BOARD MEETING AGENDA
SPECIAL MEETING OF THE BOARD OF DIRECTORS OF
CITRUS HEIGHTS WATER DISTRICT (CHWD)
NOVEMBER 17, 2021 beginning at 6:00 PM

DISTRICT ADMINISTRATIVE OFFICE
6230 SYLVAN ROAD, CITRUS HEIGHTS, CA

PHONE CALL IN: (253) 215-8782
PHONE MEETING ID: 836 1872 6872
COMPUTER AUDIO/LIVE MEETING PRESENTATIONS: https://us06web.zoom.us/j/83618726872

In compliance with the Americans with Disabilities Act, if you have a disability and need a disability-related modification or accommodation to participate in this meeting, please contact the General Manager at (916) 725-6873. Requests must be made as early as possible, and at least one full business day before the start of the meeting. The meeting will be held at the listed physical location and electronically through the above phone number.

Members of the public may attend the meeting in person at the District headquarters or remotely through the phone number and link above. In compliance with the Sacramento County Health Order issued July 29, 2021, individuals must wear face coverings in all indoor public settings, regardless of their vaccination status, unless they are exempt per the order.

CALL TO ORDER:

Upon request, agenda items may be moved to accommodate those in attendance wishing to address that item. Please inform the General Manager.

ROLL CALL OF DIRECTORS

PLEDGE OF ALLEGIANCE

PUBLIC COMMENT

CLOSED SESSION:

CL-1. CONFERENCE WITH REAL PROPERTY NEGOTIATORS

a. Pursuant to Section 54956.8:
Property: Parcel Number 243-0180-012-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore
Negotiating Parties: Gloria Dyer
Under Negotiation: Price and Terms of Payment

b. Pursuant to Section 54956.8:
Property: Parcel Number 243-0180-001-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore

Negotiating Parties: Muhammad Arif
Under Negotiation: Price and Terms of Payment

c. Pursuant to Section 54956.8:
Property: Parcel Number 243-0180-002-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore
Negotiating Parties: Teresita Kumar, Ashwani Kumar
Under Negotiation: Price and Terms of Payment

d. Pursuant to Section 54956.8:
Property: Parcel Number 243-0180-004-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore
Negotiating Parties: Dean Eichelmann
Under Negotiation: Price and Terms of Payment

CL-2. CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION
Initiation of Litigation pursuant to Government Code, section 54956.9(d)(4): (one case)

FUTURE CHWD BOARD OF DIRECTORS MEETING DATES:

November 17, 2021	6:30 PM	Regular Meeting
December 15, 2021	6:30 PM	Regular Meeting

ADJOURNMENT:

CERTIFICATION:

I do hereby declare and certify that this agenda for this Special Meeting of the Board of Directors of the Citrus Heights Water District was posted in a location accessible to the public at the District Administrative Office Building, 6230 Sylvan Road, Citrus Heights, CA 95610 at least 24 hours prior to the special meeting in accordance with Government Code Section 54954.2.

Brittney Moore

Brittney Moore, Deputy Board Clerk

Dated: November 10, 2021

BOARD MEETING AGENDA
REGULAR MEETING OF THE BOARD OF DIRECTORS OF
CITRUS HEIGHTS WATER DISTRICT (CHWD)
NOVEMBER 17, 2021 beginning at 6:30 PM

DISTRICT ADMINISTRATIVE OFFICE
6230 SYLVAN ROAD, CITRUS HEIGHTS, CA

PHONE CALL IN: (253) 215-8782
PHONE MEETING ID: 836 1872 6872
COMPUTER AUDIO/LIVE MEETING PRESENTATIONS: https://us06web.zoom.us/j/83618726872

In compliance with the Americans with Disabilities Act, if you have a disability and need a disability-related modification or accommodation to participate in this meeting, please contact the General Manager at (916) 725-6873. Requests must be made as early as possible, and at least one full business day before the start of the meeting. The meeting will be held at the listed physical location and electronically through the above phone number.

Members of the public may attend the meeting in person at the District headquarters or remotely through the phone number and link above. In compliance with the Sacramento County Health Order issued July 29, 2021, individuals must wear face coverings in all indoor public settings, regardless of their vaccination status, unless they are exempt per the order.

CALL TO ORDER:

Upon request, agenda items may be moved to accommodate those in attendance wishing to address that item. Please inform the General Manager.

ROLL CALL OF DIRECTORS:

PLEDGE OF ALLEGIANCE:

VISITORS:

PUBLIC COMMENT:

The Public shall have the opportunity to directly address the Board on any item of interest to the public before or during the Board's consideration of that item pursuant to Government Code Section 54954.3. Public comment on items of interest within the jurisdiction of the Board is welcome. The Presiding Officer will limit comments to three (3) minutes per speaker.

(A) Action Item (D) Discussion Item (I) Information Item

CONSENT CALENDAR: (I/A)

All items under the Consent Calendar are considered to be routine and will be approved by one motion. There will be no separate discussion of these items unless a member of the Board, Audience, or Staff request a specific item be removed for separate discussion/action before the motion to approve the Consent Calendar.

CC-1a. Minutes of the Special Meeting – October 20, 2021 (A)
CC-1b. Minutes of the Regular Meeting – October 20, 2021 (A)
CC-1c. Minutes of the Special Meeting – November 2, 2021 (A)

Recommendation: Approve the minutes of the October 20, 2021 Special and Regular Meetings and the November 2, 2021 Special Meeting.

CC-2. Revenue Analysis Report for October 2021 (I)
CC-3. Assessor/Collector's Roll Adjustment for October 2021 (I)
CC-4. Treasurer's Report for October 2021 (I)
CC-5. Treasurer's Report of Fund Balances for October 2021 (I)
CC-6. Operating Budget Analysis for October 2021 (I)
CC-7. Capital Projects Summary for October 2021 (I)
CC-8. Warrants for October 2021 (I)
CC-9. Purchase Card Distributions for October 2021 (I)
CC-10. Employee Recognitions (I)
CC-11. Long-Range Agenda (I)
CC-12. Engineering Department Report (I)
CC-13. Operations Department Report (I)
CC-14. 2021 Water Supply – Purchased and Produced (I)
CC-15. Water Supply Reliability for October 2021 (I)
CC-16. Water Efficiency and Safety Program Update (I)
CC-17. Discussion and Possible Action to Extend Resolution 07-2021 Authorizing Remote Public Meetings (A)

Recommendation:
Extend Resolution 07-2021 to permit future hybrid remote public meetings by the Board of Directors.

CC-18. Discussion and Possible Action to Approve Agreement with Water Systems Consulting, Inc. for Design, Testing, and Construction Management Services for the Ella Way Well Project (A)

Recommendation:
Authorize the General Manager to execute the Professional Services Agreement with Water Systems Consulting, Inc. for the Design, Testing, and Construction Management Services for the Ella Way Well Project and approve a 10% contingency fund.

CC-19. Discussion and Possible Action to Approve a Professional Services Agreement with Wallace-Kuhl & Associates for Geotechnical Services (A)

Recommendation:
Approve the Professional Services Agreement with Wallace-Kuhl & Associates, and Authorize the General Manager to Execute the Agreement

CC-20. Discussion and Possible Action to Award a Contract to B&M Builders for 2022/23 On-Call Concrete Restoration Services (A)

Recommendation:
Award a contract to B&M Builders for 2022/23 on-call concrete restoration services throughout the District service area for the amount of $24 per square foot for concrete flatwork restoration and $65 per linear foot of concrete curb and gutter restoration.

CC-21. Discussion and Possible Action to Receive and File the Sacramento Region Water Utility Collaboration/Integration Study Report (A)

Recommendation:
Receive and file the Sacramento Region Water Utility Collaboration/Integration Study Report.

CC-22. Discussion and Possible Action to Approve an Agreement with B&M Builders, Inc. for HVAC Maintenance and Repair Services (A)

Recommendation:

Authorize the General Manager to execute the agreement with B&M Builders, Inc. for HVAC Maintenance and Repair Services.

PRESENTATIONS:

P-1. Resolution R11-2021 Commending Christopher Boyd for Service to the Citrus Heights Community (A)

Recommendation:

Adopt Resolution R11-2021 Commending Christopher Boyd for Service to the Citrus Heights Community

PUBLIC HEARINGS:

None.

STUDY SESSION:

None.

BUSINESS:

B-1. Review and Consideration of the Strategic Plan for ASR Implementation (A)

Recommendations:

1. Receive the Strategic Plan for ASR Implementation Groundwater Planning Report.
2. Authorize Staff to implement a phased plan for the District's ASR Program.
3. Authorize Staff to seek grant funding for ASR implementation as needed.

B-2. Discussion and Possible Action to Approve District Policy Updates (A)

Recommendations:

1. Approve updates to the District's Policies (2000 Series)
2. Approve updates to the District's Policies (3000 Series)

MANAGEMENT SERVICES REPORTS (I):

MS-1. 2022 Board Meeting Schedule

CONSULTANTS' AND LEGAL COUNSEL'S REPORTS (I):

None.

DIRECTOR'S AND REPRESENTATIVE'S REPORTS (I):

D-1. Regional Water Authority (Wheaton).
D-2. Sacramento Groundwater Authority (Sheehan).
D-3. San Juan Water District (All).
D-4. Association of California Water Agencies (Wheaton).
D-5. ACWA Joint Powers Insurance Authority (Wheaton/Moore).
D-6. City of Citrus Heights (Pieri).
D-7. Chamber of Commerce Update (Talwar/Moore).

D-8. RWA Legislative and Regulatory Affairs Update (Talwar/Moore).
D-9. Customer Advisory Committee (Riehle/Moore).
D-10. Other Reports.

CLOSED SESSION:

None.

FUTURE CHWD BOARD OF DIRECTORS MEETING DATES:

December 15, 2021 6:30 PM Regular Meeting

ADJOURNMENT:

CERTIFICATION:

I do hereby declare and certify that this agenda for this Regular Meeting of the Board of Directors of the Citrus Heights Water District was posted in a location accessible to the public at the District Administrative Office Building, 6230 Sylvan Road, Citrus Heights, CA 95610 at least 72 hours prior to the special meeting in accordance with Government Code Section 54954.2.

Brittney Moore

Dated: November 10, 2021

Brittney Moore, Deputy Board Clerk

CITRUS HEIGHTS WATER DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING MINUTES
October 20, 2021

The Special Meeting of the Board of Directors was called to order at 6:01 p.m. by President Wheaton and roll was called. Present were:

David C. Wheaton, President
Caryl F. Sheehan, Vice President
Raymond A. Riehle, Director

Staff:
Steve Anderson, General Counsel
Brittney Moore, Senior Management Analyst/Deputy Board Clerk
Melissa Pieri, Director of Engineering/District Engineer
Hilary Straus, General Manager
Susan Talwar, Director of Finance and Administrative Services

PLEDGE OF ALLEGIANCE:

President Wheaton led the Pledge of Allegiance.

PUBLIC COMMENT:

None.

President Wheaton adjourned the meeting to closed session at 6:06 p.m.

CLOSED SESSION:

CL-1. CONFERENCE WITH REAL PROPERTY NEGOTIATORS

a. Pursuant to Section 54956.8:
Property: Parcel Number 243-0180-012-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore
Negotiating Parties: Gloria Dyer
Under Negotiation: Price and Terms of Payment

b. Pursuant to Section 54956.8:
Property: Parcel Number 243-0180-001-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore
Negotiating Parties: Muhammad Arif
Under Negotiation: Price and Terms of Payment

c. Pursuant to Section 54956.8:

Property: Parcel Number 243-0180-002-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore
Negotiating Parties: Teresita Kumar, Ashwani Kumar
Under Negotiation: Price and Terms of Payment

d. Pursuant to Section 54956.8:
Property: Parcel Number 243-0180-004-0000
Agency Negotiators: Brian Hensley, Rebecca Scott, Josh Nelson, Melissa Pieri, Hilary Straus, Susan Talwar, Steve Anderson, Brittney Moore
Negotiating Parties: Dean Eichelmann
Under Negotiation: Price and Terms of Payment

No Reportable Action.

CL-2. CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION
Initiation of Litigation pursuant to Government Code, section 54956.9(d)(4): (one case)

No Reportable Action.

ADJOURNMENT:

There being no other business to come before the Board, the meeting was adjourned at 6:36 p.m.

APPROVED:

BRITTNEY C. MOORE Deputy Board Clerk Citrus Heights Water District	DAVID C. WHEATON, President Board of Directors Citrus Heights Water District

CITRUS HEIGHTS WATER DISTRICT
BOARD OF DIRECTORS REGULAR MEETING MINUTES
October 20, 2021

The Regular Meeting of the Board of Directors was called to order at 6:36 p.m. by President Wheaton and roll was called. Present were:

David C. Wheaton, President
Caryl F. Sheehan, Vice President
Raymond A. Riehle, Director

Staff:
Steve Anderson, General Counsel
Timothy Katkanov, Engineering/ GIS Technician
Dana Mellado, Management Analyst
Brittney Moore, Senior Management Analyst/ Deputy Board Clerk
Melissa Pieri, Director of Engineering/ District Engineer
Alberto Preciado, Accounting Manager
Rebecca Scott, Director of Operations
Susan Talwar, Director of Finance and Administrative Services
Terri Highsmith, Special Labor Counsel

PUBLIC COMMENT:

Gay Jones, Sacramento Metropolitan Fire District

CONSENT CALENDAR:

President Wheaton asked for consideration and/ or approval of the Consent Calendar.

CC-1a. Minutes of the Special Meeting – August 18, 2021 (A)
CC-1b. Minutes of the Regular Meeting – August 18, 2021 (A)
CC-1c. Minutes of the Special Meeting – September 9, 2021 (A)
Recommendation: Approve the minutes of the August 18, 2021 Special and Regular Meetings and the September 9, 2021 Special Meeting.
CC-2. Revenue Analysis Report for August and September 2021 (I)
CC-3. Assessor/Collector's Roll Adjustment for August and September 2021 (I)
CC-4. Treasurer's Report for August and September 2021 (I)
CC-5. Treasurer's Report of Fund Balances for August and September 2021 (I)
CC-6. Operating Budget Analysis for August and September 2021 (I)
CC-7. Capital Projects Summary August and September 2021 (I)
CC-8. Warrants for August and September 2021 (I)
CC-9. Purchase Card Distributions for August and September 2021 (I)
CC-10. Employee Recognitions (I)
CC-11. Long-Range Agenda (I)
CC-12. Engineering Department Report (I)

CC-13. Operations Department Report (I)
CC-14. 2021 Water Supply – Purchased and Produced (I)
CC-15a. Water Supply Reliability for August 2021 (I)
CC-15b. Water Supply Reliability for September 2021 (I)
CC-16. Water Efficiency and Safety Program Update (I)

ACTION:
Director Riehle moved and Vice President Sheehan seconded a motion to approve the consent calendar.

The motion carried 3-0 with all Directors voting yes.

PRESENTATIONS:

None.

PUBLIC HEARINGS:

None.

STUDY SESSION:

S-1. Presentation of 2022 Water Rates, Miscellaneous Fees and Charges and Capacity Fees (I/D)

BUSINESS:

B-1. Discussion and Possible Action to Consider Selection of Sacramento Local Agency Formation Commission (Sacramento LAFCo) Special District Commissioner and Alternate Special District Commissioner (A)

Public comment by Gay Jones, Sacramento Metropolitan Fire District.

ACTION:
Director Riehle moved and Vice President Sheehan seconded a motion to approve the selection of Gay Jones as LAFCo Special District Commissioner and Michael Hanson as LAFCo Alternate Special District Commissioner.

The motion carried 3-0 with all Directors voting yes.

B-2. Discussion and Possible Action to Approve District Policy Updates (A)

ACTION:
Director Riehle moved and Vice President Sheehan seconded a motion to approve the updates to the District's Human Resources Policies (4000 Series).

The motion carried 3-0 with all Directors voting yes.

ACTION:
Vice President Sheehan moved and Director Riehle seconded a motion to approve the updates to the District's Accounts Receivable Policies (7000 Series).

The motion carried 3-0 with all Directors voting yes.

B-3. Discussion and Possible Action to Approve Resolution 07-2021 Authorizing Remote Public Meetings (A)

ACTION:
Vice President Sheehan moved and Director Riehle seconded a motion to approve Resolution 07-2021 Authorizing Remote Public Meetings.

The motion carried 3-0 with all Directors voting yes.

MANAGEMENT SERVICES REPORTS (I):

None.

CONSULTANTS' AND LEGAL COUNSEL'S REPORTS (I):

None.

DIRECTOR'S AND REPRESENTATIVE'S REPORTS (I):
D-1. Regional Water Authority (Wheaton).
D-2. Sacramento Groundwater Authority (Sheehan).
D-3. San Juan Water District (All).
D-4. Association of California Water Agencies (Wheaton).
D-5. ACWA Joint Powers Insurance Authority (Wheaton/Moore).
D-6. City of Citrus Heights (Pieri).
D-7. Chamber of Commerce Update (Talwar/Moore).
D-8. RWA Legislative and Regulatory Affairs Update (Talwar/Moore).
D-9. Customer Advisory Committee (Riehle/Moore).
D-10. Other Reports.

CLOSED SESSION:

None.

ADJOURNMENT:

There being no other business to come before the Board, the meeting was adjourned at 7:46 p.m.

APPROVED:

BRITTNEY C. MOORE Deputy Board Clerk Citrus Heights Water District	DAVID C. WHEATON, President Board of Directors Citrus Heights Water District

CITRUS HEIGHTS WATER DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING MINUTES
November 2, 2021

The Special Meeting of the Board of Directors was called to order at 6:30 p.m. by President Wheaton and roll was called. Present were:

David C. Wheaton, President
Caryl F. Sheehan, Vice President
Raymond A. Riehle, Director

Staff:
Sheila Shah, Management Technician
Hilary Straus, General Manager

Charley Howard, Consultant

PLEDGE OF ALLEGIANCE:

President Wheaton led the Pledge of Allegiance.

PUBLIC COMMENT:
None.

President Wheaton adjourned the meeting to closed session at 6:31 p.m.

CLOSED SESSION:

CL-1. Pursuant to Government Section 54957:
Unrepresented Management Employee: General Manager
Negotiating Parties: For CHWD: Charley Howard; for General Manager: Hilary Straus

No reportable action.

ADJOURNMENT:

There being no other business to come before the Board, the meeting was adjourned at 8:31 p.m.

APPROVED:

BRITTNEY C. MOORE Deputy Board Clerk Citrus Heights Water District	DAVID C. WHEATON, President Board of Directors Citrus Heights Water District

CITRUS HEIGHTS WATER DISTRICT
OCTOBER 2021
REVENUE ANALYSIS

Outstanding Receivables

Aged Trial Balance					
Total	Current	31-90	91-150	>150	Unapplied Current
1,048,625	791,736	208,985	47,466	115,947	115,511

General Ledger Balance	Total
Outstanding A/R	1,137,609.57
Outstanding Liens	-
Outstanding Grants	946
A/R Other	(22,023)
Less Unapplied Payments	(117,289)
Total	$ 999,244

CITRUS HEIGHTS WATER DISTRICT
ASSESSOR/COLLECTOR'S ROLL ADJUSTMENTS FOR
October 31, 2021

There were no adjustments made for October 2021.

Reason For Cancellation	Charge Type	Amount
		$ -

TREASURER'S REPORT TO THE BOARD OF DIRECTORS
OCTOBER 2021

Bank of the West			
Beginning Balance			$5,545,624
RECEIPTS:		1,738,022	
DISBURSEMENTS:			
Checks Issued / ACH Payments	495,688		
Payroll	365,387		
Returned Checks	2,377		
		863,453	874,569
Bank of the West			
Balance per Bank 10/31/2021			6,420,193
Outstanding Checks			(527,166)
Deposit in Transit			111,901
Balance Per Books 10/31/2021			$6,004,929

RECONCILEMENT:	
Bank of the West	$6,004,929
Local Agency Investment Fund	14,522,564
Money Mkt Activity Account	544,011
TOTAL BALANCE	$21,071,503

CASH & INVESTMENT SUMMARY:	
Bank of the West (General Account)	6,004,929
Local Agency Investment Fund	14,522,564
Money Mkt Activity Account	544,011
Total	$21,071,503

INSTITUTION	MATURITY DATE	INT RATE	DEPOSIT AMOUNT	DATE OF LAST TRANSACTION
Local Agency Investment Fund	**Daily**	**24.00%**	**8,123.64**	**10/15/2021**

I certify that this report accurately reflects all pooled investments and is in compliance with applicable State of California Government Codes and is in conformity with Investment of District Funds Policy 6300. As Treasurer of the Citrus Heights Water District, I hereby certify that sufficient investment liquidity and anticipated revenue are available to meet the next six months' estimated expenditures.

