Wise Housecalls	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
6	Door Hangers	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
7	Water Waste Patrols	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1000 residences per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management.

The City continues its effort to reach residents via water efficiency rebate programs, free water wise house call services, water waste patrol and outreach.

Commercial, Institutional, and Industrial Programs

Briefly list/describe your CII Programs:

	Title	Website
1	Landscape Conversion and Irrigation Upgrade Rebate	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
2	Food Service One Stop Water Efficiency Rebate	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
3	Customized Rebate Program	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
4	Water Wise Evaluation Interior	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
5	Water Wise Evaluation Exterior	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
6	Water Budget Evaluation	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
7	Report Water Waste	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
8		

Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City continues its water efficiency efforts by engaging the commercial community with multiple programs and outreach. Our water wise evaluations are one of our most valuable water saving services.

Landscape Programs

Briefly list/describe your Landscape Programs:

	Title	Website
1	Cash for Grass Rebate	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	Green Gardening Events	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
3	Water Wise Evaluation Exterior	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
4	DIY Landscape Workshops	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
5	Landscape Conversion and Irrigation Upgrade Rebate	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
6	Water Efficient Landscape Ordinance (WELO)	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1000 residences and approximately 100 commercial sites for landscape-related visits per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management. The City continues its effort to reach residents and commercial customers via water efficiency rebate programs, free water wise house call services, commercial site evaluations, water waste patrol and outreach.

Contact Information Update

Date	04/08/21
Water District	City of Roseville
District Address	2005 Hilltop Circle, Roseville, CA 95747
District Website	www.roseville.ca.us

Conservation Coordinator

First Name	Bobby
Last Name	Alvarez
Title	Water Conservation Administrator
Phone	(916) 746-1710
Email	balvarez@roseville.ca.us

General Manager

First Name	Sean
Last Name	Bigley
Title	Environmental Utilities Assistant Director
Phone	(916) 774-5513
Email	sbigley@roseville.ca.us

Other Contact

First Name	Jennifer
Last Name	Sbaffi
Title	Customer Service Supervisor
Phone	(916) 746-1707
Email	jsbaffi@roseville.ca.us

Gallons Per Capita Water Reduction

Reporting Year	2020
Data Year	2020

What was your GPCD the last 5 years?

Year	GPCD
2020	206.77
2019	190.50
2018	190.90
2017	194.08
2016	177.32

If not using programmatic method of water efficiency, what is your district implementing to reduce water use? Provide a brief narrative.

City of Roseville does use a programmatic method of water efficiency.

If your district's GPCD is not declining, please provide a narrative of why and what your district will be doing to accomplish water usage savings.

The City of Roseville's GPCD is generally declining; however, in 2020 due to quarantine measures resulting from the COVID-19 pandemic, there was a noted increase in indoor usage. This period of greater presence within residential homes caused an overall increase in GPCD for the year. It is not expected that this increase will remain beyond the point that quarantine requirements are fully removed.

Metering With Commodity Rates

Are all connections metered? ○ Yes ◉ No ○ NA

If not 100% metered, please provide a narrative of why and when your district will be fully metered.

The City of Roseville implemented a Meter Retrofit Program beginning in 2001 and concluding in 2011, whereby 99%+ of the City's service connections were retrofitted with meters, either individually or with master meters. In general, accounts were left unmetered where site plumbing issues make it challenging, if not practically impossible, to provide an individual meter to the account location at that time.

Currently, the remaining <1% of unmetered services are retrofitted as part of an ongoing

Are all metered connections billed by water usage? ◉ Yes ○ No ○ NA

If no, please provide a brief narrative of why and when your district will be billing by water usage?

Retail Conservation Pricing

Is your district billing utilizing conserving rate structure? ○ Yes ◉ No ○ NA

Website to billing rate structure	http://qcode.us/codes/roseville/

If no, please provide a brief narrative of why or when your district will be implementing a conserving rate structure.