SUSAN K. TALWAR
Treasurer

HILARY M. STRAUS
Secretary

Signed: 11/10/2021

TREASURER'S REPORT OF FUND BALANCES

October 31, 2021

Fund Name	Beginning Balance 01/01/2021	Year to Date Transfers In / Collections	Year to Date Transfers Out	Current Month Transfers In / Collections	Current Month Transfers Out	Ending Balance 10/31/2021	2021 Target Balance per Policy
Operating Fund	$ 5,562,075	$ 13,306,612	$ (13,097,359)	$ 1,738,082	$ (863,513)	$ 6,645,897	$ 2,334,017
Operating Reserve	$ 3,592,065	$ -	$ -	$ -	$ -	$ 3,592,065	N/A
Rate Stabilization Fund	$ 1,000,000	$ -	$ -	$ -	$ -	$ 1,000,000	$ 1,000,000
Capital Improvement Reserve	$ 2,796,860	$ -	$ -	$ -	$ -	$ 2,796,860	$ 2,681,248
Restricted for Debt Service	$ 536,963	$ -	$ -	$ -	$ -	$ 536,963	N/A
Water Supply Reserve	$ 1,623,173	$ 1,000,000	$ -	$ -	$ -	$ 2,623,173	N/A
Water Efficiency Reserve	$ 200,000	$ -	$ -	$ -	$ -	$ 200,000	$ 200,000
Water Meter Replacement Reserve	$ 1,525,000	$ 200,000	$ -	$ -	$ -	$ 1,725,000	N/A
Fleet Equipment Reserve	$ 334,253	$ -	$ -	$ -	$ -	$ 334,253	$ 318,559
Employment-Related Benefits Reserve	$ 405,319	$ 581,643	$ -	$ -	$ -	$ 986,962	$ 986,962
	$ 17,575,708	**15,088,255**	**$ (13,097,359)**	**$ 1,738,082**	**$ (863,513)**	**$ 20,441,173**	**$ 7,520,786**

SUSAN K. TALWAR, Treasurer

TREASURER'S REPORT OF FUND BALANCES
October 31, 2021

Fund Transfers Summary:

The Operating Fund Transferred:	$	1,738,082	from funds collected in October 2021 per Treasurer's Report
	$	(863,513)	disbursements made in October 2021 per Treasurer's Report
	$	874,569	

Citrus Heights Water District
Budget Performance Report
As of 10/31/2021

	October Actual	Year-to-Date Actual	Year-to-Date Budget	YTD Variance Amount	YTD Variance Percent	Annual Budget
Revenues						
Metered Service Charges	$671,158.48	$8,698,761.53	$7,988,410.00	$710,351.53	8.89%	$9,586,090.00
Metered Water Deliveries	464,161.29	5,041,884.10	4,308,118.00	733,766.10	17.03%	5,234,960.00
Non-Metered Service Charges	8,234.97	88,411.75	116,670.00	(28,258.25)	-24.22%	140,000.00
Penalties	403.00	29,998.97	123,442.00	(93,443.03)	-75.70%	150,000.00
Interest	9,481.54	48,192.13	37,950.00	10,242.13	26.99%	45,535.00
Backflow Fees	4,013.80	49,412.00	96,670.00	(47,258.00)	-48.89%	116,000.00
Water Service Install & S&R	19,260.88	217,045.05	22,750.00	194,295.05	854.04%	27,300.00
Grant Funds		1,875.00		1,875.00	0.00%	0.00
Miscellaneous *	5,592.75	25,874.21	122,500.00	(96,625.79)	-78.88%	147,000.00
Cost Reimbursements	2,653.39	37,415.14		37,415.14	0.00%	0.00
Income - Wheeling Water		13,946.39	2,250.00	11,696.39	519.84%	2,700.00
Income - Connection Fees	74,016.31	333,531.06		333,531.06	0.00%	0.00
Total Revenue	1,258,976.41	14,586,347.33	12,818,760.00	1,767,587.33	13.79%	15,449,585.00
*includes Assessments, New Account, Back Charges & other Miscellaneous Revenue Sources						
Operating Expenses						
Cost of Water						
Purchased Water		1,946,039.69	2,654,887.00	(708,847.31)	-26.70%	3,185,864.40
Ground Water	88,153.68	792,500.01	793,337.30	(837.29)	-0.11%	952,004.76
	88,153.68	2,738,539.70	3,448,224.30	(709,684.60)	-20.58%	4,137,869.16
Labor & Benefits						
Labor Regular	237,313.94	2,638,087.63	2,799,621.10	(161,533.47)	-5.77%	3,359,545.32
Labor Non-Regular		11,453.04		11,453.04	0.00%	
Labor Taxes	16,758.73	206,720.15	222,683.80	(15,963.65)	-7.17%	267,220.56
Labor Workers Comp		29,295.38	76,250.00	(46,954.62)	-61.58%	91,500.00
Labor External	14,083.50	98,390.25	105,066.70	(6,676.45)	-6.35%	126,080.04
Benefits Med/Den/Vis	38,537.89	418,825.87	428,668.10	(9,842.23)	-2.30%	514,401.72
Benefits LTD/Life/EAP	6,130.54	43,278.65	44,095.10	(816.45)	-1.85%	52,914.12
Benefits CalPers	19,775.79	220,189.98	275,516.00	(55,326.02)	-20.08%	330,619.20
Benefits Other	8,260.93	94,745.42	107,608.70	(12,863.28)	-11.95%	129,130.44
Benefit Retiree Expenses	3,958.05	38,120.30	47,368.70	(9,248.40)	-19.52%	56,842.44
Benefit Unemployment			7,717.30	(7,717.30)	-100.00%	9,260.76
Benefit GASB 68		404,057.00	340,875.00	63,182.00	18.54%	409,050.00
Capitalized Labor & Benefit Contra	(41,398.89)	(449,277.30)	(416,666.70)	(32,610.60)	7.83%	(500,000.04)
	303,420.48	3,753,886.37	4,038,803.80	(284,917.43)	-7.05%	4,846,564.56
General & Administrative						
Fees & Charges	13,193.40	125,585.92	174,187.50	(48,601.58)	-27.90%	209,025.00
Regulatory Compliance/Permits		51,125.01	99,979.20	(48,854.19)	-48.86%	119,975.04
District Events & Recognition	17,428.76	39,256.08	80,602.60	(41,346.52)	-51.30%	96,723.12
Maintenance/Licensing	1,235.00	147,681.89	120,667.50	27,014.39	22.39%	144,801.00
Equipment Maintenance	10,126.82	66,451.77	94,479.10	(28,027.33)	-29.67%	113,374.92

Citrus Heights Water District
Budget Performance Report
As of 10/31/2021

	October Actual	Year-to-Date Actual	Year-to-Date Budget	YTD Variance Amount	YTD Variance Percent	Annual Budget
Professional Development	1,998.34	25,075.96	111,824.20	(86,748.24)	-77.58%	134,189.04
Department Admin		(170.00)	22,250.10	(22,420.10)	-100.76%	26,700.12
Dues & Subscriptions	2,066.99	204,076.28	173,269.20	30,807.08	17.78%	207,923.04
Fuel & Oil	6,277.45	51,721.30	52,700.00	(978.70)	-1.86%	63,240.00
General Supplies	3,291.84	55,889.45	57,666.60	(1,777.15)	-3.08%	69,199.92
Insurance - Auto/Prop/Liab	20,159.61	98,276.36	85,000.00	13,276.36	15.62%	102,000.00
Leasing/Equipment Rental	1,049.64	19,921.88	33,250.00	(13,328.12)	-40.08%	39,900.00
Parts & Materials	17,913.63	292,649.49	145,833.30	146,816.19	100.67%	54,999.96
Postage/Shipping/Freight	3,757.17	48,778.20	143,750.00	(94,971.80)	-66.07%	172,500.00
Rebates & Incentives	955.49	11,750.25	28,333.30	(16,583.05)	-58.53%	33,999.96
Telecom/Network	2,346.34	31,580.91	56,783.30	(25,202.39)	-44.38%	68,139.96
Tools & Equipment	7,539.70	45,065.93	74,666.70	(29,600.77)	-39.64%	89,600.04
Utilities	2,906.71	11,419.71		11,419.71	0.00%	
Write-Off Bad Debt Exp		21.44	4,166.70	(4,145.26)	-99.49%	5,000.04
Capitalized G&A Contra	(18,450.30)	(251,651.53)		(251,651.53)	0.00%	
Capitalized Equipment Contra	(34,384.60)	(293,033.16)		(293,033.16)	0.00%	
	59,411.99	781,473.14	1,559,409.30	(777,936.16)	-49.89%	1,751,291.16
Professional & Contract Services						
Support Services	71,375.27	919,639.08	1,428,420.94	(508,781.86)	-35.62%	1,773,465.12
Legal Services	37,273.99	224,987.51	343,749.90	(118,762.39)	-34.55%	412,499.88
Printing Services	856.02	21,824.20	29,750.10	(7,925.90)	-26.64%	35,700.12
	109,505.28	1,166,450.79	1,801,920.94	(635,470.15)	-35.27%	2,221,665.12
Reserves & Debt Services						
Interest Expense		43,759.37	62,277.81	(18,518.44)	-29.74%	74,733.37
Net Increase(Descrease) in Value of Investments		14,738.10		14,738.10	0.00%	
		58,497.47	62,277.81	(3,780.34)	-6.07%	74,733.37
Total Operating Expenses	560,491.43	8,498,847.47	10,910,636.15	(2,411,788.68)	-22.10%	13,032,123.37
Net Income / (Expense)	698,484.98	6,087,499.86	1,908,123.85	4,179,376.01	219.03%	2,417,461.63

Citrus Heights Water District
Capital Projects Summary
Fiscal Period End as of 10/2021

Project Number	Project Name	BUDGET		AMOUNTS PAID			
		Project Forecast Budget	Expenditures to 12/2020	Month to Date	Year to Date	Project to Date	Remaining Budget
C16-134	Auburn Blvd-Rusch Park Placer	$167,000	$1,438	$72	$2,941	$4,379	$162,621
C19-108	6230 Sylvan East Wall	$245,000	$7,653	$0	$9,095	$16,748	$228,252
C20-108	Corp Yard PreArchitecture Stdy	$100,000	$1,676	$0	$0	$1,676	$98,324
C20-109	Corp Yard Plans Specs Estimate	$400,000	$0	$0	$0	$0	$400,000
Construction in Progress		**$912,000**	**$10,767**	**$72**	**$12,036**	**$22,803**	**$889,197**
C21-010	Water Main Replacements	$72,100	$0	$0	$0	$0	$72,100
C21-011	Water Valve Replacements	$103,000	$0	$0	$29,847	$29,847	$73,153
C21-012	Water Service Connections	$875,500	$0	$61,482	$710,672	$710,672	$164,828
C21-013	Water Meter Replacements	$500,000	$0	$501	$79,497	$79,497	$420,503
C21-014	Fire Hydrants	$164,800	$0	$0	$50,581	$50,581	$114,219
Annual Infrastructure		**$1,715,400**	**$0**	**$61,982**	**$870,597**	**$870,597**	**$844,803**
C15-104B	Document Management System	$244,639	$5,361	$0	$0	$5,361	$239,278
C21-003	Fleet/Field Operations Equip	$260,000	$0	$248,456	$248,456	$248,456	$11,544
C21-004	Technology Hardware/Software	$56,650	$0	$0	$12,841	$12,841	$43,809
Fleet and Equipment		**$561,289**	**$5,361**	**$248,456**	**$261,297**	**$266,658**	**$294,631**
C15-109	Blossom Hill Way 6" & 10" Inte	$27,777	$0	$0	$0	$0	$27,777
C15-110	Crestmont Ave 6" Intertie	$24,979	$91	$0	$0	$91	$24,888
C19-106	Wells Ave Main 8"	$219,003	$30,302	$0	$162,300	$192,602	$26,401
C20-101	Fair Oaks Blvd	$475,137	$10,210	$110,290	$141,499	$151,709	$323,428
C20-102	Langley Ave & Chance Dr	$504,057	$46,739	$100	$347,561	$394,300	$109,757
C20-103	Marsala Ct	$31,602	$22,081	$1,478	$1,528	$23,609	$30,074
C20-104	Skycrest School	$104,022	$5,536	$633	$37,730	$43,266	$60,756
C20-105	Walnut Drive	$105,247	$3,732	$0	$11,234	$14,967	$90,280
C20-106	Wisconsin Drive	$301,990	$42,391	$422	$229,892	$272,283	$29,707
C21-101	Antelope & Rusch Park	$187,741	$0	$43,304	$85,439	$85,439	$102,302
C21-102	Old Auburn Road	$91,459	$0	$0	$1,003	$1,003	$90,456
C21-103	Pratt Ave	$39,043	$0	$0	$46,225	$46,225	($7,182)
C21-104	Mesa Verde HS	$118,779	$0	$11,400	$43,742	$43,742	$75,037
C21-105	Madison Ave & Dewey Dr	$28,138	$0	$2,500	$2,922	$2,922	$25,216
Water Mains		**$2,258,974**	**$161,082**	**$170,127**	**$1,111,076**	**$1,272,157**	**$1,008,898**

Citrus Heights Water District
Capital Projects Summary
Fiscal Period End as of 10/2021

Project Number	Project Name	BUDGET		AMOUNTS PAID			
		Project Forecast Budget	Expenditures to 12/2020	Month to Date	Year to Date	Project to Date	Remaining Budget
C21-005	Facilities Improvements	$60,000	$0	$339	$87,486	$87,486	($27,486)
C21-040	Other City Partnerships	$112,551	$0	$0	$0	$0	$112,551
C21-040B	Elec. Greenway Bike Trail	$0	$0	$0	$314	$314	($314)
C21-040C	MSR2S Phase4	$0	$0	$465	$10,674	$10,674	($10,674)
C21-040E	Bonita Storm Drain	$0	$0	$465	$29,055	$29,055	($29,055)
C21-041	Other Misc Infrastructure	$112,551	$0	$0	$0	$0	$112,551
C21-041A	Valve Box Raising	$0	$0	$0	$32,407	$32,407	($32,407)
C21-041B	Greenback Acquisition	$0	$0	$0	$0	$0	$0
Miscellaneous Projects		**$285,102**	**$0**	**$1,270**	**$159,936**	**$159,936**	**$125,166**
C17-104	Groundwater Well Property Acq	$640,000	$370,943	$0	$6,080	$377,023	$262,977
C17-104A	Well #7 Patton	$250,000	$45,712	$0	$135,374	$181,085	$68,915
C17-104B	Well #8 Highland	$0	$37,483	$0	$213,221	$250,705	($250,705)
C20-107	Well Design & Construction	$1,105,500	$0	$0	$0	$0	$1,105,500
C21-020	Groundwater Well Improvements	$154,500	$0	$69,328	$69,328	$69,328	$85,172
Wells		**$2,150,000**	**$454,138**	**$69,328**	**$424,003**	**$878,141**	**$1,271,859**
	Grand Totals:	**$7,882,765**	**$631,347**	**$551,236**	**$2,838,946**	**$3,470,293**	**$4,434,553**

OCTOBER 2021 WARRANTS

CHECK	PAYEE	DESCRIPTION	AMOUNT
72292	Marliene L Bowers Trust	Customer Refund	$21.00
72293	Sonny L Tanner	Customer Refund	$39.68
72294	Arden Tropical Gardens Apartments LLC	Customer Refund	$37.55
72295	Roman D Zablotskiy	Customer Refund	$65.14
72296	ACWA	Dues & Subscriptions	$21,260.00
72297	ACWA/JPIA	Workers Comp Insurance	$91.65
72298	AnswerNet	Telephone-Answering Service	$347.35
72299	Aqua Sierra Controls	Wells Maintenance	$688.00
72300	AREA Restroom Solutions	Equipment Rental-Field	$151.04
72301	California-Nevada Section AWWA	Dues & Subscriptions	$100.00
72302	Backflow Technologies	Material	$103.27
72303	Best Best & Krieger	Legal & Audit	$9,709.17
72304	California Landscape Associates Inc	Janitorial	$230.00
72305	Craig/Andrea Collins	Toilet Rebate Program	$75.00
72306	Sacramento County	Utilities	$77.12
72307	Cybex	Equipment Rental-Office	$179.62
72308	Employee Relations Inc	Contract Services-Other	$44.60
72309	Debby Figoni	Contract Services-Conservation	$1,198.00
72310	Jerilyn Fisher	Toilet Rebate Program	$75.00
72311	Ezio Gagliardi	Toilet Rebate Program	$75.00
72312	Grainger	Small Tools	$91.72
72313	Ferguson Enterprises Inc #1423	Material	$216.73
72314	Harris & Associates	Contract Services-Engineering	$5,312.50
72315	Hunt & Sons Inc	Gas & Oil	$795.91
72316	Iconix Waterworks	Material	$477.34
72317	Indoor Environmental Services	Maintenance Agreement-Equipment	$390.71
72318	Integrity Administrators Inc	Health Insurance	$255.99
72319	J Comm Inc	Contract Services-Other	$13,500.00
72320	Kei Window Cleaning #12	Janitorial	$110.00
72321	Douglas Lent	Toilet Rebate Program	$125.19
72322	Liebert Cassidy Whitmore	Legal & Audit	$2,545.00
72323	LSL CPAs	Contract Services-Financial	$6,600.00
72324	Moonlight BPO LLC	Contract Services-Bill Print/Mail	$4,916.22
72325	One Print Source & Graphics	Printing	$53.56
72326	Pace Supply Corp	Material	$3,144.88
72327	Laura Peterson	Toilet Rebate Program	$225.00
72328	Post Modern Marketing	Contract Services-Other	$250.00
72329	Quick Quack Car Wash	Maintenance Agreement-Equipment	$298.30
72330	Republic Services #922	Utilities	$365.29
72331	Regional Government Services	Contract Services-Other	$8,830.72

OCTOBER 2021 WARRANTS

CHECK	PAYEE	DESCRIPTION	AMOUNT
72332	River City Staffing Group	Temporary Staffing	$3,060.85
72333	Sonitrol	Equipment Rental-Office	$196.39
72334	Spot on Signs & Graphics	Contract Services-Other	$157.22
72335	Superior Equipment Repair	Repair-Trucks	$581.64
72336	State Water Resources Control Board	Dues & Subscriptions	$105.00
72337	Jason E Tupper	Continued Education	$50.00
72338	Walker's Office Supplies	Office Expense	$85.26
72339	Sacramento County	Utilities	$75.90
72340	Brent Deming	Customer Refund	$242.36
72341	Gerald C/Delores M Glenn	Customer Refund	$9.72
72342	Karen L Blaser	Customer Refund	$79.93
72343	Edward F Raczynski Estate	Customer Refund	$25.83
72344	Karen K Platzer	Customer Refund	$84.19
72345	Spiers Living Trust	Customer Refund	$225.00
72346	Joyce L Rau	Customer Refund	$11.60
72347	Sandra L Finnemyhr	Customer Refund	$21.35
72348	Ray/Stacey Constantian	Customer Refund	$499.24
72349	LM Ball Properties LLC	Customer Refund	$173.90
72350	Marcel R Heximer	Customer Refund	$119.63
72351	Mary Jones	Customer Refund	$75.12
72352	JD Morton INC	Customer Refund	$67.16
72353	Kristin L Kaluza	Customer Refund	$22.43
72354	Nicole M Lopez	Customer Refund	$49.06
72355	Bart/Riebes Auto Parts	Repair-Trucks	$60.67
72356	Dennis Bayne	Toilet Rebate Program	$75.00
72357	CHCMB	Contract Services-Conservation	$40.00
72358	Consolidated	Telephone-Local/Long Distance	$1,170.34
72359	Robin Cope	Health Insurance	$457.00
72360	Warren Eugene Courtney	Customer Refund	$34.97
72361	Diana G Phelps	Customer Refund	$375.98
72362	Dr Tech LLC	Contract Services-Other	$1,350.00
72363	Grainger	Small Tools	$141.49
72364	Indoor Environmental Services	Maintenance Agreement-Equipment	$254.75
72365	Marilyn Masters	Toilet Rebate Program	$80.30
72366	Messenger Publishing Group	Publication Notices	$675.00
72367	Pace Supply Corp	Material	$12,469.09
72368	Red Wing Shoe Store	Small Tools	$1,582.32
72369	Regional Government Services	Contract Services-Other	$7,954.65
72370	River City Staffing Group	Temporary Staffing	$3,060.85
72371	Road Tech Safety Services, Inc	Contract Services-Other	$1,800.00

OCTOBER 2021 WARRANTS

CHECK	PAYEE	DESCRIPTION	AMOUNT
72372	Warren Consulting Engineers Inc	Contract Services-Engineering	$14,560.00
72373	Wex Bank	Gas & Oil	$4,241.28
72374	David/Waltraud Paige	Customer Refund	$163.99
72375	Randy L/Gary W McClure	Customer Refund	$30.29
72376	Kathleen E Ailor	Customer Refund	$89.86
72377	Paul P/Patricia A Urone	Customer Refund	$23.95
72378	Nancy L Mah	Customer Refund	$136.61
72379	Thomas C Pool	Customer Refund	$15.31
72380	Frank D Ranells	Customer Refund	$382.66
72381	Brandon Georgie	Customer Refund	$56.87
72382	Alexander J/Jennifer M Baker	Customer Refund	$24.34
72383	Randy C Pierce	Customer Refund	$24.60
72384	KP Investments LLC	Customer Refund	$121.01
72385	Richard S/Josephine L Willey	Customer Refund	$111.53
72386	David M/Ashley E Laver	Customer Refund	$27.36
72387	Sergey Mikhnevich	Customer Refund	$136.13
72388	Strata Trust Company, Custodian	Customer Refund	$191.85
72389	Tanzanite Investments, Inc	Customer Refund	$65.67
72390	ABA DABA Rentals & Sales	Supplies-Field	$54.46
72391	ACWA/JPIA	Workers Comp Insurance	$16,317.72
72392	AFLAC	Employee Paid Insurance	$166.66
72393	AIA Services, LLC/NDS	Contract Services-Other	$150.69
72394	Alexander's Contract Services	Contract Services-Meter Reads	$6,814.26
72395	Awntech Corporation	Contract Services-Other	$32.95
72396	Axiom Technologies LLC	Contract Services-Other	$5,299.00
72397	Best Best & Krieger	Legal & Audit	$24,061.49
72398	California Society of Municipal Finance Officers	Dues & Subscriptions	$470.00
72399	Citrus Heights Community Center	Equipment Rental-Office	$110.00
72400	Colantuono, Highsmith & Whatley, PC	Legal & Audit	$13,212.50
72401	Corelogic Information Solutions Inc	Dues & Subscriptions	$212.18
72402	CSDA	Dues & Subscriptions	$8,195.00
72403	Sacramento County Utilities	Utilities	$190.10
72404	GEI Consultants	Contract Services-Wells	$858.00
72405	Harris & Associates	Contract Services-Engineering	$9,225.00
72406	ICMA Membership Renewals	Dues & Subscriptions	$1,400.00
72407	Lowe's	Supplies-Field	$606.58
72408	Brittney Moore	Continued Education	$200.00
72409	Prime Auto Repair	Repair-Trucks	$536.83
72410	River City Staffing Group	Temporary Staffing	$779.70
72411	Road Tech Safety Services, Inc	Contract Services-Other	$3,287.50

OCTOBER 2021 WARRANTS

CHECK	PAYEE	DESCRIPTION	AMOUNT
72412	Sacramento County Dept of Finance	Utilities	$17.88
72413	Hassan Shahbi	Liabilty & Comp Insurance	$261.60
72414	Simon and Company Inc	Contract Services-Other	$1,000.00
72415	S.I.C.H.	Office Miscellaneous	$237.65
72416	ThirdRail	Contract Services-Other	$181.02
72417	ACWA/JPIA	Workers Comp Insurance	$79,592.00
72418	Garry M Reynolds	Customer Refund	$23.07
72419	Lorali/Ronald Hawkins	Customer Refund	$50.91
72420	David/Alisha L McElvain	Customer Refund	$16.21
72421	David/Terri S Sewell	Customer Refund	$146.42
72422	Our Trust	Customer Refund	$225.00
72423	Nathaniel W Lake	Customer Refund	$10.23
72424	Kelly Pierce	Customer Refund	$269.61
72425	Zillow Homes Property Trust	Customer Refund	$163.50
72426	ACWA/JPIA	Workers Comp Insurance	$1,495.00
72427	Afman Supply	Small Tools	$206.07
72428	AWWA	Dues & Subscriptions	$4,523.00
72429	Bart/Riebes Auto Parts	Repair-Trucks	$162.55
72430	Best Best & Krieger	Legal & Audit	$15,306.25
72431	BSK Associates	Water Analysis	$1,307.00
72432	Coast Counties Truck & Equipment Co	Assets-Equipment	$248,456.36
72433	Fast Action Pest Control	Contract Services-Miscellaneous	$165.00
72434	Ferguson Enterprises Inc #1423	Material	$8,341.87
72435	Hunt & Sons Inc	Gas & Oil	$2,036.17
72436	Indoor Environmental Services	Maintenance Agreement-Equipment	$1,875.77
72437	Integrity Administrators Inc	Health Insurance	$5,000.00
72438	J Comm Inc	Contract Services-Other	$10,000.00
72439	Kirby's Pump and Mechanical, Inc	Wells Maintenance	$69,328.38
72440	Pacific Gas & Electric	Utilities	$13.27
72441	Alberto Preciado	Continued Education	$293.41
72442	Prime Auto Repair	Repair-Trucks	$73.34
72443	RDO Equipment	Repair-Trucks	$3,095.17
72444	Regional Government Services	Contract Services-Other	$420.00
72445	River City Staffing Group	Temporary Staffing	$5,082.10
72446	Road Tech Safety Services, Inc	Contract Services-Other	$2,250.00
72447	Sacramento County Dept of Finance Tax Acct	Fees	$50.00
72448	Les Schwab Tires	Repair-Trucks	$29.00
72449	SMUD	Utilities	$47,449.32
72450	A. Teichert & Son, Inc.	Road Base	$3,524.31
72451	Walker's Office Supplies	Office Expense	$107.62

OCTOBER 2021 WARRANTS

CHECK	PAYEE	DESCRIPTION	AMOUNT
72452	WaterWise Consulting, Inc	Contract Services-Conservation	$5,875.00
Total			$751,919.43
ACH	ADP589579020	Contract Services-Financial	$279.80
ACH	ADP590001941	Contract Services-Financial	$114.25
ACH	ADP590477051	Contract Services-Financial	$1,062.30
ACH	BOW SEPT 2021	Bank Fee	$1,676.89
ACH	CA CHOICE NOV 2021	Health Insurance	$42,969.29
ACH	ICMA 10/14/21 PAYDAY	Deferred Compensation	$8,352.77
ACH	JP MORGAN SEPT 2021	See October Agenda Item CC-9	$11,802.31
ACH	JP MORGAN SEPT 2021	See October Agenda Item CC-9	$338.82
ACH	PERS 9/30/21 PAYDAY	PERS	$18,111.44
ACH	PRINCIPAL SEPT 20211 FICA	Health Insurance	$94.13
ACH	PRINCIPAL NOV 2021	Health Insurance	$8,207.67
ACH	VALIC 10/14/21 PAYDAY	Deferred Compensation	$2,127.51
ACH	VALIC 9/30/21 PAYDAY	Deferred Compensation	$2,127.51
ACH	ICMA 9/30/21 PAYDAY	Deferred Compensation	$8,352.77
ACH	MID AMERICA 9/21-9/27/21	Employee Paid Insurance	$56.00
ACH	MID AMERICA 9/28-10/4/21	Employee Paid Insurance	$742.00
ACH	PERS 9/16/21 PAYDAY	PERS	$20,523.98
Total			$126,939.44
Grand Total			$878,858.87

JP Morgan Purchase Card Distributions
Oct-21

Name	General Supplies	District Events & Recognition	Equipment Maintenance	Professional Development	CIP	Maintenance/ Licensing	Tools & Equipment	Dues & Subscription	Postage/Shipping/ Freight	Total Bill
Shockley	$ 1,990.05	$ 1,051.34		$ 1,369.25			$ 258.58	$ 241.87	$ 82.58	$ 4,993.67
Spiers			$ 1,046.27							$ 1,046.27
Straus				$ 1,302.96	$ 15.00					$ 1,317.96
Moore		$ 216.46		$ 33.99						$ 250.45
Scott		$ 8.00			$ 15.00					$ 23.00
Talwar		$ 55.75		$ 1,500.00		$ 275.00		$ 3.99		$ 1,834.74
Total Bill	**$ 1,990.05**	**$ 1,331.55**	**$ 1,046.27**	**$ 4,206.20**	**$ 30.00**	**$ 275.00**	**$ 258.58**	**$ 245.86**	**$ 82.58**	**$ 9,466.09**

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT : EMPLOYEE RECOGNITION
STATUS : Information Item
REPORT DATE : November 3, 2021
PREPARED BY : Brittney Moore, Senior Management Analyst

The following District employees were recognized for perfect attendance during September 2021, and outstanding customer service and quality of work during the month of October 2021.

Administrative Services

Name	Attendance	Customer Service	Work Quality
Dana Mellado		Customer on Fair Oaks Blvd. called suspecting an issue with her bill. Desiree had Mike reread the meter, and discovered it had been misread. Dana corrected the bill and contacted the customer the same day. The customer was very grateful at the speed and quality of the service received from Desiree, Mike, and Dana.	Attended the October Board Meeting.
Lea Park-Kim	Yes		Coordinated and participated in the Howl-O-Ween Parade.
Alberto Preciado	Yes		Attended the October Board Meeting.
Kayleigh Shepard	Yes	Assisted with additional duties during unplanned staffing outages. Customer on Larkspur Ln. contacted the District to leave a glowing commendation for Kayleigh for helping her with issues due to a tenant's unpaid balances. The customer was impressed with Kayleigh for her courtesy, professionalism, and follow up.	
Beth Shockley		Assisted Customer Service staff with account transfers during staff outages.	Assisted with Employee Recognition during Water Professionals Week.

Name	Attendance	Customer Service	Work Quality
Desiree Smith	Yes	Customer on Fair Oaks Blvd. called suspecting an issue with her bill. Desiree had Mike reread the meter, and discovered it had been misread. Dana corrected the bill and contacted the customer the same day. The customer was very grateful at the speed and quality of the service received from Desiree, Mike, and Dana. Assisted with billing process during unplanned staffing outages.	

Engineering Department

Name	Attendance	Customer Service	Work Quality
Tamar Dawson		Worked after hours (10/15, 10/16) for a District water main project.	Participated in the Howl-O-Ween Parade and Festival.
Timothy Katkanov		Provided IT services at the 10/20/21 Board Meeting.	Participated in the Howl-O-Ween Parade and Festival.
Neil Tamagni		Worked after hours (10/20, 10/21) for a private development project to minimize water shut off for local businesses. Worked after hours (10/29) for a District water main project.	

Operations Department

Name	Attendance	Customer Service	Work Quality
Christopher Bell	Yes		
Brady Chambers			Sat. 10/16 - Participated in the Howl-O-Ween Parade and Festival.
Tim Cutler	Yes		
Kelly Drake	Yes		Sat. 10/16 - Participated in the Howl-O-Ween Parade and Festival.

Name	Attendance	Customer Service	Work Quality
James Ferro			Sat. 10/16 - Participated in the Howl-O-Ween Parade and Festival. Mon. 10/25 – 1:30am James responded to an emergency call to repair water main and services at 7529 Eastgate Ave. Sun. 10/31 – James assisted with installation of steel plate in roadway in front of 8009 Sawgrass Cir.
Brian Hensley	Yes	Thurs. 10/28: customer called regarding loud indoor piping, Brian called her back almost immediately and dispatched staff to assist. She was very impressed with the immediate response and said, "All I can say is WOW! You guys are great!"	
Mike Mariedth		Thurs. 10/7 – Sharon, resident on Cologne Lane, stated that Mike was extremely helpful in locating an irrigation leak, and his friendly / positive attitude "made her day!"	Tues. 10/12 – Customer on Fair Oaks Blvd. called and expressed her gratitude for the quick response in re-reading her meter after an error had been made by the contract meter reading company.
Chris Nichols	Yes		
Jace Nunes	Yes		
Nick Spiers			Assisted with Employee Recognition during Water Professionals Week.
Jason Tupper		Thurs. 10/28: Jason assisted a customer who called regarding loud indoor piping. He made some outdoor adjustments and the customer said that he was "very knowledgeable and professional the entire time. He obviously knows his stuff." She was very impressed with the immediate response and quick resolution and said, "All I can say is WOW! You guys are great!"	Sat. 10/16 - Participated in the Howl-O-Ween Parade and Festival.

AGENDA ITEM: CC-11

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT : LONG RANGE AGENDA
STATUS : Consent/Information Item
REPORT DATE : November 9, 2021
PREPARED BY : Brittney Moore, Senior Management Analyst

OBJECTIVE:
Listed below is the current Long Range Agenda.

Legend	
S	Study Session
CC	Consent Calendar
P	Presentation
B	Business
PH	Public Hearing
CL	Closed Session

CITRUS HEIGHTS WATER DISTRICT LONG RANGE AGENDA

MEETING DATE	MEETING TYPE	ITEM DESCRIPTION	ASSIGNED	AGENDA TYPE	AGENDA ITEM
December 15, 2021					
December 15, 2021		District Officers	**Moore**	**B**	A
December 15, 2021		Water Meter Replacement Study	**Scott**	**B**	A
December 15, 2021		Selection of President and Vice President	**Moore**	**B**	A
December 15, 2021		Representatives and Alternatives	**Moore**	**B**	A
January 19, 2022					
January 19, 2022		Agreement with Response Structural Engineers	**Pieri**	**CC**	A
January 19, 2022		Boring and Potholing Agreement	**Pieri**	**CC**	A
January 19, 2022		7000 Series Update	**Talwar/Scott**	**B**	A
January 19, 2022		Branding & Marketing Update	**Talwar/Park-Kim**	**B**	A
January 19, 2022		Strategic Plan Update	**Moore**	**S**	I/D
February 16, 2022					
February 16, 2022		Investment of District Funds	**Talwar/General Counsel**	**B**	A
March 16, 2022					
March 16, 2022		Update on District Wide Easement Project	**Pieri**	**P**	I/D

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT : ENGINEERING DEPARTMENT REPORT
STATUS : Information Item
REPORT DATE : November 2, 2021
PREPARED BY : Missy Pieri, Director of Engineering/District Engineer

Significant assignments and activities for the Engineering Department are summarized below. I will be available at the meeting to answer questions and/or provide additional details.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PROJECT 2030 Water Main Replacement Project	Engineering	Director of Engineering and Project Manager	Yes, 06/29/21 (Final Completion Update)	Yes	Masterplan for replacement of water mains.	Board approved Project 2030 Study. Staff proceeding with various implementation steps.
CAPITAL IMPROVEMENT PROJECT Corporation Yard / Facilities Master Plan Buildout	Engineering	Director of Engineering and Project Manager	Yes, 07/17/19 (Award of Contract)	Yes	Masterplan for office space requirements through 2045.	Staffing Report approved by Board on 06/16/21. Pre-Architectural Study pending.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
CAPITAL IMPROVEMENT PROJECT 6230 Sylvan Rd Perimeter Wall	Engineering	Director of Engineering and Assistant Engineer	Yes, TBD	No	Wall along the east side of District property. 2021 design.	Rezone of properties on hold. Preliminary plans pending.
CAPITAL IMPROVEMENT PROJECT - Skycrest School Water Service Replacement	Engineering	Project Manager and Assistant Engineer	No	Yes	2020 design, 2021 construction.	District to send easement to County for recordation once construction complete. Operations performing construction. 99% Complete.
CAPITAL IMPROVEMENT PROJECT - Walnut Drive Water Service Project	Engineering	Project Manager and Assistant Engineer	No	Yes	2021 design, 2021 construction.	4 of 5 easements acquired. Plans are 100% complete. Anticipate construction to be completed by Operations in Fall 2021.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
CAPITAL IMPROVEMENT PROJECT - Langley Ave & Chance Way Water Main Project	Engineering	Project Manager and Senior Construction Inspector	Yes, 05/19/21 (Award of Contract)	Yes	2021 design, 2021 construction.	Easement (4) recorded. Construction 100% complete. Project closeout in progress.
CAPITAL IMPROVEMENT PROJECT - Fair Oaks Blvd Water Main Project	Engineering	Project Manager and Assistant Engineer	Yes, 08/18/21 (Award of Contract)	Yes	2021 design, 2021 construction.	Award of Contract occurred at the 08/18/21 Board Meeting. Construction 50% complete.
CAPITAL IMPROVEMENT PROJECT - Mesa Verde High School Water Main Project	Engineering	Project Manager and Assistant Engineer	Yes	Yes	2021 design, 2022 construction.	District obtaining easement from SJUSD. 100% Plans prepared and under review.
CAPITAL IMPROVEMENT PROJECT - Carriage Dr, Mesa Verde High School to Pratt	Engineering	Project Manager and Assistant Engineer	Yes	Yes	2021 design, 2022 construction.	30% design in progress.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
CAPITAL IMPROVEMENT PROJECT - Antelope - Rusch Park Water Main	Engineering	Project Manager and Assistant Engineer	Yes	Yes	2021 design, 2021 construction.	Easement approved by Sunrise Recreation & Park District at their 08/03/21 Board meeting. Operations began construction on 09/30/21.
CAPITAL IMPROVEMENT PROJECT - Old Auburn Road Water Main	Engineering	Project Manager and Assistant Engineer	Yes	Yes	2021 design, 2023 construction.	District to begin design.
CAPITAL IMPROVEMENT PROJECT - Pratt Avenue Water Main	Engineering	Project Manager and Assistant Engineer	Yes	Yes	2021 design, 2022 construction.	Plans are signed. Anticipate release project end of 2021.
CAPITAL IMPROVEMENT PROJECT - Madison Ave & Dewey Dr Water Main	Engineering	Project Manager and Assistant Engineer	Yes	Yes	2021 design, 2022 construction.	Survey to be completed in October.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT Mitchell Village - 7925 Arcadia Dr	Engineering	Director of Engineering and Senior Construction Inspector	Yes, 03/30/20, 04/15/20 (Deferment of Fees)	No	200-300 unit development by Watt Communities.	Received 2 recorded easements at 8017 Greenback Lane on 12/08/20. Received recorded easement at 6434 Sunrise Boulevard on 05/27/21. Received recorded SMUD access easement on 01/08/21. Project re-started on 7/14/20. Water portion 99% Complete.
PRIVATE DEVELOPMENT Lawrence Ave Wyatt Ranch	Engineering	Senior Construction Inspector, Director of Engineering and Assistant Engineer	Yes, 01/20/21 (Deferment of Fees)	No	23 lot subdivision.	District signed plans on 12/04/19. Deferment Agreement signed on 02/11/21. Construction 75% Complete. Construction restarted 08/09/21.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT 12057 Fair Oaks Blvd Fair Oaks Senior Apartments	Engineering	Director of Engineering and Assistant Engineer	No	No	Seniors apartment complex with 42 one bedroom and 68 two bedroom units.	All fees paid on 10/18/21. District signed plans on 10/19/21. Awaiting construction.
PRIVATE DEVELOPMENT 8043 Holly Dr Parcel Split 1 - 3	Engineering	Director of Engineering and Assistant Engineer	No	No	Parcel being split into 3 for 3 home subdivision.	District received third submittal on 03/10/21 and provided comments on 03/29/21. Awaiting final plans for signature. Plan check fees paid 04/13/21.
PRIVATE DEVELOPMENT 208 Langley Ave Parcel Split 1 - 2	Engineering	Director of Engineering and Assistant Engineer	No	No	Parcel being split into 2 lots. New single family home construction on one lot.	District sent correspondence to property owner on 04/20/20.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT 5425 Sunrise Blvd Sunrise Village Phase 1	Engineering	Director of Engineering and Assistant Engineer	No	No	Redevelopment of Sunrise Village.	Plans signed and all fees paid. Phase 1 - Construction 99% complete. Pad 3 - Construction 99% complete.
PRIVATE DEVELOPMENT 7969 Madison Ave Orchard Apts Storage Units	Engineering	Director of Engineering and Assistant Engineer	No	No	Demo tennis courts to make storage unit with sprinkler system.	Payment received for Fees on 04/01/20. District signed plans on 11/23/20.
PRIVATE DEVELOPMENT 7435 Stock Ranch Rd USPI Surgical Center	Engineering	Senior Construction Inspector and Assistant Engineer	No	No	Proposed multi-use outpatient surgical center.	All fees paid. District signed plans on 08/18/20. Construction 99% complete.
PRIVATE DEVELOPMENT 7424 Sunrise Blvd Sunrise Pointe	Engineering	Senior Construction Inspector and Assistant Engineer	No	No	Proposed multi-unit housing complex for low-income and homeless.	All fees paid. District provided punchlist. Construction 95% complete.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT 8220 Sunrise Blvd Carefield Citrus Heights	Engineering	Director of Engineering and Assistant Engineer	No	No	Proposed memory care facility.	Received schematic plans on 05/08/19. Will-Serve letter sent on 05/20/19.
PRIVATE DEVELOPMENT Livoti Development	Engineering	Director of Engineering and Assistant Engineer	No	No	Six Parcel Subdivision.	Awaiting final plans & payment of plan check fees.
PRIVATE DEVELOPMENT 7951 Antelope Rd American River Collegiate Academy	Engineering	Director of Engineering and Assistant Engineer	No	No	Commercial Development.	Received first submittal from developer's engineer on 09/30/21.
PRIVATE DEVELOPMENT 7800 Greenback Ln Raising Cane's	Engineering	Senior Construction Inspector and Assistant Engineer	No	No	Commercial Development.	All fees paid. Construction 75% complete.
PRIVATE DEVELOPMENT 8030 Greenback Ln Popeye's Louisiana Chicken	Engineering	Director of Engineering and Assistant Engineer	No	No	Commercial Development. New Fire Service.	All fees paid 07/12/21. Plans signed on 07/19/21. Awaiting construction.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT 8034 Greenback Ln Burger King	Engineering	Director of Engineering and Assistant Engineer	No	No	Commercial Development.	Plan check fees paid 06/03/21. Plans signed 06/02/21. Awaiting construction.
PRIVATE DEVELOPMENT 7301 Greenback Ln Safeway Fire Improvements	Engineering	Director of Engineering and Assistant Engineer	No	No	Interior Tenant Improvements and Fire Improvements.	All fees paid. Submittals approved. Awaiting start of construction.
PRIVATE DEVELOPMENT 8556 Pheasant Ridge Ln Fire Improvements	Engineering	Director of Engineering and Assistant Engineer	No	No	Extension of water main, addition of fire hydrant, and fire sprinklers.	District has no additional comments on plans as of 02/16/21. All fees paid on 03/11/21. Awaiting final plans.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT 6031 Sunrise Vista Dr Apartments & Annexation	Engineering	Director of Engineering and Assistant Engineer	Yes (Resolution adopted for Annexation - 12/16/20)	No	Annexation and proposed apartments.	Annexation fees paid. Adoption of Resolution approving annexation occurred at the 12/16/20 Board Meeting. Received planning level documents on 04/06/21 and District provided comments on 04/13/21.
PRIVATE DEVELOPMENT 7311 Huntington Square Ln	Engineering	Director of Engineering and Assistant Engineer	No	No	New fire service and domestic water service for additional apartments.	Fees paid 04/29/21. Plans signed on 08/18/21. Easement documents received on 08/17/21. Awaiting construction.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT 7078 Auburn Blvd Auburn Heights Townhomes	Engineering	Director of Engineering and Assistant Engineer	No	No	8 Townhomes on undeveloped property.	Plans signed on 09/20/21. Awaiting payment of inspection fees and construction.
PRIVATE DEVELOPMENT 7725 Aloha Lane	Engineering	Director of Engineering and Assistant Engineer	No	No	Single Family Resident	Plans approved and fees paid. Operations installed water service on 06/09/21.
PRIVATE DEVELOPMENT 8136 Auburn Blvd Self Service Coin Laundry	Engineering	Director of Engineering and Assistant Engineer	No	No	Redevelopment of existing building to a self service coin laundry.	Plan check fees paid. Plans signed on 07/19/21. Awaiting construction.
PRIVATE DEVELOPMENT Talbot Way Citrus Place Subdivision	Engineering	Director of Engineering and Assistant Engineer	No	No	8 lot subdivision	Received plans on 06/21/21. District provided comments to submittal on 07/08/21.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
PRIVATE DEVELOPMENT 7311 Hickory Ave Single Family Home	Engineering	Director of Engineering and Assistant Engineer	No	No	Customer requesting water service for a recently split lot.	Verify lot is split prior to initiating new water service.
CITY OF CITRUS HEIGHTS PROJECT Bonita Wy, Garry Oak Dr, & Twin Oaks Ave Storm Drain Improvements	Engineering	Senior Construction Inspector and Assistant Engineer	No	Yes	Bonita Wy, Garry Oak Dr & Twin Oaks Ave Storm Drain Project.	Operations relocating water facilities. 99% complete. Engineering to inspect water service relocation by City's contractor. Bonita - 100% complete. Garry Oak - 100% complete. Twin Oaks - 50% complete.
CITY OF CITRUS HEIGHTS PROJECT Chula Vista Dr Storm Drain Improvements	Engineering	Director of Engineering and Assistant Engineer	No	Yes	Chula Vista Dr Storm Drain Project.	Project is on hold at the City as of 09/24/20.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
CITY OF CITRUS HEIGHTS PROJECT Mariposa Ave - Safe Routes to School Phase IV	Engineering	Senior Construction Inspector and Assistant Engineer	No	Yes	Frontage improvements along east side of Mariposa Ave from Madison Ave to Skycrest School.	Construction began June 2021. Operations relocated water facilities. 100% complete. Water facilities relocation by Contractor 99% complete.
CITY OF CITRUS HEIGHTS PROJECT Auburn Blvd - Complete Streets Phase 2	Engineering	Director of Engineering and Assistant Engineer	No	No	City of Citrus Heights Frontage Improvements and Utility relocation on Auburn Blvd from Rusch Park to north.	District provided Cost Liability letter on 03/25/21.
CITY OF CITRUS HEIGHTS PROJECT Arcade-Cripple Creek Trail Project	Engineering	Director of Engineering and Assistant Engineer	No	No	City of Citrus Heights Bike Trail.	District received Cost Liability letter from the City on 10/09/20. District provided comments on the submittal on 06/10/21.