As a component of its meter retrofit program, the City adopted conservation pricing for water on all metered accounts from 2011 through 2015. To comply with Proposition 218 requirements, a law passed in California, the City transitioned to a per-use, uniform rate billing structure in February 2016.

Water Waste Prohibition

Water Waste Ordinance (●) Yes ( ) No ( ) NA

Ordinance Website Address	http://qcode.us/codes/roseville/

Other Pertinent Links

	Title	Website
1	City of Roseville Water Efficiency Website	https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
2	City of Roseville Water Efficiency - Report Water Waste	https://roseville.maps.arcgis.com/apps/GeoForm/index.html?appid=d1a535cf27c845449697c6cf563d0469
3		
4		
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Brief Comments/Narrative

The City currently restricts water waste within its service area. Roseville Municipal Code Chapter 14.09, Water Conservation Ordinance, defines water waste and associated penalties of continued infractions. Per the ordinance, customers in violation are provided a series of notifications at one week intervals: first a courtesy notice, second an administrative warning, and finally a formal citation. If the situation is not remedied by the time specified in the formal citation, additional measures can be taken to force compliance. These measures include fines, water restrictions, low flow devices, or discontinued service.

Water Loss Control

Water Loss Program? (●) Yes ( ) No ( ) NA

If not using AWWA Water Audit Software, brief description of program and/or link to website.

City of Roseville uses the latest version of AWWA Water Audit Software.

AWWA Water Audit Software? (●) Yes ( ) No ( ) NA

Water Audit Data Validity Score	70/100
Data Validity Level	III (51-70)
Date of Last Analysis	2019

Brief Comments/Narrative

In 2009 the City began using AWWA Water Loss software to develop an annual water loss audit. Results from the audit have helped the City identify where in the distribution process leaks are occurring. When coupled with detailed pipeline information stored in the City's asset management system, audit information helps identify leak-prone areas of the City's distribution system.

These areas are then targeted for annual visual and auditory leak detection surveys to isolate individual areas of leakage. Once isolated, the City's responses include corrosion monitoring programs, service cathodic protection and/or replacement. The City's asset management software is then updated with identified leaks, which in turn provides more information useful for prioritization of future rehabilitation programs.

Public Outreach

Briefly list/describe your Public Outreach Programs:

	Title	Website
1	News stories on main page	http://roseville.ca.us/
2	Green Living Workshops	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=15390262
3	Mulch Mayhem	http://roseville.ca.us/workspaces/One.aspx?objectId=12537136&contextId=9754960
4	Water Efficiency Rebates	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=11491211
5	EU Today newsletter	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=87 17422
6	Landscape makeover contest	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=8944823
7	Regional Water Authority's Water Efficiency Program	www.bewatersmart.info
8	EPA Water Sense Partner, Fix-a-Leak Week	www.epa.gov
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Brief Comments/Narrative

In 2020, the City's public facility access and interactive programs were amended according to state and local guidance pertaining to the COVID-19 pandemic. As much as was possible, exhibits and programs remained in effect.

See website links for additional information.

School Education Programs

Briefly list/describe your School Education Programs:

	Title	Website
1	Be Water Smart News	www.bewatersmart.info
2	Water, the Never Ending Cycle (water cycle program)	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
3	Hydro Heroes (1st-3rd grade program)	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=8968185
4	Water Warriors (1st-3rd grade program)	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=8968201
5	H2Own (4th-6th grade program)	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=8968181
6	Keepin' It Clean (4th-6th grade program)	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=8968188
7	Planet Protectors comic books and lesson plans for Kindergarten	https://www.roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=8940700
8	Water Spots video contest for high school students	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
9	Living Rivers of the Sacramento Valley Program	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907
10	Utility Exploration Center Exhibits	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8715907

Brief Comments/Narrative

In 2020, the City's public facility access and interactive programs were amended according to state and local guidance pertaining to the COVID-19 pandemic. As much as was possible, exhibits and programs remained in effect.

Utility Exploration Center interactive exhibits teaching about water efficiency; website resources and links; teacher training workshops; other educational initiatives for various school-age groups.