Items of Interest	Department	Project Team	To Board? If so, Date	Strategic Planning Item	Item Description	Update from Last Report/ Current Status
CITY OF CITRUS HEIGHTS PROJECT Greenback Lane Complete Streets	Engineering	Director of Engineering and Assistant Engineer	No	No	City of Citrus Heights Road Improvements along Greenback Lane	The City submitted plans for review on 10/25/21. District reviewing documents.
District-wide Easement Project	Engineering	Director of Engineering, Project Manager and Assistant Engineer	(06/16/21) Award of Contract	Yes	Research and review District facility locations and easements for potential additions/revisions.	Project status meetings to occur bi-weekly. Easement packets 5% complete.
Review CEQA process for Capital Improvement Projects (CIPs)	Legal	Assistant General Counsel Joshua Nelson and Director of Engineering	TBD	Yes	Review existing CEQA process for CIPs. Update and revise as necessary.	Staff will conduct an initial scoping meeting in Q4 2021. For all other projects, an environmental consultant is hired to oversee the CEQA process.

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT : OPERATIONS DEPARTMENT REPORT
STATUS : Information Item
REPORT DATE : November 2, 2021
PREPARED BY : Tim Cutler, Water Distribution Supervisor
Rebecca Scott, Director of Operations

Facilities Maintenance

	Completed WO's	
	Oct.	**Year to Date**
Backflow Maintenance	0	0
Blow Off Maintenance	0	41
Hydrant Maintenance	0	587
Leak Investigation	0	1
Mainline Repair/Maintenance	1	6
Meter Box Maintenance	3	33
Meter Register Replacement	49	230
Meter Repair/ Test/Maintenance	0	8
Pot Hole Work	0	0
Water Service Repair/Locate	0	10
Valve, Mainline Maintenance	0	1,177
Valve Box Maintenance	0	9
TOTAL	**53**	**2,102**

CIP Projects

	Completed WO's	
	Oct.	**Year to Date**
C21-010 Water Mainline	0	0
C21-011 Water Valves	0	7
C21-012 Water Services	22	265
C21-013 Water Meters	14	271
C21-014 Fire Hydrants	1	10
C21-103 Pot Hole Main	0	1
TOTAL	**37**	**554**

Water Quality

Water Analysis Report: Bacteriological testing has met all California Department of Public Health requirements. 72 samples were collected with no positive results.

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS

NOVEMBER 17, 2021 MEETING

SUBJECT : 2021 WATER SUPPLY - PURCHASED & PRODUCED
STATUS : Information Item
REPORT DATE : November 2, 2021
PREPARED BY : Brian M. Hensley, Water Resources Supervisor
: Rebecca Scott, Director of Operations

OBJECTIVE:

Monthly water supply report, including a comparison to the corresponding month in the prior 5 years. The 2013 data is included for reference as it is the baseline consumption year for water conservation mandates.

Month	**2013**	2016	2017	2018	2019	2020	2021				Year-to-Date Comparison to 2013	
	Total Water Monthly acre feet						Surface Water Purchased	Ground Water Produced	Total Water Monthly	Total Water Annual		
							acre feet				acre feet	%
Jan	**602.52**	539.60	506.81	531.38	520.86	519.03	491.47	84.07	575.54	575.54	**-26.98**	**-4.5%**
Feb	**606.36**	484.53	443.99	525.73	447.48	589.8	401.12	84.05	485.17	1,060.71	**-148.17**	**-12.3%**
Mar	**819.55**	517.56	546.60	540.78	516.87	654.31	420.62	180.40	601.02	1,661.73	**-366.70**	**-18.1%**
Apr	**1,029.73**	677.81	575.52	646.09	682.90	767.24	726.48	275.48	1,001.96	2,663.69	**-394.47**	**-12.9%**
May	**1,603.43**	979.49	1,138.72	1,072.27	977.41	1,168.99	881.36	395.97	1,277.33	3,941.02	**-720.57**	**-15.5%**
Jun	**1,816.73**	1,343.76	1,412.94	1,387.03	1,328.07	1,475.82	1,042.71	498.61	1,541.32	5,482.34	**-995.98**	**-15.4%**
Jul	**2,059.21**	1,544.57	1,650.76	1,737.13	1,582.40	1,682.83	1,050.37	593.36	1,643.73	7,126.07	**-1,411.46**	**-16.5%**
Aug	**1,924.28**	1,579.80	1,570.80	1,583.78	1,603.36	1,660.59	924.70	614.06	1,538.76	8,664.83	**-1,796.98**	**-17.2%**
Sep	**1,509.82**	1,257.91	1,441.76	1,330.19	1,297.12	1,381.14	985.11	348.18	1,333.29	9,998.12	**-1,973.51**	**-16.5%**
Oct	**1,297.42**	840.80	1,128.97	1,061.88	1,083.17	1,185.00	404.84	567.25	972.09	10,970.21	**-2,298.84**	**-17.3%**
Nov	**911.55**	561.82	631.55	807.7	839.06	779.34						
Dec	**700.94**	518.62	574.43	558.97	548.17	620.34						
Total	**14,881.54**	10,846.27	11,622.85	11,782.93	11,426.87	12,484.43	7,328.78	3,641.43	10,970.21	10,970.21		
% of Total							66.81%	33.19%				

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT	:	WATER SUPPLY RELIABILITY
STATUS	:	Information Item
REPORT DATE	:	November 2, 2021
PREPARED BY	:	Brian Hensley Water Resources Supervisor Rebecca Scott, Director of Operations

OBJECTIVE:
Receive status report on surface water supplies available to the Citrus Heights Water District (District).

BACKGROUND AND ANALYSIS:
As of Novemebr 1, 2021, storage in Folsom Lake (Lake) was at 318,577 acre-feet, 33 percent of the total capacity of 977,000 acre-feet. This represents an increase in storage of 89,834 acre-feet in the past month.

The District's total water use during October 2021 (972.09 acre-feet) was 25 percent below that of October 2013 (1,297.42 acre-feet).

The District continues to assist with preserving surface water supplies in the Lake by operating its groundwater wells. The District's groundwater production wells: Bonita, Skycrest, Mitchell Farms, and Sylvan are operational and used on a rotational or as-needed basis. Other District groundwater production wells, Palm and Sunrise, are available for emergency use.

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT : WATER EFFICIENCY & SAFETY PROGRAM UPDATE
STATUS : Information Item
REPORT DATE : November 3, 2021
PREPARED BY : Rebecca Scott, Director of Operations

Water Efficiency, Safety and Meter Program updates are summarized below.

ACTIVITIES AND PROGRESS REPORT

- Water Efficiency activities during the month of October 2021 included:
    - Eight High Efficiency Toilet (HET) rebates were processed, compared to four in October 2020.
    - The District is processing High-Efficiency Clothes Washer (HECW) rebates in-house. There have been zero rebates processed year to date. The District continues to reach out to customers on social media and our website to promote the HECW rebate program.
    - There were 14 smart irrigation controllers installed for customers in October, and 110 smart irrigation controllers have been installed year to date. In addition, WaterWise completed 11 water audits for customers in October.
- Thirty-one Pressure Reducing Valve (PRV) rebates have been issued year to date, including one in October.
- Thirty-one reports of water waste were received in October, including eight reports through CHWD's Water Efficiency web page. Staff continues reaching out to customers for water waste violations and leak notifications.
- The District holds bi-monthly safety meetings. The October safety meetings covered Vacuum Excavation and Extension Cord Safety.
- As the 2021 WaterSmart classes are now complete, staff is planning the 2022 schedule.

  The 2021 classes are archived on CHWD's website and on YouTube, where they can be viewed any time.
- CHWD has three garden plots at the Sylvan Ranch Community Garden featuring water efficient landscaping. CHWD is working with a customer based volunteer "Garden Corps" who maintains the plots by removing weeds and checking the irrigation system and controller timers.

- The following table summarizes the Residential Gallons Per Capita Per Day (R-GPCD) values for CHWD to date for 2021:

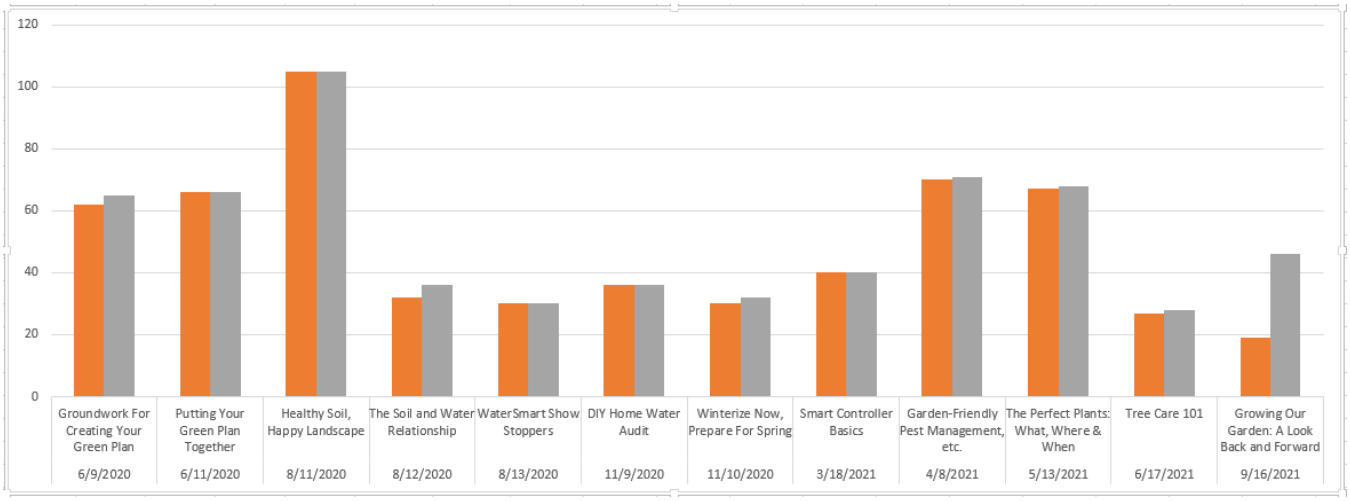
Month	R-GPCD 2020	R-GPCD 2021	% CHANGE
January	76	84	+10.5%
February	92	78	-15.2%
March	95	88	-7.3%
April	116	135	+16.3%
May	170	169	-0.7%
June	222	172	-22.4%
July	245	230	-6.3%
August	242	187	-23%
September	208	178	-14%
October	147	118	-20%

The following table summarizes the service requests and work orders of Water Efficiency staff for October 2021:

WORK ORDERS	Oct. 2021	Oct. 2020
CHANGE TOUCH-READ TO RADIO READ	**1**	**1**
CONVERT TO RADIO-READ METER	**1**	**11**
METER BOX MAINTENANCE	**3**	**3**
METER REPAIR	**0**	**1**
METER REPLACEMENT	**0**	**2**
METER TESTING	**0**	**0**
REGISTER REPLACEMENT	**30**	**10**
RADIO-READ REGISTER REPLACEMENT	**18**	**0**
INSTALL METER	**20**	**0**
TOTAL	**73**	**28**

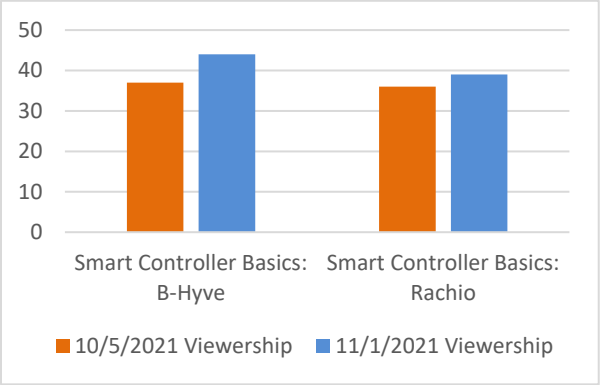
SERVICE REQUESTS	Oct. 2021	Oct. 2020
CONSERVATION REQUEST	**31**	**19**
CHECK FOR LEAK	**2**	**0**
UNABLE TO OBTAIN METER READ	**52**	**50**
TRIM SHRUBS	**19**	**16**
METER BURIED	**34**	**16**
METER MAINTENANCE	**33**	**17**
LOCKED GATE	**3**	**4**
RE-READ METER	**35**	**10**
READ METER	**4**	**1**
METER BOX MAINTENANCE	**3**	**1**
MOVE-IN/MOVE-OUT	**18**	**27**
CAR OVER METER	**9**	**10**
TOTAL	**243**	**171**

WaterSmart Class Viewership



= Viewership, October 5, 2021
= Viewership, November 1, 2021

Standalone Video Viewership: Smart Controller Basics (published March 18, 2021)



CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 REGULAR MEETING

SUBJECT	: DISCUSSION AND POSSIBLE ACTION TO EXTEND RESOLUTION 07-2021 AUTHORIZING REMOTE PUBLIC MEETINGS
STATUS	: Action Item
REPORT DATE	: November 08, 2021
PREPARED BY	: Brittney Moore, Senior Management Analyst Joshua Nelson, Assistant General Counsel

OBJECTIVE:
Consider extending Resolution 07-2021 to permit future hybrid remote public meetings by the Board of Directors.

BACKGROUND AND ANALYSIS:
On September 16, 2021, the Governor signed AB 361, which allows legislative bodies to meet virtually provided there is a state of emergency, and either (1) state or local officials have imposed or recommended measures to promote social distancing; or (2) the legislative body determines by majority vote that meeting in person would present imminent risks to the health and safety of attendees.

On October 20, 2021 CHWD Board of Directors adopted Resolution 07-2021 to permit future hybrid remote public meetings by the Board of Directors consistent with the requirements of AB 361.

In order to continue to qualify for AB 361's waiver of in-person meeting requirements, the Board must, within thirty (30) days of its first meeting under AB 361, and every thirty (30) days thereafter, make findings that (a) state or local officials continue to recommend measures to promote social distancing, or that (b) an in-person meeting would constitute an imminent risk to the safety of attendees. The findings need not be in the form of a resolution but a resolution is helpful in formalizing these findings.

Because the Board meets regularly on the third Wednesday of each month, it is possible that more than thirty days may elapse between consecutive meetings. AB 361 is silent as to whether special meetings are required on a more frequent basis to keep up with the thirty-day renewal of findings requirement, although scheduling such meetings would ensure strict compliance. Alternatively, if the Board does not meet within thirty days after its prior meeting, the Board should make its renewed findings at the beginning of its next meeting prior to any other action or discussion. If the Board wishes to continue meetings remotely, staff recommends the Board extend Resolution 07-2021 by motion, and continuously consider this Resolution as a monthly consent calendar item while there is a declared state of emergency, or until state and local orders aimed at containing the COVID-19 virus are rescinded.

RECOMMENDATION:

Extend Resolution 07-2021 to permit future hybrid remote public meetings by the Board of Directors.

ATTACHMENT:

Resolution No. 07-2021 Resolution of the Board of Directors of the Citrus Heights Water District Authorizing Remote Public Meeting

ACTION:

Moved by Director _____, Seconded by Director _____, Carried _____

CITRUS HEIGHTS WATER DISTRICT
RESOLUTION NO. 07-2021

RESOLUTION OF THE BOARD OF DIRECTORS
OF CITRUS HEIGHTS WATER DISTRICT
AUTHORIZING REMOTE PUBLIC MEETINGS

WHEREAS, CITRUS HEIGHTS WATER DISTRICT ("CHWD") is committed to preserving and nurturing public access and participation in meetings of the Board of Directors; and

WHEREAS, all meetings of CHWD's legislative bodies are open and public, as required by the Ralph M. Brown Act (Cal. Gov. Code 54950 – 54963), so that any member of the public may attend and participate in CHWD's meetings; and

WHEREAS, starting in March 2020, in response to the spread of COVID-19 in the State of California, the Governor issued a number of executive orders aimed at containing the COVID-19 virus; and

WHEREAS, among other things, these orders waived certain requirements of the Brown Act to allow legislative bodies to meet virtually; and

WHEREAS, pursuant to the Governor's executive orders, CHWD has been permitting virtual participation in meetings during the pandemic in the interest of protecting the health and safety of the public, staff, and Directors; and

WHEREAS, the Governor's executive order related to the suspension of certain provisions of the Brown Act expired on September 30, 2021; and

WHEREAS, on September 16, 2021 the Governor signed AB 361 (in effect as of October 1, 2021 – Government Code Section 54953(e)), which allows legislative bodies to meet virtually provided there is a state of emergency, and either (1) state or local officials have imposed or recommended measures to promote social distancing; or (2) the legislative body determines by majority vote that meeting in person would present imminent risks to the health and safety of attendees; and

WHEREAS, such conditions now exist in CHWD, specifically, a state of emergency has been proclaimed related to COVID-19, State and Sacramento County officials are recommending measures to promote social distancing, and because of the ongoing threat of COVID-19, meeting in person would present imminent risks to the health and safety of attendees;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE CITRUS HEIGHTS WATER DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. Recitals. The Recitals set forth above are true and correct and are incorporated into this Resolution by this reference.

Section 2. Remote Teleconference Meetings: Consistent with the provisions of Government Code Section 54953(e), the Board of Directors finds and determines that (1) a state of emergency related to COVID-19 is currently in effect; (2) state and local officials in Sacramento County have recommended measures to promote social distancing in connection with COVID-19, including indoor mask recommendations and minimum recommend distance between attendees; and (3) due to the COVID-19 emergency, the transfer of novel coronavirus from person-to-person, and the associated risk of serious illness or death from COVID-19, meeting in person would present imminent risks to the health and safety of attendees. Based on such facts, findings and determinations, the Board authorizes staff to conduct remote teleconference meetings of the Board of Directors and other CHWD legislatives bodies under the provisions of Government Code Section 54953(e).

Section 3. Effective Date of Resolution. This Resolution shall take effect October 20, 2021, and shall be effective for 30 days or until this Resolution is extended by a majority vote of the Board of Directors in accordance with Section 4 of this Resolution.

Section 4. Extension by Motion. The Board of Directors may extend the application of this Resolution by motion and majority vote by up to thirty days at a time, provided that it makes all necessary findings consistent with and pursuant to the requirements of Section 54953(e)(3).

PASSED, APPROVED, AND ADOPTED this 20th day of October, 2021.

AYES:
NOES:
ABSENT:
ABSTAINED:

CITRUS HEIGHTS WATER DISTRICT ORGANIZED OCT 26 1920 SACRAMENTO COUNTY

David C. Wheaton, President

ATTEST:

Brittney Moore, Deputy Board Clerk

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 REGULAR MEETING

SUBJECT	: CONSIDERATION OF AN AGREEMENT WITH WATER SYSTEMS CONSULTING, INC. FOR DESIGN, TESTING, AND CONSTRUCTION MANAGEMENT SERVICES FOR THE ELLA WAY WELL PROJECT
STATUS	: Action Item
REPORT DATE	: October 28, 2021
PREPARED BY	: Brian Hensley, Water Resources Supervisor Rebecca Scott, Director of Operations

OBJECTIVE:
Consider approval of an agreement with Water Systems Consulting, Inc. (WSC) for Design, Testing, and Construction Management Services for the Ella Way Well Project

BACKGROUND AND ANALYSIS:
The District recently purchased property at Ella Way (.52 Acres) to install a new groundwater well as part of its 2022 Strategic Plan, which included an objective to complete the design for well site #7. In 2017, the District drilled and abandoned a test hole at the project site. The test drilling determined there would be adequate water available for a groundwater well. The District has completed the environmental review for this project including an Initial Study/Mitigated Negative Declaration, Mitigation Monitoring and Reporting Program, Phase 1 Environmental Site Assessment, and Preliminary Drinking Water Source Assessment. The project has been awarded $1.1 million in Integrated Regional Water Management Grant funds for construction with an approximate completion date in late 2023. An additional $585,000 Congressionally Directed spending appropriation request is included in the proposed 2021-2022 Federal budget, currently pending before Congress.

On August 31, 2021, the District issued a Request for Proposals for Design, Testing, and Construction Management Services for the Ella Way Well Project to local engineering firms known to have expertise in this field.

The scope of work for the project includes the following items:

Phase 1: Well Drilling

Task 1 - Prepare a complete set of construction specifications and bid package for drilling a new groundwater well.

Task 2 - Provide Construction Management and oversight of testing and development of the new well.

Phase 2: Design and Construction Management of Surface Facilities

Task 1 - Complete a set of improvement plans for equipping the newly constructed well and a complete set of written construction specifications for equipping the well and all above-ground appurtenances.

Task 2 - Provide Construction Management, Inspection, and oversight of Testing of equipping of surface facilities.

The District conducted a mandatory pre-proposal meeting at the Ella Way Well site on September 14, 2021. Three consulting firms attended the meeting.

On October 7, 2021, the District received two (2) responsive proposals from the following firms: WSC, Inc. and Wood Rogers, Inc.

Based on the project scope, the quotes received are as follows:

Engineering Firm	Amount
WSC, Inc.	**$644,898**
Wood Rogers, Inc.	$1,297,705

The District met with the proposers on October 21, 2021, to address staff questions on scope items requiring clarification.

Based on the review of the proposals and interviews, District staff selected WSC, Inc. based on their knowledge of the project, their qualifications in groundwater well construction, and overall proposed cost.

Based on the final project scope, WSC's fee is $644,898. The District recommends including a 10% contingency fund of $64,490 for a total Project cost of $709,388. There are sufficient funds within the Water Supply Reserve for this Project.

The Professional Services Agreement including WSC, Inc.'s scope, fee, and schedule is attached.

RECOMMENDATION:
Approved the Professional Services Agreement with Water Systems Consulting, Inc., for the Design, Testing, and Construction Management Services for the Ella Way Well Project, authorize the General Manager to execute the agreement, and approve a 10% contingency fund.

ATTACHMENT:
Professional Services Agreement for the Design, Testing, and Construction Management Services for the Ella Way Well Project

ACTION:

Moved by Director _____, Seconded by Director _____, Carried _____

CITRUS HEIGHTS WATER DISTRICT
PROFESSIONAL SERVICES AGREEMENT

This Agreement is made and entered into as of _____, 20____ by and between the Citrus Heights Water District, an irrigation district organized and operating under the laws of the State of California with its principal place of business at 6230 Sylvan Road, Citrus Heights, California ("District"), and Water Systems Consulting, Inc., a California corporation with its principal place of business at 2330 East Bidwell Street, Suite 110, Folsom, CA (hereinafter referred to as "Consultant"). District and Consultant are sometimes individually referred to as "Party" and collectively as "Parties" in this Agreement.

RECITALS

A. District is a public agency of the State of California and is in need of professional services for the following project:

Ella Way Well Project (hereinafter referred to as "the Project").

B. Consultant is duly licensed and has the necessary qualifications to provide such services.

C. The Parties desire by this Agreement to establish the terms for District to retain Consultant to provide the services described herein.

AGREEMENT

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

1. Services.

Consultant shall provide the District with the services described in the Scope of Services attached hereto as Exhibit "A."

2. Compensation.

a. Subject to paragraph 2(b) below, the District shall pay for such services in accordance with the Schedule of Charges set forth in Exhibit "B."

b. In no event shall the total amount paid for services rendered by Consultant under this Agreement exceed the sum of $644,898.00. This amount is to cover all printing and related costs, and the District will not pay any additional fees for printing expenses. Periodic payments shall be made within 45 days of receipt of an invoice which includes a detailed description of the work performed. Payments to Consultant for work performed will be made on a monthly billing basis.

3. Additional Work.

If changes in the work seem merited by Consultant or the District, and informal consultations with the other party indicate that a change is warranted, it shall be processed in the following manner: a letter outlining the changes shall be forwarded to the District by Consultant with a statement of estimated changes in fee or time schedule. An amendment to this Agreement shall be prepared by the District and executed by both Parties before performance of such services, or the District will not be required to pay for the changes in the scope of work. Such amendment shall not render ineffective or invalidate unaffected portions of this Agreement.

4. Maintenance of Records.

Books, documents, papers, accounting records, and other evidence pertaining to costs incurred shall be maintained by Consultant and made available at all reasonable times during the contract period and for four (4) years from the date of final payment under the contract for inspection by District.

5. Time of Performance.

Consultant shall perform its services in a prompt and timely manner and shall commence performance upon receipt of written notice from the District to proceed ("Notice to Proceed"). Consultant shall complete the services required hereunder within Exhibit C. The Notice to Proceed shall set forth the date of commencement of work.

6. Delays in Performance.

a. Neither District nor Consultant shall be considered in default of this Agreement for delays in performance caused by circumstances beyond the reasonable control of the non-performing party. For purposes of this Agreement, such circumstances include but are not limited to, abnormal weather conditions; floods; earthquakes; fire; epidemics; war; riots and other civil disturbances; strikes, lockouts, work slowdowns, and other labor disturbances; sabotage or judicial restraint.

b. Should such circumstances occur, the non-performing party shall, within a reasonable time of being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of this Agreement.

7. Compliance with Law.

a. Consultant shall comply with all applicable laws, ordinances, codes and regulations of the federal, state and local government, including Cal/OSHA requirements.

b. If required, Consultant shall assist the District, as requested, in obtaining and maintaining all permits required of Consultant by federal, state and local regulatory agencies.

c. If applicable, Consultant is responsible for all costs of clean up and/ or removal of hazardous and toxic substances spilled as a result of his or her services or operations performed under this Agreement.

8. Standard of Care

Consultant's services will be performed in accordance with generally accepted professional practices and principles and in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions.

9. Assignment and Subconsultant

Consultant shall not assign, sublet, or transfer this Agreement or any rights under or interest in this Agreement without the written consent of the District, which may be withheld for any reason. Any attempt to so assign or so transfer without such consent shall be void and without legal effect and shall constitute grounds for termination. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement. Nothing contained herein shall prevent Consultant from employing independent associates, and subconsultants as Consultant may deem appropriate to assist in the performance of services hereunder.

10. Independent Consultant

Consultant is retained as an independent contractor and is not an employee of District. No employee or agent of Consultant shall become an employee of District. The work to be performed shall be in accordance with the work described in this Agreement, subject to such directions and amendments from District as herein provided.

11. Insurance. Consultant shall not commence work for the District until it has provided evidence satisfactory to the District it has secured all insurance required under this section. In addition, Consultant shall not allow any subcontractor to commence work on any subcontract until it has secured all insurance required under this section.

a. Commercial General Liability

(i) The Consultant shall take out and maintain, during the performance of all work under this Agreement, in amounts not less than specified herein, Commercial General Liability Insurance, in a form and with insurance companies acceptable to the District.

(ii) Coverage for Commercial General Liability insurance shall be at least as broad as the following:

(1) Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 00 01) or exact equivalent.

(iii) Commercial General Liability Insurance must include coverage for the following:

(1) Bodily Injury and Property Damage
(2) Personal Injury/Advertising Injury
(3) Premises/Operations Liability
(4) Products/Completed Operations Liability
(5) Aggregate Limits that Apply per Project

(6) Explosion, Collapse and Underground (UCX) exclusion deleted
(7) Contractual Liability with respect to this Contract
(8) Broad Form Property Damage

(iv) The policy shall contain no endorsements or provisions limiting coverage for (1) contractual liability; (2) cross liability exclusion for claims or suits by one insured against another; (3) products/completed operations liability; or (4) contain any other exclusion contrary to the Agreement.

(v) The policy shall give District, its officials, officers, employees, agents and District designated volunteers additional insured status using ISO endorsement forms CG 20 10 10 01 and 20 37 10 01, or endorsements providing the exact same coverage.

(vi) The general liability program may utilize either deductibles or provide coverage excess of a self-insured retention, subject to written approval by the District, and provided that such deductibles shall not apply to the District as an additional insured.

b. Automobile Liability

(i) At all times during the performance of the work under this Agreement, the Consultant shall maintain Automobile Liability Insurance for bodily injury and property damage including coverage for owned, non-owned and hired vehicles, in a form and with insurance companies acceptable to the District.

(ii) Coverage for automobile liability insurance shall be at least as broad as Insurance Services Office Form Number CA 00 01 covering automobile liability (Coverage Symbol 1, any auto).

(iii) The policy shall give District, its officials, officers, employees, agents and District designated volunteers additional insured status.

(iv) Subject to written approval by the District, the automobile liability program may utilize deductibles, provided that such deductibles shall not apply to the District as an additional insured, but not a self-insured retention.

c. Workers' Compensation/Employer's Liability

(i) Consultant certifies that he/she is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and he/she will comply with such provisions before commencing work under this Agreement.

(ii) To the extent Consultant has employees at any time during the term of this Agreement, at all times during the performance of the work under this Agreement, the Consultant shall maintain full compensation insurance for all persons employed directly by him/her to carry out the work contemplated under this Agreement, all in accordance with the

"Workers' Compensation and Insurance Act," Division IV of the Labor Code of the State of California and any acts amendatory thereof, and Employer's Liability Coverage in amounts indicated herein. Consultant shall require all subconsultants to obtain and maintain, for the period required by this Agreement, workers' compensation coverage of the same type and limits as specified in this section.

d. Professional Liability (Errors and Omissions)

At all times during the performance of the work under this Agreement the Consultant shall maintain professional liability or Errors and Omissions insurance appropriate to its profession, in a form and with insurance companies acceptable to the District and in an amount indicated herein. This insurance to include contractual liability applicable to this Agreement, but may otherwise exclude (1) a claim based upon or arising out of express warranties or guarantees other than any guarantee that the Consultant's professional services conform with the generally accepted standard of care applicable to that professional service, and (2) liability of others assumed by the Consultant under any contract or agreement, other than liability for damages that the Consultant would have in the absence of such contract or agreement. This insurance shall be written on a policy form coverage specifically designed to protect against the negligent acts, errors or omissions of the Consultant. "Covered Professional Services" as designated in the policy must specifically include work performed under this Agreement. The policy must "pay on behalf of" the insured and must include a provision establishing the insurer's duty to defend.

e. Minimum Policy Limits Required

(i) The following insurance limits are required for the Agreement:

Commercial General Liability	$1,000,000 per occurrence / $2,000,000 aggregate for bodily injury, personal injury, and property damage
Automobile Liability	$1,000,000 per occurrence for bodily injury and property damage
Employer's Liability	$1,000,000 per occurrence
Professional Liability	$1,000,000 per claim and aggregate (errors and omissions)

(ii) Except for Professional Liability, defense costs shall be payable in addition to the limits.

(iii) Requirements of specific coverage or limits contained in this section are not intended as a limitation on coverage, limits, or other requirement, or a waiver of any coverage normally provided by any insurance. Any available coverage shall be provided to the parties required to be named as Additional Insured pursuant to this Agreement.

f. Evidence Required

Prior to execution of the Agreement, the Consultant shall file with the District evidence of insurance from an insurer or insurers certifying to the coverage of all insurance required herein. Such evidence shall include original copies of the ISO CG 00 01 (or insurer's equivalent) signed by the insurer's representative and Certificate of Insurance (Acord Form 25-S or equivalent), together with required endorsements. All evidence of insurance shall be signed by a properly authorized officer, agent, or qualified representative of the insurer and shall certify the names of the insured, any additional insureds, where appropriate, the type and amount of the insurance, the location and operations to which the insurance applies, and the expiration date of such insurance.

g. Policy Provisions Required

(i) Consultant shall provide the District at least thirty (30) days prior written notice of cancellation of any policy required by this Agreement, except that the Consultant shall provide at least ten (10) days prior written notice of cancellation of any such policy due to non-payment of premium. If any of the required coverage is cancelled or expires during the term of this Agreement, the Consultant shall deliver renewal certificate(s) including the General Liability Additional Insured Endorsement to the District at least ten (10) days prior to the effective date of cancellation or expiration.

(ii) The Commercial General Liability Policy and Automobile Policy shall each contain a provision stating that Consultant's policy is primary insurance and that any insurance, self-insurance or other coverage maintained by the District or any named insureds shall not be called upon to contribute to any loss.

(iii) The retroactive date (if any) of each policy is to be no later than the effective date of this Agreement. Consultant shall maintain such coverage continuously for a period of at least three years after the completion of the work under this Agreement. Consultant shall purchase a one (1) year extended reporting period A) if the retroactive date is advanced past the effective date of this Agreement; B) if the policy is cancelled or not renewed; or C) if the policy is replaced by another claims-made policy with a retroactive date subsequent to the effective date of this Agreement.

(iv) All required insurance coverages, except for the professional liability coverage, shall contain or be endorsed to waiver of subrogation in favor of the District, its officials, officers, employees, agents, and volunteers or shall specifically allow Consultant or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Consultant hereby waives its own right of recovery against District, and shall require similar written express waivers and insurance clauses from each of its subconsultants.

(v) Except for Professional Liability, the limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve the Consultant from liability in excess of such coverage, nor shall it limit the Consultant's indemnification obligations to the District and shall not preclude the District from taking such other actions available to the District under other provisions of the Agreement or law.

h. Qualifying Insurers

(i) All policies required shall be issued by acceptable insurance companies, as determined by the District, which satisfy the following minimum requirements:

(1) Each such policy shall be from a company or companies with a current A.M. Best's rating of no less than A:VII and admitted to transact in the business of insurance in the State of California, or otherwise allowed to place insurance through surplus line brokers under applicable provisions of the California Insurance Code or any federal law.

i. Additional Insurance Provisions

(i) The foregoing requirements as to the types and limits of insurance coverage to be maintained by Consultant, and any approval of said insurance by the District, is not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Consultant pursuant to this Agreement, including but not limited to, the provisions concerning indemnification.

(ii) If at any time during the life of the Agreement, any policy of insurance required under this Agreement does not comply with these specifications or is canceled and not replaced, District has the right but not the duty to obtain the insurance it deems necessary and any premium paid by District will be promptly reimbursed by Consultant or District will withhold amounts sufficient to pay premium from Consultant payments. In the alternative, District may cancel this Agreement.

(iii) The District may require the Consultant to provide complete copies of all insurance policies in effect for the duration of the Project.

(iv) Neither the District nor any of its officials, officers, employees, agents or volunteers shall be personally responsible for any liability arising under or by virtue of this Agreement.

j. Subconsultant Insurance Requirements. Consultant shall not allow any subcontractors or subconsultants to commence work on any subcontract until they have provided evidence satisfactory to the District that they have secured all insurance required under this section. Policies of commercial general liability insurance provided by such subcontractors or subconsultants shall be endorsed to name the District as an additional insured using ISO form CG 20 38 04 13 or an endorsement providing the exact same coverage. If requested by Consultant, District may approve different scopes or minimum limits of insurance for particular subcontractors or subconsultants.

12. Indemnification.

a. To the fullest extent permitted by law, Consultant shall defend (with counsel reasonably approved by the District), indemnify and hold the District, its officials, officers, employees, agents and volunteers free and harmless from any and all claims, demands, causes of action, suits, actions, proceedings, costs, expenses, liability, judgments, awards, decrees,

settlements, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, (collectively, "Claims", and individually, a "Claim") to the extent arising out of, pertaining to, or incident to any alleged acts, errors or omissions, or willful misconduct of Consultant, its officials, officers, employees, subcontractors, consultants or agents in connection with the performance of the Consultant's services, the Project or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys' fees and other related costs and expenses. Notwithstanding the foregoing, to the extent Consultant's services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to Claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant. Consultant's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the District, its officials, officers, employees, agents or volunteers. Solely to the extent that a Claim is covered by a professional liability policy Consultant carries, and without narrowing or otherwise limiting Consultant's obligation to defend, indemnify, and hold harmless in connection with Claims not covered by a professional liability policy Consultant carries, Consultant agrees to reimburse District for reasonable defense costs, provided however that such obligation is limited to the portion of such costs equal to the percentage of Consultant's liability as ultimately determined to be caused by the negligence, recklessness, or willful misconduct e of Consultant.

13. California Labor Code Requirements.

a. Consultant is aware of the requirements of California Labor Code Sections 1720 et seq. and 1770 et seq., which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. If the services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and if the total compensation is $1,000 or more, Consultant agrees to fully comply with such Prevailing Wage Laws, if applicable. Consultant shall defend, indemnify and hold the District, its officials, officers, employees and agents free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure to comply with the Prevailing Wage Laws. It shall be mandatory upon the Consultant and all subconsultants to comply with all California Labor Code provisions, which include but are not limited to prevailing wages, employment of apprentices, hours of labor and debarment of contractors and subcontractors. It shall be mandatory upon the Consultant and all subconsultants to comply with all California Labor Code provisions, which include but are not limited to prevailing wages (Labor Code Sections 1771, 1774 and 1775), employment of apprentices (Labor Code Section 1777.5), certified payroll records (Labor Code Section 1776), hours of labor (Labor Code Sections 1813 and 1815) and debarment of contractors and subcontractors (Labor Code Sections 1777.1).

b. If the services are being performed as part of an applicable "public works" or "maintenance" project, then pursuant to Labor Code Sections 1725.5 and 1771.1, the Consultant and all subconsultants performing such Services must be registered with the Department of Industrial Relations. Consultant shall maintain registration for the duration of the Project and require the same of any subconsultants, as applicable. This Project may also be subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be Consultant's sole responsibility to comply with all applicable registration and labor compliance requirements.

14. Verification of Employment Eligibility.

By executing this Agreement, Consultant verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time, and shall require all subconsultants and sub-subconsultants to comply with the same.

15. Laws and Venue.

This Agreement shall be interpreted in accordance with the laws of the State of California. If any action is brought to interpret or enforce any term of this Agreement, the action shall be brought in a state or federal court situated in the County of Sacramento, State of California.

16. Termination or Abandonment

a. District has the right to terminate or abandon any portion or all of the work under this Agreement by giving ten (10) calendar days written notice to Consultant. In such event, District shall be immediately given title and possession to all original field notes, drawings and specifications, written reports and other documents produced or developed for that portion of the work completed and/or being abandoned. District shall pay Consultant the reasonable value of services rendered for any portion of the work completed prior to termination. If said termination occurs prior to completion of any task for the Project for which a payment request has not been received, the charge for services performed during such task shall be the reasonable value of such services, based on an amount mutually agreed to by District and Consultant of the portion of such task completed but not paid prior to said termination. District shall not be liable for any costs other than the charges or portions thereof which are specified herein. Consultant shall not be entitled to payment for unperformed services, and shall not be entitled to damages or compensation for termination of work.

b. Consultant may terminate its obligation to provide further services under this Agreement upon thirty (30) calendar days' written notice to District only in the event of substantial failure by District to perform in accordance with the terms of this Agreement through no fault of Consultant.

17. Documents. Except as otherwise provided in "Termination or Abandonment," above, all original field notes, written reports, drawings and specifications and other documents, produced or developed for the Project ("Documents & Data") shall, upon payment in full for the services described in this Agreement, be furnished to and become the property of the District. Nothing contained in this Section shall be construed as limiting or depriving Consultant of its rights to use its basic knowledge and skills to carry out other projects or work for itself or others, whether or not such other projects or work are similar to the work to be performed pursuant to this Agreement. Consultant shall have the right to retain and use copies of any Documents & Data furnished or to be furnished by Consultant less any specific details provided by the District unless such details are within the public realm. All Documents & Data are instruments of service and are not intended to be modified or represented to be suitable for reuse on other projects by District except as may be contemplated pursuant to the terms of this Agreement. Any such modification

or reuse without Consultant's prior written approval will be at District's sole risk, without liability or legal exposure to Consultant. Rights to intellectual property developed, utilized, or modified in the performance of the services under this Agreement including the Documents & Data developed hereunder ("Intellectual Property") shall remain the property of Consultant. Consultant hereby grants to District an irrevocable, nonexclusive, royalty-free license to utilize Intellectual Property provided to District as part of the Services for the purposes set forth in this Agreement.

18. Organization

Consultant shall assign Jeff Lawrence, P.E. as Project Manager. The Project Manager shall not be removed from the Project or reassigned without the prior written consent of the District.

19. Limitation of Agreement.

This Agreement is limited to and includes only the work included in the Project described above.