Planet Protectors comic books and lesson plans (pre/post activities) for our Kindergarten Program, Hydro Heroes, Water Warriors, H2Own and Keepin it Clean;

Residential Programs

Briefly list/describe your Residential Programs:

	Title	Website
1	Cash for Grass Rebate	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
2	Showerhead Replacement	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10783212
3	Faucet Aerators Replacement	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10783212
4	Toilet Flapper Replacement	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10783212
5	Water Wise Housecalls	http://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10783212
6	Door Hangers	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
7	Water Waste Patrols	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1000 residences per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management.

The City continues its effort to reach residents via water efficiency rebate programs, free water wise house call services, water waste patrol and outreach.

Commercial, Institutional, and Industrial Programs

Briefly list/describe your CII Programs:

	Title	Website
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2	Food Service One Stop Water Efficiency Rebate	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
3	Customized Rebate Program	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
4	Water Wise Evaluation Interior	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
5	Water Wise Evaluation Exterior	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
6	Water Budget Evaluation	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
7	Water Waste Patrols	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
8		

Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City continues its water efficiency efforts by engaging the commercial community with multiple programs and outreach. Our water wise evaluations are one of our most valuable water saving services.

Landscape Programs

Briefly list/describe your Landscape Programs:

	Title	Website
1	Cash for Grass Rebate	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
2	Green Gardening Events	https://roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=15390262
3	Water Wise Evaluation Exterior	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10866145
4	DIY Landscape Workshops	https://roseville.ca.us/cms/one.aspx?portalId=7964922&pageId=15390262
5	Landscape Conversion and Irrigation Upgrade Rebate	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=10126299
6	Water Efficient Landscape Ordinance (WELO)	https://roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8905954
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Are your programs effective? (●) Yes ( ) No ( ) NA

Has your district reached program participation saturation? ( ) Yes (●) No ( ) NA

Brief Comments/Narrative

The City's Water Efficiency programs reach approximately 1000 residences and approximately 1000 commercial sites for landscape-related visits per year, with continued efforts to engage the community and residents in rebate programs, water efficiency education, as well as best practices of water resource management. The City continues its effort to reach residents and commercial customers via water efficiency rebate programs, free water wise house call services, commercial site evaluations, water waste patrol and outreach.

Appendix Q – Adoption Resolutions and Submission

Resolutions and submission documentation will be added following final Council adoption.

Appendix R – DWR UWMP Checklist

2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and overview	n/a	Executive Summary
Chapter 1	10630.5	Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	Plan preparation	n/a	Executive Summary
Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	n/a	Section 2.1
Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	2-1	Section 2.1
Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	2-2	Section 2.2
Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	2-3	Section 2.3
Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan preparation	n/a	Appendix B
Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	n/a	Section 2.4
Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R	Appendix A
Section 2.4.1	10631(h)	Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	Plan preparation	2-4 W	N/A
Chapter 3	10631(a)	Describe the Supplier service area.	System description	n/a	Section 3.2
Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	n/a	Section 3.3
Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	System description	3-1	DWR Table 3-1
Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	n/a	Section 3.4.2
Section 3.5	10631(a)	Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	n/a	Section 3.5

Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2	COR Table 4-A DWR Table 4-1 DWR Table 4-2
Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5	COR Table 4-D DWR Table 4-5
Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6	Section 4.2.6
Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3	COR Table 4-G COR Table 4-H
Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System water use	4-3	Section 4.2.7
Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3	Section 4.2.7
Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3	Section 4.2.7
Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	n/a	Section 4.4 Section 6.14.2
Section 5.1	10608.36	Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	Baselines and targets	n/a	N/A
Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1	2025 DWR Table 5-1
Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System supplies	n/a	Section 6.11
Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System supplies	n/a	Section 7.2
Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1	Section 6.3

Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	n/a	Section 6.3.2
Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	n/a	Section 6.3.1
Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	System supplies	n/a	Section 6.3.1
Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	Water supplies and recycled water	n/a	Section 6.3.1
Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	n/a	Section 6.3.2
Section 6.2.2	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	n/a	Section 6.3.3
Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System supplies	6-9	Section 6.12.2
Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9	DWR Table 6-8 DWR Table 6-9
Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System supplies	n/a	Section 6.10
Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods.	System supplies (recycled water)	6-2	Section 6.5.1
Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System supplies (recycled water)	6-3	Section 6.5.1
Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4	Section 6.7
Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System supplies (recycled water)	6-4	Section 6.8
Section 6.2.5	10633(e)	Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-4 and 6-5	Section 6.7
Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	6-6	Section 6.8
Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the Supplier's service area.	System supplies (recycled water)	n/a	Section 6.8
Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	6-7	Section 6.9

Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	System supplies	6-7	Section 6.12
Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	System suppliers, energy intensity	O-1A, O-1B, O-1C, and O-2	Section 6.15
Section 7.1	10634	Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	Water supply reliability assessment	n/a	Section 7.1.2
Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4	DWR Table 7-2 DWR Table 7-3 DWR Table 7-4
Section 7.2.3	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water supply reliability assessment	n/a	Section 7.2.5
Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water supply reliability assessment	n/a	DWR Table 7-2 DWR Table 7-3 DWR Table 7-4 DWR Table 7-5
Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	Water supply reliability assessment	n/a	Section 7.2.5
Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water supply reliability assessment	n/a	COR Table 7-D
Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5	DWR Table 7-4 DWR Table 7-5
Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water supply reliability assessment	n/a	Section 7.2.1
Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	n/a	Appendix M
Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	n/a	WSCP Section 1.1
Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	Water shortage contingency planning	n/a	WSCP Table 5
Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water shortage contingency planning	n/a	WSCP Table 5 Steps 1-8
Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water shortage contingency planning	n/a	WSCP Table 4
Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1	WSCP Table 4

Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2	WSCP Section 1.5
Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3	WSCP Table 6
Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2	WSCP Section 1.5
Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Water shortage contingency planning	Table 8-3	WSCP Table 6
Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water shortage contingency planning	8-2 and 8-3	WSCP Table 6
Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency planning	n/a	WSCP Section 1.1.3
Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water shortage contingency planning	n/a	WSCP Table 5
Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	n/a	WSCP Table 5
Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	n/a	WSCP Section 1.6
Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	n/a	WSCP Section 1.2
Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. *Water Shortage Emergencies*.	Water shortage contingency planning	n/a	WSCP Table 5 Step 11
Section 8.7	10632(a)(7)(C)	Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water shortage contingency planning	n/a	WSCP Table 5 Step 12
Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	WSCP Section 1.6
Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	WSCP Section 1.7
Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, *Excessive Residential Water Use During Drought*.	Water shortage contingency planning	n/a	WSCP Section 1.7
Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	n/a	WSCP Table 5 Step 15
Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	n/a	WSCP Table 5 Step 16
Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	n/a	WSCP Table 6
Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	n/a	WSCP Section 1.8

Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	n/a	Section 9.1
Sections 9.2	10631(e)(2)	Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program.	Demand management measures	n/a	N/A
Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	n/a	Section 10.2 Section10.3
Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	10-1	Appendix B
Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 2026.	Plan adoption, submittal, and implementation	n/a	Appendix Q
Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	n/a	Appendix B
Section 10.2.2	10642	The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	Plan adoption, submittal, and implementation	10-1	Appendix B
Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	Plan adoption, submittal, and implementation	n/a	Appendix Q
Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	n/a	Appendix Q
Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	n/a	Appendix Q
Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	n/a	Appendix Q
Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	n/a	Appendix Q
Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Appendix Q
Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Appendix M: Exhibit C
Section 10.6	10621(c)	If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan adoption, submittal, and implementation	n/a	N/A