20. Notice

Any notice or instrument required to be given or delivered by this Agreement may be given or delivered by depositing the same in any United States Post Office, certified mail, return receipt requested, postage prepaid, addressed to:

DISTRICT:	CONSULTANT:
Citrus Heights Water District	Water Systems Consulting, Inc.
6230 Sylvan Road	2330 East Bidwell Street
Citrus Heights, California 95610	Suite 110, Folsom, CA, 95630
Attn: Hilary M. Straus	Attn: Jeff Lawrence
General Manager	Project Manager

and shall be effective upon receipt thereof.

21. Third Party Rights

Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than the District and the Consultant.

22. Equal Opportunity Employment.

Consultant represents that it is an equal opportunity employer and that it shall not discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, sex, age or other interests protected by the State or Federal Constitutions. Such non-discrimination shall include, but not be limited to, all activities related to initial employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination.

23. Entire Agreement

This Agreement, with its exhibits, represents the entire understanding of District and Consultant as to those matters contained herein, and supersedes and cancels any prior or contemporaneous oral or written understanding, promises or representations with respect to those matters covered hereunder. Each party acknowledges that no representations, inducements, promises or agreements have been made by any person which are not incorporated herein, and that any other agreements shall be void. This Agreement may not be modified or altered except in writing signed by both Parties hereto. This is an integrated Agreement.

24. Severability

The unenforceability, invalidity or illegality of any provision(s) of this Agreement shall not render the provisions unenforceable, invalid or illegal.

25. Successors and Assigns

This Agreement shall be binding upon and shall inure to the benefit of the successors in interest, executors, administrators and assigns of each party to this Agreement. However, Consultant shall not assign or transfer by operation of law or otherwise any or all of its rights, burdens, duties or obligations without the prior written consent of District. Any attempted assignment without such consent shall be invalid and void.

26. Non-Waiver

None of the provisions of this Agreement shall be considered waived by either party, unless such waiver is specifically specified in writing.

27. Time of Essence

Time is of the essence for each and every provision of this Agreement.

28. District's Right to Employ Other Consultants

District reserves its right to employ other consultants, including engineers, in connection with this Project or other projects.

29. Prohibited Interests

Consultant maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement. Further, Consultant warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, District shall have the right to rescind this Agreement without liability. For the term of this Agreement, no director, official, officer or employee of District, during the term of his or her service with District, shall have any

direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

[SIGNATURES ON FOLLOWING PAGE]

SIGNATURE PAGE FOR PROFESSIONAL SERVICES AGREEMENT BETWEEN THE CITRUS HEIGHTS WATER DISTRICT AND WATER SYSTEMS CONSULTING, INC.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first written above.

CITRUS HEIGHTS WATER DISTRICT	WATER SYSTEMS CONSULTING, INC.
By: _____	By: _____
Hilary M. Straus	
General Manager	Its: _____
	Printed Name:_____
	Federal ID No. _____
	Business License Number _____ (City of _____)

EXHIBIT A

Scope of Services

CITRUS HEIGHTS WATER DISTRICT
PROFESSIONAL SERVICES AGREEMENT

This Agreement is made and entered into as of _____, 20____ by and between the Citrus Heights Water District, an irrigation district organized and operating under the laws of the State of California with its principal place of business at 6230 Sylvan Road, Citrus Heights, California ("District"), and Water Systems Consulting, Inc., a Corporation with its principal place of business at 2330 East Bidwell Street, Suite 110, Folsom, CA (hereinafter referred to as "Consultant"). District and Consultant are sometimes individually referred to as "Party" and collectively as "Parties" in this Agreement.

RECITALS

A. District is a public agency of the State of California and is in need of professional services for the following project:

Ella Way Well Project (hereinafter referred to as "the Project").

B. Consultant is duly licensed and has the necessary qualifications to provide such services.

C. The Parties desire by this Agreement to establish the terms for District to retain Consultant to provide the services described herein.

AGREEMENT

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

1. Services.

Consultant shall provide the District with the services described in the Scope of Services attached hereto as Exhibit "A."

2. Compensation.

a. Subject to paragraph 2(b) below, the District shall pay for such services in accordance with the Schedule of Charges set forth in Exhibit "B."

b. In no event shall the total amount paid for services rendered by Consultant under this Agreement exceed the sum of $644,898.00. This amount is to cover all printing and related costs, and the District will not pay any additional fees for printing expenses. Periodic payments shall be made within 45 days of receipt of an invoice which includes a detailed description of the work performed. Payments to Consultant for work performed will be made on a monthly billing basis.

3. Additional Work.

If changes in the work seem merited by Consultant or the District, and informal consultations with the other party indicate that a change is warranted, it shall be processed in the following manner: a letter outlining the changes shall be forwarded to the District by Consultant with a statement of estimated changes in fee or time schedule. An amendment to this Agreement shall be prepared by the District and executed by both Parties before performance of such services, or the District will not be required to pay for the changes in the scope of work. Such amendment shall not render ineffective or invalidate unaffected portions of this Agreement.

4. Maintenance of Records.

Books, documents, papers, accounting records, and other evidence pertaining to costs incurred shall be maintained by Consultant and made available at all reasonable times during the contract period and for four (4) years from the date of final payment under the contract for inspection by District.

5. Time of Performance.

Consultant shall perform its services in a prompt and timely manner and shall commence performance upon receipt of written notice from the District to proceed ("Notice to Proceed"). Consultant shall complete the services required hereunder within Exhibit C. The Notice to Proceed shall set forth the date of commencement of work.

6. Delays in Performance.

a. Neither District nor Consultant shall be considered in default of this Agreement for delays in performance caused by circumstances beyond the reasonable control of the non-performing party. For purposes of this Agreement, such circumstances include but are not limited to, abnormal weather conditions; floods; earthquakes; fire; epidemics; war; riots and other civil disturbances; strikes, lockouts, work slowdowns, and other labor disturbances; sabotage or judicial restraint.

b. Should such circumstances occur, the non-performing party shall, within a reasonable time of being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of this Agreement.

7. Compliance with Law.

a. Consultant shall comply with all applicable laws, ordinances, codes and regulations of the federal, state and local government, including Cal/OSHA requirements.

b. If required, Consultant shall assist the District, as requested, in obtaining and maintaining all permits required of Consultant by federal, state and local regulatory agencies.

c. If applicable, Consultant is responsible for all costs of clean up and/ or removal of hazardous and toxic substances spilled as a result of his or her services or operations performed under this Agreement.

8. Standard of Care

Consultant's services will be performed in accordance with generally accepted professional practices and principles and in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions.

9. Assignment and Subconsultant

Consultant shall not assign, sublet, or transfer this Agreement or any rights under or interest in this Agreement without the written consent of the District, which may be withheld for any reason. Any attempt to so assign or so transfer without such consent shall be void and without legal effect and shall constitute grounds for termination. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement. Nothing contained herein shall prevent Consultant from employing independent associates, and subconsultants as Consultant may deem appropriate to assist in the performance of services hereunder.

10. Independent Consultant

Consultant is retained as an independent contractor and is not an employee of District. No employee or agent of Consultant shall become an employee of District. The work to be performed shall be in accordance with the work described in this Agreement, subject to such directions and amendments from District as herein provided.

11. Insurance. Consultant shall not commence work for the District until it has provided evidence satisfactory to the District it has secured all insurance required under this section. In addition, Consultant shall not allow any subcontractor to commence work on any subcontract until it has secured all insurance required under this section.

a. Commercial General Liability

(i) The Consultant shall take out and maintain, during the performance of all work under this Agreement, in amounts not less than specified herein, Commercial General Liability Insurance, in a form and with insurance companies acceptable to the District.

(ii) Coverage for Commercial General Liability insurance shall be at least as broad as the following:

(1) Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 00 01) or exact equivalent.

(iii) Commercial General Liability Insurance must include coverage for the following:

(1) Bodily Injury and Property Damage

(2) Personal Injury/Advertising Injury
(3) Premises/Operations Liability
(4) Products/Completed Operations Liability
(5) Aggregate Limits that Apply per Project
(6) Explosion, Collapse and Underground (UCX) exclusion deleted
(7) Contractual Liability with respect to this Contract
(8) Broad Form Property Damage
(9) Independent Consultants Coverage

(iv) The policy shall contain no endorsements or provisions limiting coverage for (1) contractual liability; (2) cross liability exclusion for claims or suits by one insured against another; (3) products/completed operations liability; or (4) contain any other exclusion contrary to the Agreement.

(v) The policy shall give District, its officials, officers, employees, agents and District designated volunteers additional insured status using ISO endorsement forms CG 20 10 10 01 and 20 37 10 01, or endorsements providing the exact same coverage.

(vi) The general liability program may utilize either deductibles or provide coverage excess of a self-insured retention, subject to written approval by the District, and provided that such deductibles shall not apply to the District as an additional insured.

b. Automobile Liability

(i) At all times during the performance of the work under this Agreement, the Consultant shall maintain Automobile Liability Insurance for bodily injury and property damage including coverage for owned, non-owned and hired vehicles, in a form and with insurance companies acceptable to the District.

(ii) Coverage for automobile liability insurance shall be at least as broad as Insurance Services Office Form Number CA 00 01 covering automobile liability (Coverage Symbol 1, any auto).

(iii) The policy shall give District, its officials, officers, employees, agents and District designated volunteers additional insured status.

(iv) Subject to written approval by the District, the automobile liability program may utilize deductibles, provided that such deductibles shall not apply to the District as an additional insured, but not a self-insured retention.

c. Workers' Compensation/Employer's Liability

(i) Consultant certifies that he/she is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and he/she will comply with such provisions before commencing work under this Agreement.

(ii) To the extent Consultant has employees at any time during the term of this Agreement, at all times during the performance of the work under this Agreement, the Consultant shall maintain full compensation insurance for all persons employed directly by him/her to carry out the work contemplated under this Agreement, all in accordance with the "Workers' Compensation and Insurance Act," Division IV of the Labor Code of the State of California and any acts amendatory thereof, and Employer's Liability Coverage in amounts indicated herein. Consultant shall require all subconsultants to obtain and maintain, for the period required by this Agreement, workers' compensation coverage of the same type and limits as specified in this section.

d. Professional Liability (Errors and Omissions)

At all times during the performance of the work under this Agreement the Consultant shall maintain professional liability or Errors and Omissions insurance appropriate to its profession, in a form and with insurance companies acceptable to the District and in an amount indicated herein. This insurance shall be endorsed to include contractual liability applicable to this Agreement and shall be written on a policy form coverage specifically designed to protect against acts, errors or omissions of the Consultant. "Covered Professional Services" as designated in the policy must specifically include work performed under this Agreement. The policy must "pay on behalf of" the insured and must include a provision establishing the insurer's duty to defend.

e. Minimum Policy Limits Required

(i) The following insurance limits are required for the Agreement:

	Combined Single Limit
Commercial General Liability	$1,000,000 per occurrence / $2,000,000 aggregate for bodily injury, personal injury, and property damage
Automobile Liability	$1,000,000 per occurrence for bodily injury and property damage
Employer's Liability	$1,000,000 per occurrence
Professional Liability	$1,000,000 per claim and aggregate (errors and omissions)

(ii) Defense costs shall be payable in addition to the limits.

(iii) Requirements of specific coverage or limits contained in this section are not intended as a limitation on coverage, limits, or other requirement, or a waiver of any coverage normally provided by any insurance. Any available coverage shall be provided to the parties required to be named as Additional Insured pursuant to this Agreement.

f. Evidence Required

Prior to execution of the Agreement, the Consultant shall file with the District evidence of insurance from an insurer or insurers certifying to the coverage of all insurance required herein. Such evidence shall include original copies of the ISO CG 00 01 (or insurer's equivalent) signed by the insurer's representative and Certificate of Insurance (Acord Form 25-S or equivalent), together with required endorsements. All evidence of insurance shall be signed by a properly authorized officer, agent, or qualified representative of the insurer and shall certify the names of the insured, any additional insureds, where appropriate, the type and amount of the insurance, the location and operations to which the insurance applies, and the expiration date of such insurance.

g. Policy Provisions Required

(i) Consultant shall provide the District at least thirty (30) days prior written notice of cancellation of any policy required by this Agreement, except that the Consultant shall provide at least ten (10) days prior written notice of cancellation of any such policy due to non-payment of premium. If any of the required coverage is cancelled or expires during the term of this Agreement, the Consultant shall deliver renewal certificate(s) including the General Liability Additional Insured Endorsement to the District at least ten (10) days prior to the effective date of cancellation or expiration.

(ii) The Commercial General Liability Policy and Automobile Policy shall each contain a provision stating that Consultant's policy is primary insurance and that any insurance, self-insurance or other coverage maintained by the District or any named insureds shall not be called upon to contribute to any loss.

(iii) The retroactive date (if any) of each policy is to be no later than the effective date of this Agreement. Consultant shall maintain such coverage continuously for a period of at least three years after the completion of the work under this Agreement. Consultant shall purchase a one (1) year extended reporting period A) if the retroactive date is advanced past the effective date of this Agreement; B) if the policy is cancelled or not renewed; or C) if the policy is replaced by another claims-made policy with a retroactive date subsequent to the effective date of this Agreement.

(iv) All required insurance coverages, except for the professional liability coverage, shall contain or be endorsed to waiver of subrogation in favor of the District, its officials, officers, employees, agents, and volunteers or shall specifically allow Consultant or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Consultant hereby waives its own right of recovery against District, and shall require similar written express waivers and insurance clauses from each of its subconsultants.

(v) The limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve the Consultant from liability in excess of such coverage, nor shall it limit the Consultant's indemnification obligations to the District and shall not preclude the District from taking such other actions available to the District under other provisions of the Agreement or law.

h. Qualifying Insurers

(i) All policies required shall be issued by acceptable insurance companies, as determined by the District, which satisfy the following minimum requirements:

(1) Each such policy shall be from a company or companies with a current A.M. Best's rating of no less than A:VII and admitted to transact in the business of insurance in the State of California, or otherwise allowed to place insurance through surplus line brokers under applicable provisions of the California Insurance Code or any federal law.

i. Additional Insurance Provisions

(i) The foregoing requirements as to the types and limits of insurance coverage to be maintained by Consultant, and any approval of said insurance by the District, is not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Consultant pursuant to this Agreement, including but not limited to, the provisions concerning indemnification.

(ii) If at any time during the life of the Agreement, any policy of insurance required under this Agreement does not comply with these specifications or is canceled and not replaced, District has the right but not the duty to obtain the insurance it deems necessary and any premium paid by District will be promptly reimbursed by Consultant or District will withhold amounts sufficient to pay premium from Consultant payments. In the alternative, District may cancel this Agreement.

(iii) The District may require the Consultant to provide complete copies of all insurance policies in effect for the duration of the Project.

(iv) Neither the District nor any of its officials, officers, employees, agents or volunteers shall be personally responsible for any liability arising under or by virtue of this Agreement.

j. Subconsultant Insurance Requirements. Consultant shall not allow any subcontractors or subconsultants to commence work on any subcontract until they have provided evidence satisfactory to the District that they have secured all insurance required under this section. Policies of commercial general liability insurance provided by such subcontractors or subconsultants shall be endorsed to name the District as an additional insured using ISO form CG 20 38 04 13 or an endorsement providing the exact same coverage. If requested by Consultant, District may approve different scopes or minimum limits of insurance for particular subcontractors or subconsultants.

12. Indemnification.

a. To the fullest extent permitted by law, Consultant shall defend (with counsel reasonably approved by the District), indemnify and hold the District, its officials, officers, employees, agents and volunteers free and harmless from any and all claims, demands, causes of action, suits, actions, proceedings, costs, expenses, liability, judgments, awards, decrees,

settlements, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, (collectively, "Claims') in any manner arising out of, pertaining to, or incident to any alleged acts, errors or omissions, or willful misconduct of Consultant, its officials, officers, employees, subcontractors, consultants or agents in connection with the performance of the Consultant's services, the Project or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys' fees and other related costs and expenses. Notwithstanding the foregoing, to the extent Consultant's services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to Claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant. Consultant's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the District, its officials, officers, employees, agents or volunteers.

13. California Labor Code Requirements.

a. Consultant is aware of the requirements of California Labor Code Sections 1720 et seq. and 1770 et seq., which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. If the services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and if the total compensation is $1,000 or more, Consultant agrees to fully comply with such Prevailing Wage Laws, if applicable. Consultant shall defend, indemnify and hold the District, its officials, officers, employees and agents free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Prevailing Wage Laws. It shall be mandatory upon the Consultant and all subconsultants to comply with all California Labor Code provisions, which include but are not limited to prevailing wages, employment of apprentices, hours of labor and debarment of contractors and subcontractors. It shall be mandatory upon the Consultant and all subconsultants to comply with all California Labor Code provisions, which include but are not limited to prevailing wages (Labor Code Sections 1771, 1774 and 1775), employment of apprentices (Labor Code Section 1777.5), certified payroll records (Labor Code Section 1776), hours of labor (Labor Code Sections 1813 and 1815) and debarment of contractors and subcontractors (Labor Code Sections 1777.1).

b. If the services are being performed as part of an applicable "public works" or "maintenance" project, then pursuant to Labor Code Sections 1725.5 and 1771.1, the Consultant and all subconsultants performing such Services must be registered with the Department of Industrial Relations. Consultant shall maintain registration for the duration of the Project and require the same of any subconsultants, as applicable. This Project may also be subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be Consultant's sole responsibility to comply with all applicable registration and labor compliance requirements.

14. Verification of Employment Eligibility.

By executing this Agreement, Consultant verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented

aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time, and shall require all subconsultants and sub-subconsultants to comply with the same.

15. Laws and Venue.

This Agreement shall be interpreted in accordance with the laws of the State of California. If any action is brought to interpret or enforce any term of this Agreement, the action shall be brought in a state or federal court situated in the County of Sacramento, State of California.

16. Termination or Abandonment

a. District has the right to terminate or abandon any portion or all of the work under this Agreement by giving ten (10) calendar days written notice to Consultant. In such event, District shall be immediately given title and possession to all original field notes, drawings and specifications, written reports and other documents produced or developed for that portion of the work completed and/or being abandoned. District shall pay Consultant the reasonable value of services rendered for any portion of the work completed prior to termination. If said termination occurs prior to completion of any task for the Project for which a payment request has not been received, the charge for services performed during such task shall be the reasonable value of such services, based on an amount mutually agreed to by District and Consultant of the portion of such task completed but not paid prior to said termination. District shall not be liable for any costs other than the charges or portions thereof which are specified herein. Consultant shall not be entitled to payment for unperformed services, and shall not be entitled to damages or compensation for termination of work.

b. Consultant may terminate its obligation to provide further services under this Agreement upon thirty (30) calendar days' written notice to District only in the event of substantial failure by District to perform in accordance with the terms of this Agreement through no fault of Consultant.

17. Documents. Except as otherwise provided in "Termination or Abandonment," above, all original field notes, written reports, drawings and specifications and other documents, produced or developed for the Project ("Documents & Data") shall, upon payment in full for the services described in this Agreement, be furnished to and become the property of the District. Nothing contained in this Section shall be construed as limiting or depriving Consultant of its rights to use its basic knowledge and skills to carry out other projects or work for itself or others, whether or not such other projects or work are similar to the work to be performed pursuant to this Agreement. Consultant shall have the right to retain and use copies of any Documents & Data furnished or to be furnished by Consultant less any specific details provided by the District unless such details are within the public realm. All Documents & Data are instruments of service and are not intended to be modified or represented to be suitable for reuse on other projects by District except as may be contemplated pursuant to the terms of this Agreement. Any such modification or reuse without Consultant's prior written approval will be at District's sole risk, without liability or legal exposure to Consultant. Rights to intellectual property developed, utilized, or modified in the performance of the services under this Agreement including the Documents & Data developed hereunder ("Intellectual Property") shall remain the property of Consultant. Consultant hereby

grants to District an irrevocable, nonexclusive, royalty-free license to utilize Intellectual Property provided to District as part of the Services for the purposes set forth in this Agreement.

18. Organization

Consultant shall assign Jeff Lawrence, P.E. as Project Manager. The Project Manager shall not be removed from the Project or reassigned without the prior written consent of the District.

19. Limitation of Agreement.

This Agreement is limited to and includes only the work included in the Project described above.

20. Notice

Any notice or instrument required to be given or delivered by this Agreement may be given or delivered by depositing the same in any United States Post Office, certified mail, return receipt requested, postage prepaid, addressed to:

DISTRICT:	CONSULTANT:
Citrus Heights Water District	Water Systems Consulting, Inc.
6230 Sylvan Road	2330 East Bidwell Street
Citrus Heights, California 95610	Suite 110, Folsom, CA, 95630
Attn: Hilary M. Straus	Attn: Jeff Lawrence
General Manager	Project Manager

and shall be effective upon receipt thereof.

21. Third Party Rights

Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than the District and the Consultant.

22. Equal Opportunity Employment.

Consultant represents that it is an equal opportunity employer and that it shall not discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, sex, age or other interests protected by the State or Federal Constitutions. Such non-discrimination shall include, but not be limited to, all activities related to initial employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination.

23. Entire Agreement

This Agreement, with its exhibits, represents the entire understanding of District and Consultant as to those matters contained herein, and supersedes and cancels any prior or contemporaneous oral or written understanding, promises or representations with respect to those matters covered hereunder. Each party acknowledges that no representations, inducements, promises or agreements have been made by any person which are not incorporated herein, and that any other agreements shall be void. This Agreement may not be modified or altered except in writing signed by both Parties hereto. This is an integrated Agreement.

24. Severability

The unenforceability, invalidity or illegality of any provision(s) of this Agreement shall not render the provisions unenforceable, invalid or illegal.

25. Successors and Assigns

This Agreement shall be binding upon and shall inure to the benefit of the successors in interest, executors, administrators and assigns of each party to this Agreement. However, Consultant shall not assign or transfer by operation of law or otherwise any or all of its rights, burdens, duties or obligations without the prior written consent of District. Any attempted assignment without such consent shall be invalid and void.

26. Non-Waiver

None of the provisions of this Agreement shall be considered waived by either party, unless such waiver is specifically specified in writing.

27. Time of Essence

Time is of the essence for each and every provision of this Agreement.

28. District's Right to Employ Other Consultants

District reserves its right to employ other consultants, including engineers, in connection with this Project or other projects.

29. Prohibited Interests

Consultant maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement. Further, Consultant warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, District shall have the right to rescind this Agreement without liability. For the term of this Agreement, no director, official, officer or employee of District, during the term of his or her service with District, shall have any direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

[SIGNATURES ON FOLLOWING PAGE]

SIGNATURE PAGE FOR PROFESSIONAL SERVICES AGREEMENT BETWEEN THE CITRUS HEIGHTS WATER DISTRICT AND WATER SYSTEMS CONSULTING, INC.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first written above.

CITRUS HEIGHTS WATER DISTRICT	WATER SYSTEMS CONSULTING, INC.
By: _____	By: _____
Hilary M. Straus	
General Manager	Its: _____
	Printed Name:_____
	Federal ID No. _____
	Business License Number _____ (City of _____)

EXHIBIT A

Scope of Services

F. Report Tasks

WSC's approach for addressing the requested scope of services is provided below, and includes deliverables for each work element.

Task 1.0—Well Drilling

The design of the downhole well structure is intended to result in a clear set of biddable construction documents for pilot drilling and lithologic logging, geophysical logging, borehole reaming, selection of well materials, well construction, developing and testing.

1.1 Kickoff Meeting

- Organize and lead project kickoff meeting. The kickoff meeting will focus on discussion of scope and objectives, establish roles and responsibilities, reviewing the project data request and establishing data needs.
- Kickoff Meeting is assumed to be virtual for a duration of up to one hour.

Deliverables: Meeting Agenda and Minutes in PDF format.

1.2 Drilling and Well Construction Specifications and Plans

We understand that the District has a preferred set of drilling and well construction specifications. Our team will begin with this document and update the design parameters and be sure that each of the following activities are addressed.

- Operating hours
- Acceptable drilling methods and procedures
- Water available for drilling purposes
- Handling and characteristics of drilling fluid
- Drilling program loss of circulation plan and approach
- Sanitary seal requirements
- Pilot and reamed borehole diameters and depths
- Sediment sampling
- Geophysical logging
- Length, diameter, slot size, and ASTM specifications for the well casing and screen materials
- Preliminary filter pack gradation
- Acceptable construction, development, and testing methods
- Production testing equipment and procedures
- Well disinfection procedures
- Drilling mud and cutting disposal
- The specifications will require the contractor to
- Provide sanitary facilities
- Provide sound barriers
- Comply with National Pollutant Discharge Elimination System (NPDES) discharge permit conditions
- Provide necessary permits to drill and construct the well
- Submit copies of the well logs to Sacramento County Environmental Management Division and California Department of Water Resources.

We will combine the technical specifications along with the District's standard Invitation to Bid, General Conditions and Specific Conditions to complete the bidding documents at the Final Draft. We will incorporate District comments and the completed bidding documents for the District's use. We will also provide an engineer's cost estimate for the construction of the new well.

Deliverables: Draft and Final Well Drilling, Construction and Testing Technical Specifications

1.3 Drilling and Well Construction Bid Phase Support

GEI will prepare a list of qualified bidders for the District's consideration in selecting a contractor for production well drilling, construction, and testing. These will be firms that we have worked successfully in the past that have the equipment and experience using reverse rotary drilling methods to the depth chosen.

We will provide assistance during bidding of the well construction. The District will solicit bids for the work and contract directly with the contractor. We will attend the pre-bid meeting, respond to bidder's questions, and prepare any required addenda. All responses will be provided to the District for approval prior to us distributing them to the bidders. We anticipate the District will receive the bids and distribute a copy to us for review. We will provide a letter to the District recommending award of the contract.

Deliverable: Draft and Final Responses to Bidders Questions or Addenda, Letter of Recommendation to Award.

1.4 Drilling and Well Construction Phase Support

GEI will provide construction oversight during the drilling of the borehole, well construction, testing, disinfection, and final acceptance of the well including the following activities:

- Pre-Construction Meeting
- Construction Progress Meetings: We will be available to meet with the District personnel during construction and testing of the well. Because the well construction and testing will last about six weeks, we anticipate there will be about six 30-minute meetings.
- Submittal Review: GEI will review Contractor submittals and provide the District with recommendations to approve, accept with conditions, or reject.
- Pilot Hole Logging: During the drilling of the pilot borehole GEI staff will be on-site to coordinate contractor activities, log the drill cuttings and collect samples of the sediments, confirm the contractor is maintaining drilling fluid properties and observe and interpret the geophysical logging.
- Final Well Design: Upon completion of the pilot hole drilling, geophysical logging and sediment sampling GEI will analyze the information and create a final well design. We will provide a copy to the District for review and approval prior to releasing the final design to the contractor.
- Pilot Hole Reaming: Prior to starting to ream the pilot hole the contractor will order the well construction materials and will coordinate delivery of the materials with completion of the pilot hole drilling. During reaming of borehole, GEI staff will visit the site daily to monitor the contractor's progress and drilling fluid maintenance.
- Well Construction: GEI staff will confirm that the materials used to construct the well comply with the specifications. GEI staff will be on-site continuously for the installation of the well casing and screens, gravel packing of the annular space and placement of concrete sanitary and annular seals. We will prepare the as-built well construction details.
- Well Development: The development of the well is a very important task because it removes drilling fluid and remnants from the annular space between the water-bearing sediments and the well screen. GEI personnel will be on-site during the preliminary development to approve the methods used and to monitor the discharge water quality for discharge of water to the sanitary sewer. Based on the results of the preliminary development, we will recommend whether to install the test pump and continue the development process.
- Test Pumping: After the test pump has been installed, GEI staff will be on-site to approve the methods used and near the end of the pump development process to witness the results at the start-up. GEI personnel will also evaluate the water conditions and approve whether it can be discharged to surface water and to monitor the discharge water quality for NPDES permit compliance.
- We will review the results of the pump development and based on these results recommend the pumping rate for the step-drawdown test. Our staff will be present continuously during the step-drawdown testing.
- GEI will analyze the results of the step-drawdown test and recommend the pumping rate for the long-term pumping test, establishing the production capacity of the well.
- During the long-term pumping test (24 hours), GEI will visit the site to start the test and observe the work procedures. At the completion of the long-term test, we will return to the site to make recovery measurements (a period of about two hours) and then after 24 hours to confirm the aquifer has fully recovered.
- Near the end of the long-term pumping test, water quality samples will be obtained for Title 22 analyses, per DDW District Engineer. GEI will collect the samples and submit the samples deliver the samples to the District's contract laboratory.
- NPDES Monitoring and Reporting: During both the development and test pumping, effluent discharge monitoring will occur. Based on our experience, it is likely the discharge will occur over a two-month period. During our on-site activities we will monitor for volume of water discharged and turbidity as the groundwater will not be chlorinated. Total residual chlorine content will be monitored after pilot hole drilling and well construction as water from the distribution system will be used during these periods, although it is unlikely to be present in the discharge. Monitoring will be performed at the on-site discharge point after any treatment (settling tanks). When GEI staff are not present, District personnel will perform the monitoring. The District will report the discharge monitoring as part of annual report.
- Final Well Inspection: After the completion of aquifer testing and the removal of all equipment from the well, GEI will be on-site to observe the alignment testing and the disinfecting of the well and to document the results. We will analyze the plumbness test for conformance with the specifications and calculate the effective diameter at the pump setting. Upon completion of this work, GEI will witness the video log survey and assess if there has been any damage caused by the contractor's activities.

- Well Disinfection: After the completion of final well inspections the contractor will be required to disinfect the well with chlorine. GEI will be on-site to observe the disinfection procedures. The chlorinated solution will be allowed to remain in the well.
- Contractor Invoice Review: GEI will review contractor invoicing for accuracy and actual units used and provide the District with a recommendation to pay or reject the invoice (with instructions to resolve).
- Well Completion Report: We will summarize the results of the well construction and testing in a Well Completion Report. This report will present the lithologic log of the pilot hole; the geophysical logs; the as-built well construction details; the results of the production, plumbness, and alignment tests; and recommendations for the long-term pumping rate of the well. GEI personnel will then use the report to make any adjustments to the final engineering design for the pumping plant.

Deliverable: Final Well Design, Draft and Final Well Completion Report with as-builts, permits, and other information

Task 2.0—Design of Surface Facilities

The Design of the proposed well surface facilities is intended to result in a clear set of biddable improvement plans for site development, grading, drainage, equipping, piping and mechanical, structural, architectural, instrumentation and controls, and electrical.

2.1 Preliminary Engineering and Field Investigations

Background Data Review

- Prepare a data log for submission to the District and coordinate to obtain required data for surface facility design.
- Review water system record drawings, subsurface and above ground utility maps, District standard specification and details, as well as contract documents for similar District projects.
- Review utility maps and incorporate into a project site base map.

Geotechnical Investigation and Report

- WSC's subconsultant, Geocon, Inc. (Geocon), will conduct site reconnaissance, collect baseline maps, previous reports, drilling logs, and other information that may be available for the site.
- Geocon will visit the site, mark the boring locations and contact Underground Service Alert (USA) to perform utility clearances prior to beginning subsurface exploration.
- Geocon will perform a field exploration program to drill up to thee (3) borings. The borings will be located in such a way to provide cross-sectional coverage across each site and will be drilled to depths of between 10 and 20 feet. Borings will be backfilled with soil cuttings.
- Geocon will review results of the field exploration program and assign laboratory tests to help characterize the subsurface conditions. The actual assignments and numbers of tests will be selected based on the results of the field exploration program.
- Geocon will prepare a draft and final version of the Geotechnical Report for the design of well site. The report will be submitted for review in PDF format. The report will include site location, boring locations, boring logs, geotechnical constraints and mitigation alternatives, excavation characteristics, and suitability of onsite material for backfill. Results of the field investigation will also be included. The report will provide opinions and recommendations, data for code-based building design, and recommendations for excavations, trenching, grading, drainage, and site preparation.

Survey and Base Map

WSC will use the survey file prepared by Warren Consulting Engineers for the site topography as background for CAD files. No additional survey is included in the scope of work.

Deliverable: Data Request Log (Excel/PDF), Draft and Final Geotechnical Report (PDF)

2.2 Operations Memorandum

Operation memorandum will be compiled for the project and will include equipment manuals, cut sheets, as-built drawings, and brief narrative.

Deliverable: Draft and Final Operations Memorandum (PDF)

2.3 Basis of Design TM

WSC will prepare a brief Basis of Design Technical Memorandum (BODTM) for the project presenting the preliminary site layout showing the positioning of facilities, site piping, and documentation of basis of design criteria for the well equipping design. The BODTM will include some considerations for current items to include and components to consider for future use of the site as an ASR well.

Deliverable: Draft BODTM (PDF), Final BODTM (PDF)

2.4 Construction Plans and Specifications

Design Plans

WSC will prepare engineering plans and a complete set of construction specifications in CSI format. As requested in the RFP the plans will include:

- Cover Sheet
- Grading and drainage plans (including existing and proposed elevations extending 25 feet beyond the property boundaries)
- Site development plan
- Architectural and Structural plans and details
- Mechanical plans and details
- Electrical plans and details
- Instrumentation and controls (SCADA) integration
- Provisions for treatment
- Treatment facilities (Treatment facility design plans and specifications are not included in the scope of work)

WSC's structural and electrical subconsultant, TJC & Associates (TJCAA), will prepare structural and electrical design plans. Structural design will include buildings, equipment pads, and other structures in accordance with design codes and standards.

TJCAA will also complete the SMUD application and submittal package for District submittal.

WSC will develop the site with an option for screening with fencing/walls and landscaping, reducing the need for a well building that fits within the residential character of the neighborhood. If this option does not provide the necessary site aesthetics, WSC has included Optional Task 1 to design a residential style well building.

Plans will be submitted at the 50%, 95%, and Final design phases.

Technical Specifications

- WSC will prepare a complete set of technical specifications in CSI format for the Ella Way well surface facilities design.
- Specifications will be transmitted at the 50%, 95%, and Final design phases.

Deliverable: 50% Design Plans and Specifications (PDF and Printed), 95% Design Plans and Specifications (PDF and Printed), Final Design Plans and Specifications (PDF and Printed)

2.5 Surface Facilities Bid Phase Support

- WSC will compile and provide to the District a list of qualified contractors for the well equipping.
- Receive questions from bidders and prepare responses in the form of addenda to the contract documents.
- Assumes two (2) addenda will be needed to sufficiently respond to questions.
- WSC will review bid results in comparison and provide the District with written recommendations for awarding the construction contract.

Task 3.0—Surface Facilities Construction Phase Services

3.1 Pre-Construction Meeting

- WSC will attend a pre-construction meeting to review project design. Pre-construction meeting will be two (2) hours in duration, held at the well site, and will be organized by District staff.
- WSC's construction inspector, GEI, will attend the pre-construction meeting.

3.2 Engineering Services During Construction

Submittal Review

- Review submittals related to civil site, mechanical, equipment, electrical, and structural for compliance with the Contract Documents and provide responses to the Contractor.
- Maintain and update a record of submittals, copies of submittals supplied by the contractor and a record of actions taken on submittals for WSC design items.
- The budget is based on responding to 60 total project submittals, including resubmittals.

RFC/RFI Response

Respond to RFCs and RFIs and coordinate with the District's change order process. The budget is based on responding to 25 total RFCs/RFIs. This will include preparation of written clarifications of technical requirements of the drawings and specifications

Change Orders

Review Contract Change Orders and provide written recommendations to the District. The project budget is based on a total of two change orders.

Site Observations

WSC and TJCAA will perform site observations at critical milestones through the construction of the well facilities. Two site observations are assumed for construction.

3.3 Construction Management and Inspection Services

GEI will provide overall construction management services for the successful completion of equipping the well on schedule and within budget. Our assumption is that we can complete these services by being on-site two days per week on average during the facility construction. The following specific tasks will be complete by GEI:

- Attend pre-construction meetings and review the construction schedule.
- Provide owner field inspection services as required by the design specifications.
- Monitor all construction activities and provide a weekly written report.
- Route contractor submittals to design engineer for review and confirm conformance to the design drawings and specifications.
- Review and respond to contractor's RFIs. Route to design engineer for review and consolidate responses as appropriate.
- Issue field memos and respond to requests for clarification as required.
- Review contractor change orders and provide written recommendations to District staff.
- Review contractor progress payment requests and provides recommendations to District staff for payment.
- Assist in resolving conflicts caused by discrepancies in contract documents.
- Assist in start-up and commissioning operations, and attend contractor walkthroughs, final inspections, and testing.

3.4 Record Drawing Development

WSC and TJCAA will prepare Record Drawings documenting the installed well facilties based on contractor and construction inspector redline as-builts. Record drawings will include actual lay lengths of piping, any changes or alterations made during construction, and the location of bends, fittings, and other appurtenances, changed site conditions, equipment differences, and other relevant items.

3.5 Drinking Water Source Assessment Close-Out

WSC will finalize the Drinking Water Source Assessment and submit to DDW on the District's behalf.

Deliverables: Draft and Final Drinking Water Source Assessment

Task 4.0—Design Review Meetings

4.1 50% Design Review Meeting

WSC and TJCAA will prepare for, conduct, and document a 50% design review meeting to include civil, architectural, mechanical, electrical, and instrumentation designs; specifications outline; SMUD application and submittal; and permit status report.

4.2 95% Design Review Meeting

WSC and TJCAA will prepare for, conduct, and document a 95% design review meeting to include all drawings, technical and construction specifications; engineering opinion of the probable construction cost; and preliminary operations plan for the groundwater well.

4.3 Regular Project Status Meetings

WSC' project manager will conduct regular bi-monthly project status meetings for the duration of design contract.

Deliverables: Meetings Agendas and Minutes for the design review meetings. Action Item and Decision Log updates for bi-monthly check in meetings.

Optional Task 1.0—Architectural Design Services

O1.1 Residential Building Architectural Services

WSC's architectural subconsultant, EDEA, will prepare architectural design plans and elevations.

O1.2 Architectural Bidding Support.

WSC's architectural subconsultant, EDEA, will provide bid phase support services to respond to bidder questions and RFIs.

O1.3 Architectural Construction Phase Support.

WSC's architectural subconsultant, EDEA, will provide construction phase services including submittal response, RFI response, change order support, and periodic observations.

Optional Task 2.0—Engineer's Opinion Of Probable Cost Estimate

O2.1 Project Cost Estimates

An Engineer's Opinion of Probable Construction Cost estimate will be prepared and submitted for each design deliverable (50%, 95%, and Final). Estimates will be prepared in accordance with AACE standards at a level of detail appropriate to each design stage.

Assumptions

- It is assumed the project duration will be 20 months through design and include 10 months of construction.
- Record drawings will show any utilities in the project area and will prepare utility request letters and coordination with individual utility owners for utilities outside of the site boundaries.
- Bi-weekly progress and check-in conference calls will not occur during weeks where design workshops will be held. An average assumed duration will be 30 minutes.
- Drawings shall be in native AutoCAD 2020 format and per WSC and TJCAA CAD standards.
- Potholing of existing utilities is not included in the scope of design services.
- A total of 39 drawings are anticipated for the plans, including civil, mechanical, structural, and electrical disciplines.
- The District will prepare and provide their standard front-end documents covering bidding procedures and requirements, and general and supplemental conditions of the contract. Specific technical project input will be provided by WSC.
- Electrical service at the site will be new, coordinated with SMUD and include service expansion capability as necessary to support well head treatment and/or ASR functions. Power feed assumed to be 3 phase, 480V.
- Title 24 compliance energy calculations and completion of forms is not included in the scope of work. If required, Title 24 compliance documentation can be provided as an additional service if authorized by the District.
- Provide new provision for portable generator connection. Standby power components shall be rated for full pumping and treatment capacity at the well.
- Normal pump control assumed based on local zone pressure and local programmable automation controller (PAC).
- Incorporate remote monitoring and controls (SCADA) meeting current District standard SCADA and telemetry platforms. Control component details, communication medium, and any District standardized equipment and software shall be provided to TJCAA for incorporation into the design.
- Equipment identification and tagging will be developed to ensure unique equipment identification within the facility following general ISA standards. District has no established equipment tagging standard.
- I&C and Electrical participation in field testing, startup, and commissioning will not be required but can be provided as an additional service.
- Proposal assumes a new Well Building for housing the electrical equipment in standard NEMA 12 enclosures. Note that HVAC for the Electrical Building may be required due to the high ambient summer temperatures and the possibility of a Variable Frequency Drive Operation. HVAC design is not included in the TJCAA scope of work.
- Design will comply with the requirements of the 2019 California Building Code.
- Structural observations are not included in the construction phase services.

EXHIBIT B

Schedule of Charges/Payments

Consultant will invoice District on a monthly cycle. Consultant will include with each invoice a detailed progress report that indicates the amount of budget spent on each task. Consultant will inform District regarding any out-of-scope work prior to commencing as stipulated in Item 3, Additional Work. This is a time-and-materials contract.