Appendix S – ASR Program Infrastructure and Capacity

ASR PROGRAM INFRASTRUCTURE AND CAPACITY						
Well Name	**Rated Extraction Capacity (gpm)**	**Effective Extraction Capacity (gpm)**	**Rated Injection Capacity (gpm)**	**Effective Injection Capacity (gpm)**	**Condition**	**ASR Capable (Y/N)**
Oakmont, No. 5	1,460	1,168	0	0	Active	N
Diamond Creek, No. 6	2,756	2,205	1,378	1,102	Active	Y
Woodcreek North, No. 7	1,547	1,238	774	619	Active	Y
Hayden Parkway, No. 8	2,160	1,728	1,080	864	Active	Y
Westbrook Boulevard, No. 9	2,235	1,788	1,118	894	Active	Y
Blue Oaks Boulevard, No. 12	2,500	2,000	1,250	1,000	Active	Y
Solaire Drive, No. 18	1,800	1,440	900	720	Active	Y
Campus Oaks, No. 13	2,000	1,600	1,000	800	Inactive	Y
Misty Wood, No. 19	2,400	1,920	1,200	960	Inactive	Y
To Be Determined	1,800	1,440	900	720	Inactive	Y
To Be Determined	1,800	1,440	900	720	Inactive	Y
Active Subtotal (gpm)	14,458	11,566	6,499	5,199	**NOTES:** Campus Oaks, well number 13, and Misty Wood, well number 19, are currently under construction and are scheduled to be completed in the Fall of 2026. The two wells To Be Determined are currently in the planning phase and are anticipated to be completed by the year 2030.	
Active Subtotal (TAF/yr)	23.3	18.7	10.5	8.4		
Inactive Subtotal (gpm)	8,000	6,400	4,000	3,200		
Inactive Subtotal (TAF/yr)	12.9	10.3	6.5	5.2		
Buildout Total (gpm)	**22,458**	**17,966**	**10,499**	**8,399**		
Buildout Total (TAF/yr)	**36.2**	**29.0**	**16.9**	**13.5**		

Appendix T – DWR Table 7-5 Calculations

DWR Table 7-5 Calculations				
Year	**2025 Available Potable Supplies from COR Table 7-D (Without Groundwater)**	**Recycled Water Use from DWR Table 6-4 Linearly Interpolated Between 2025 and 2030**	**Total Supplies (Potable + Recycled)**	**Total Water Use (Years 2026 - 2029) (Total Demand - Groundwater Recharge)**
2026	58,000	3,882	61,882	40,186
2027	50,000	4,006	54,006	44,526
2028	38,000	4,131	42,131	48,867
2029	38,000	4,255	42,255	53207
2030	11,200	4,379	15,579	-
2025 Total Recycled Water Use from DWR Table 6-4		**2025 Total Demand from DWR Table 4-1**	**2025 Groundwater Recharge from DWR Table 4-1**	**2030 Linda Creek Discharge from DWR Table 4-2**
3,758		36,038	193	350
2030 Total Projected Recycled Water Use from DWR Table 6-4		**2030 Total Projected Demand from DWR Table 4-2**	**2030 Total Projected Groundwater Recharge from DWR Table 4-2**	**Total Water Use (2030) (Total Demand - Groundwater Recharge - Linda Creek Discharge)**
4,379		60,908	3,360	57,198
Year	**Linear Interpolation**	**Linear Interpolation**	**Linear Interpolation**	**NOTES**
2026	3,758 + (4,379 - 3,758)/5 = 3,882	36,038 + (60,908 - 36,038)/5 = 41,012	193 + (3,360 - 193)/5 = 826	All volumes are in AF. Recycled water is produced in quantities that match current demand as shown in DWR Table 6-4 and DWR Table 6-9.
2027	3,882 + (4,379 - 3,758)/5 = 4,006	41,012 + (60,908 - 36,038)/5 = 45,986	826 + (3,360 - 193)/5 = 1,460	
2028	4,006 + (4,379 - 3,758)/5 = 4,131	45,986 + (60,908 - 36,038)/5 = 50,960	1,460 + (3,360 - 193)/5 = 2,093	
2029	4,131 + (4,379 - 3,758)/5 = 4,255	50,960 + (60,908 - 36,038)/5 = 55,934	2,093 + (3,360 - 193)/5 = 2,727	
2030	4,255 + (4,379 - 3,758)/5 = 4,379	55,934 + (60,908 - 36,038)/5 = 60,908	2,727 + (3,360 - 193)/5 = 3,360	