Project Costs

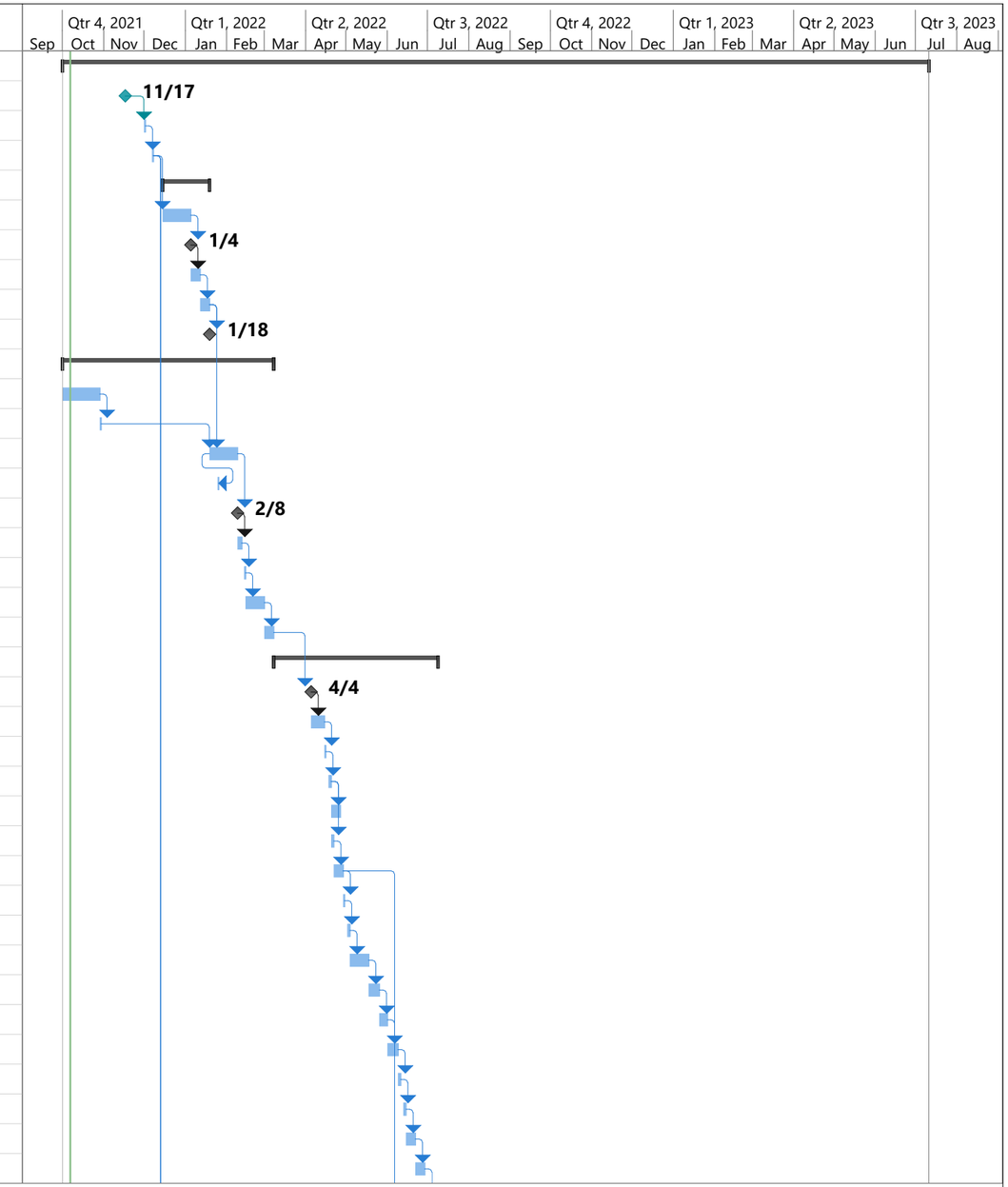
Task No.	Task Description	WSC											GEI	TJCAA	Geocon	El Dorado	Leonard Rice	ALL FIRMS
		Principal In Charge	QA/QC	Project Manager	Project Engineer	Engineering Support	Designer	Administrator	WSC Labor Hours	WSC Labor Fee	Expenses	WSC Fee	Labor Fee	Labor Fee	Labor Fee	Labor Fee	Labor Fee	Total Fee
		Joshua Reynolds	Joseph Kingsbury	Jeffery Lawrence	Robert Natoli													
	Billing rates, $/hr	*$285*	*$230*	*$285*	*$245*	*$180*	*$160*	*$145*										
1	**Well Drilling**																	
1.1	Kickoff Meeting			1	3				**4**	**$ 1,020**	**$ -**	**$ 1,020**	$ 1,287					**$ 2,307**
1.2	Drilling and Well Construction Specifications and Plans		6	6	8				**20**	**$ 5,050**	**$ 200**	**$ 5,250**	$ 16,817					**$ 22,067**
1.3	Drilling and Well Construction Bid Phase Support								**0**	**$ -**	**$ -**	**$ -**	$ 6,216					**$ 6,216**
1.4	Drilling and Well Construction Phase Support								**0**	**$ -**	**$ -**	**$ -**	$ 71,423					**$ 71,423**
	SUBTOTAL	**0**	**6**	**7**	**11**	**0**	**0**	**0**	**24**	**$ 6,070**	**$ 200**	**$ 6,270**	**$ 95,743**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 102,013**
2	**Design of Surface Facilities**																	
2.1	Preliminary Engineering and Field Investigations			3	3	8	8		**22**	**$ 4,310**	**$ 200**	**$ 4,510**			$ 9,350			**$ 13,860**
2.2	Operations Memorandum			3	12	16			**31**	**$ 6,675**	**$ 300**	**$ 6,975**	$ 1,289					**$ 8,264**
2.3	Basis of Design TM	6	3	6	12	28	12		**67**	**$ 14,010**	**$ 600**	**$ 14,610**	$ 2,579					**$ 17,189**
2.4	Construction Plans and Specifications	20		42	68	110	140	14	**394**	**$ 78,560**	**$ 3,100**	**$ 81,660**	$ 3,868	$ 100,643				**$ 186,171**
2.5	Surface Facilities Bid Phase Services			7	8	6	12		**33**	**$ 6,955**	**$ 300**	**$ 7,255**						**$ 7,255**
	SUBTOTAL	**26**	**3**	**61**	**103**	**168**	**172**	**14**	**547**	**$ 110,510**	**$ 4,500**	**$ 115,010**	**$ 7,736**	**$ 100,643**	**$ 9,350**	**$ -**	**$ -**	**$ 232,739**
3	**Surface Facilities Construction Phase Services**																	
3.1	Pre-Construction Meeting			2	2				**4**	**$ 1,060**	**$ -**	**$ 1,060**						**$ 1,060**
3.2	Engineering Services During Construction	4		22	19	62		10	**117**	**$ 24,675**	**$ 1,000**	**$ 25,675**		$ 36,120				**$ 61,795**
3.3	Construction Management and Inspection Services								**0**	**$ -**	**$ -**	**$ -**	$ 164,231					**$ 164,231**
3.4	Record Drawing Development			2	4	6	18		**30**	**$ 5,510**	**$ 200**	**$ 5,710**						**$ 5,710**
3.5	Drinking Water Source Assessment Close-out			1	4	8			**13**	**$ 2,705**	**$ 100**	**$ 2,805**						**$ 2,805**
	SUBTOTAL	**4**	**0**	**27**	**29**	**76**	**18**	**10**	**164**	**$ 33,950**	**$ 1,300**	**$ 35,250**	**$ 164,231**	**$ 36,120**	**$ -**	**$ -**	**$ -**	**$ 235,601**
4	**Design Review Meetings**																	
4.1	50% Design Review Meeting			2	2	3			**7**	**$ 1,600**	**$ 100**	**$ 1,700**						**$ 1,700**
4.2	95% Design Review Meeting			2	2	3			**7**	**$ 1,600**	**$ 100**	**$ 1,700**						**$ 1,700**
4.3	Regular Project Status Meetings			10					**10**	**$ 2,850**	**$ 100**	**$ 2,950**						**$ 2,950**
	SUBTOTAL	**0**	**0**	**14**	**4**	**6**	**0**	**0**	**24**	**$ 6,050**	**$ 300**	**$ 6,350**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 6,350**
	COLUMN TOTALS	**30**	**9**	**109**	**147**	**250**	**190**	**24**	**759**	**$ 156,580**	**$ 6,300**	**$ 162,880**	**$ 267,710**	**$ 136,763**	**$ 9,350**	**$ -**	**$ -**	**$ 576,703**
OT 1	**Architectural Services**																	
OT 1.1	Architectural Design Phase			2	4				**6**	**$ 1,550**	**$ 100**	**$ 1,650**				$ 41,318		**$ 42,968**
OT 1.2	Architectural Bidding Support								**0**	**$ -**	**$ -**	**$ -**				$ 3,630		**$ 3,630**
OT 1.3	Architectural Construction Phase Support								**0**	**$ -**	**$ -**	**$ -**				$ 10,527		**$ 10,527**
	Architectural Services TOTAL	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**6**	**$ 1,550**	**$ 100**	**$ 1,650**	**$ -**	**$ -**	**$ -**	**$ 55,475**	**$ -**	**$ 57,125**
OT 2	**Engineer's Opinion of Probable Cost Estimate**																	
OT 2.1	Project Cost Estimates			6	16	28			**50**	**$ 10,670**	**$ 400**	**$ 11,070**						**$ 11,070**
	Engineer's Opinion of Probable Cost Estimate TOTAL	**0**	**0**	**6**	**16**	**28**	**0**	**0**	**50**	**$ 10,670**	**$ 400**	**$ 11,070**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,070**

EXHIBIT C

Activity Schedule

Project Schedule

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		**Ella Way Well Project**	**462 days**	**Fri 10/1/21**	**Mon 7/10/23**	
2		Board Approval of Engineering Services for Ella Way Well Projec	0 days	Wed 11/17/2	Wed 11/17/2	
3		Notice to Proceed	1 day	Wed 12/1/21	Wed 12/1/21	2FS+10 days
4		Kick Off Meeting	1 day	Tue 12/7/21	Tue 12/7/21	3FS+3 days
5		**Well Design**	**25 days**	**Wed 12/15/2**	**Tue 1/18/22**	
6		Prepare Draft Well Drilling Construction Documents	15 days	Wed 12/15/2	Tue 1/4/22	4FS+5 days
7		Deliver Draft Construction Documents	0 days	Tue 1/4/22	Tue 1/4/22	6
8		CHWD Review of Draft Construction Documents	5 days	Wed 1/5/22	Tue 1/11/22	7
9		Prepare Final Well Drilling Construction Documents	5 days	Wed 1/12/22	Tue 1/18/22	8
10		Deliver Final Construction Documents	0 days	Tue 1/18/22	Tue 1/18/22	9
11		**Well Bid Phase**	**112 days**	**Fri 10/1/21**	**Mon 3/7/22**	
12		Prequalify Well Drillers	20 days	Fri 10/1/21	Thu 10/28/21	
13		Bid Package to Board	1 day	Fri 10/29/21	Fri 10/29/21	12
14		Advertise Project	3 wks	Wed 1/19/22	Tue 2/8/22	13,9
15		Pre-bid Meeting	1 day	Tue 1/25/22	Tue 1/25/22	14SF+5 days
16		Well Driller Bids Due/Bid Opening	0 days	Tue 2/8/22	Tue 2/8/22	14
17		Bid Review	3 days	Wed 2/9/22	Fri 2/11/22	16
18		Board Approval/Contract Award	1 day	Mon 2/14/22	Mon 2/14/22	17
19		Contracting, Bonds, Insurance	10 days	Tue 2/15/22	Mon 2/28/22	18
20		Notice to Proceed - Well Drilling	5 days	Tue 3/1/22	Mon 3/7/22	19
21		**Well Drilling and Construction**	**89 days**	**Tue 3/8/22**	**Fri 7/8/22**	
22		Submittals and Submittal Review	20 days	Tue 3/8/22	Mon 4/4/22	20
23		Equipment/Materials Acquisition	8 days	Tue 4/5/22	Thu 4/14/22	22
24		Site Mobilization/Preparation	1 day	Fri 4/15/22	Fri 4/15/22	23
25		Conductor Casing	2 days	Mon 4/18/22	Tue 4/19/22	24
26		Sound Wall Installation	5 days	Wed 4/20/22	Tue 4/26/22	25
27		Rig Mobilization	2 days	Wed 4/20/22	Thu 4/21/22	25
28		Pilot Hole Drilling	5 days	Fri 4/22/22	Thu 4/28/22	27
29		Geophysical Logging	1 day	Fri 4/29/22	Fri 4/29/22	28
30		Data Analysis and Final Well Design	2 days	Mon 5/2/22	Tue 5/3/22	29
31		Await Materials	10 days	Wed 5/4/22	Tue 5/17/22	30
32		Well Reaming	6 days	Wed 5/18/22	Wed 5/25/22	31
33		Well Construction	4 days	Thu 5/26/22	Tue 5/31/22	32
34		Well Development with Rig	6 days	Wed 6/1/22	Wed 6/8/22	33
35		Rig Demobilization	2 days	Thu 6/9/22	Fri 6/10/22	34
36		Development Pump Installation	2 days	Mon 6/13/22	Tue 6/14/22	35
37		Pump Development	5 days	Wed 6/15/22	Tue 6/21/22	36
38		Testing (Step, Constant Rate, Spinner Log)	5 days	Wed 6/22/22	Tue 6/28/22	37

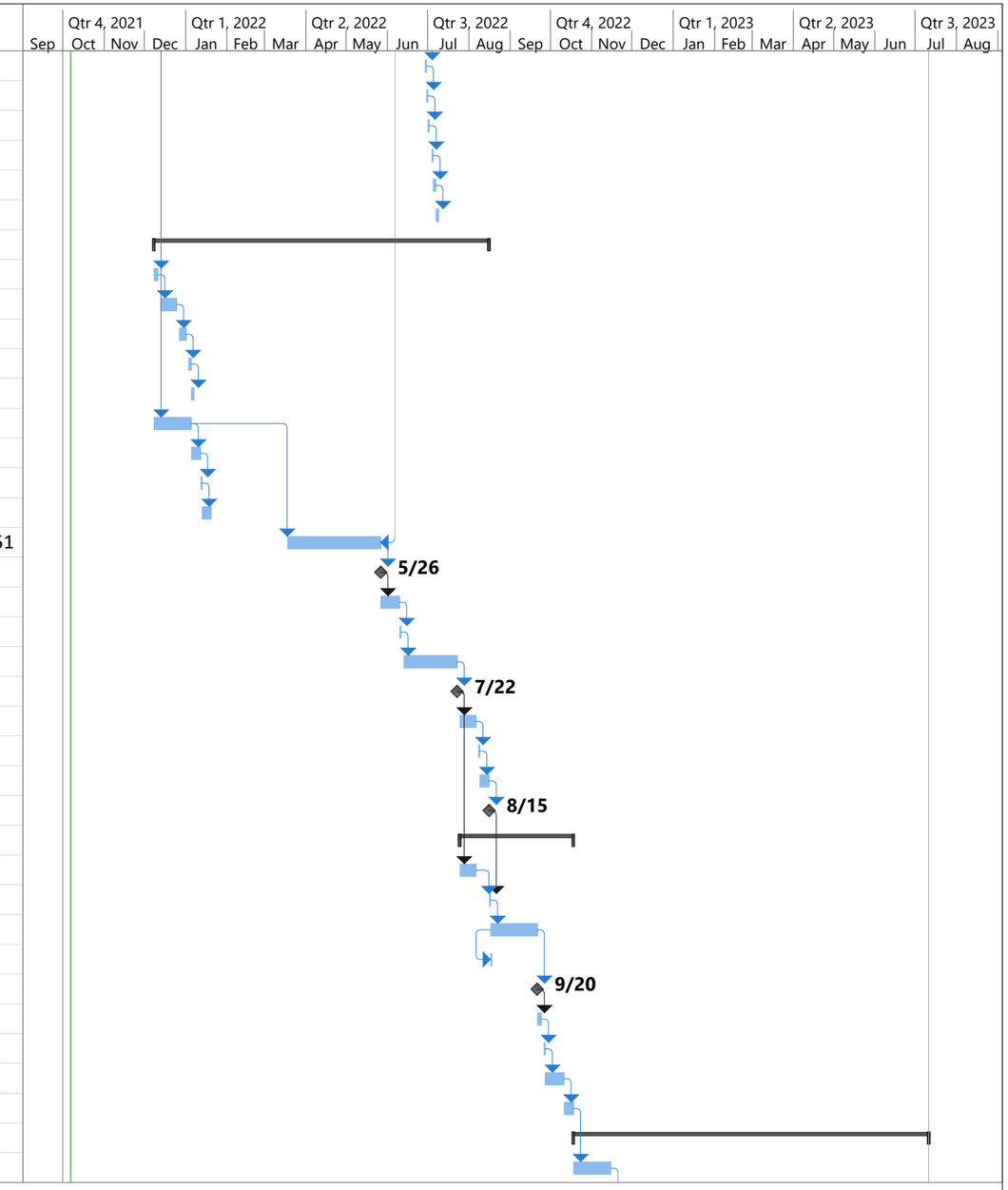


Project: CHWD_Ella Way Well_S
Date: Thu 10/7/21

Task		Project Summary		Manual Task		Start-only		Deadline	
Split		Inactive Task		Duration-only		Finish-only		Progress	
Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
Summary		Inactive Summary		Manual Summary		External Milestone			

Project Schedule Continued

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
39		Pump Removal	1 day	Wed 6/29/22	Wed 6/29/22	38
40		Brush and Bail	1 day	Thu 6/30/22	Thu 6/30/22	39
41		Video Log	1 day	Fri 7/1/22	Fri 7/1/22	40
42		Alignment/Gyro Test	1 day	Mon 7/4/22	Mon 7/4/22	41
43		Disinfection/BacT Sampling	2 days	Tue 7/5/22	Wed 7/6/22	42
44		Demobilization	2 days	Thu 7/7/22	Fri 7/8/22	43
45		**Well Equipping and Facilities Design**	**179 days**	**Wed 12/8/21**	**Mon 8/15/22**	
46		Data Review	3 days	Wed 12/8/21	Fri 12/10/21	4
47		Geotechnical Investigation (field and lab)	2 wks	Mon 12/13/2	Fri 12/24/21	46
48		Draft Geotechnical Report	5 days	Mon 12/27/2	Fri 12/31/21	47
49		WSC-CHWD Review Geotech Report	2 days	Mon 1/3/22	Tue 1/4/22	48
50		Final Geotechnical Report	2 days	Wed 1/5/22	Thu 1/6/22	49
51		Draft Basis of Design TM/Design Confirmation	20 days	Wed 12/8/21	Tue 1/4/22	4
52		CHWD Review of Draft BODTM	5 days	Wed 1/5/22	Tue 1/11/22	51
53		Design Confirmation Review Meeting	1 day	Wed 1/12/22	Wed 1/12/22	52
54		Final BODTM	5 days	Thu 1/13/22	Wed 1/19/22	53
55		Prepare 50% Well Equipping Construction Documents	50 days	Fri 3/18/22	Thu 5/26/22	28FF+20 days,51
56		Deliver 50% Construction Documents	0 days	Thu 5/26/22	Thu 5/26/22	55
57		CHWD Review of 50% Construction Documents	10 days	Fri 5/27/22	Thu 6/9/22	56
58		50% Design Review Meeting	1 day	Fri 6/10/22	Fri 6/10/22	57
59		Prepare 95% Well Equipping Construction Documents	30 days	Mon 6/13/22	Fri 7/22/22	58
60		Deliver 95% Construction Documents	0 days	Fri 7/22/22	Fri 7/22/22	59
61		CHWD Review of 95% Construction Documents	10 days	Mon 7/25/22	Fri 8/5/22	60
62		95% Design Review Meeting	1 day	Mon 8/8/22	Mon 8/8/22	61
63		Prepare Final Well Equipping Construction Documents	5 days	Tue 8/9/22	Mon 8/15/22	62
64		Deliver Final Construction Documents	0 days	Mon 8/15/22	Mon 8/15/22	63
65		**Well Equipping and Facilities Bid Phase**	**61 days**	**Mon 7/25/22**	**Mon 10/17/2**	
66		Contractor Outreach and Notification	10 days	Mon 7/25/22	Fri 8/5/22	60
67		Bid Package to Board	1 day	Tue 8/16/22	Tue 8/16/22	64,66
68		Advertise Project	5 wks	Wed 8/17/22	Tue 9/20/22	67
69		Pre-bid Meeting	1 day	Wed 8/17/22	Wed 8/17/22	68SS
70		Contractor Bids Due/Bid Opening	0 days	Tue 9/20/22	Tue 9/20/22	68
71		Bid Review	3 days	Wed 9/21/22	Fri 9/23/22	70
72		Board Approval/Contract Award	1 day	Mon 9/26/22	Mon 9/26/22	71
73		Contracting, Bonds, Insurance	10 days	Tue 9/27/22	Mon 10/10/2	72
74		Notice to Proceed - Well Equipping and Facilities	5 days	Tue 10/11/22	Mon 10/17/2	73
75		**Well Equipping and Facilities Construction**	**190 days**	**Tue 10/18/22**	**Mon 7/10/23**	
76		Submittals and Submittal Review	20 days	Tue 10/18/22	Mon 11/14/2	74

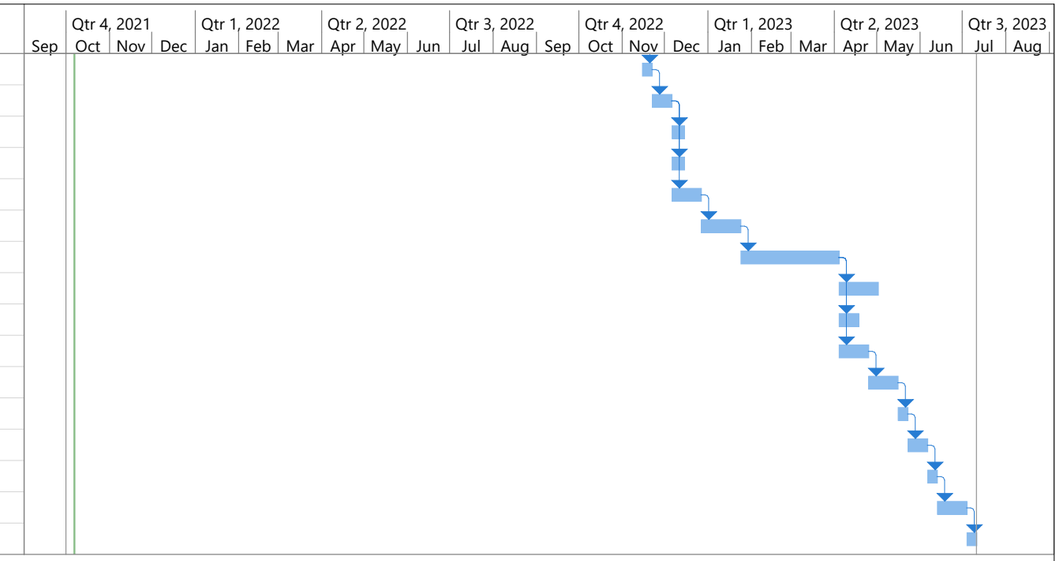


Project: CHWD_Ella Way Well_S
Date: Thu 10/7/21

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

Project Schedule Continued

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
77		Mobilization/Site Preparation	5 days	Tue 11/15/22	Mon 11/21/2	76
78		Clearing, Grubbing, and Grading	10 days	Tue 11/22/22	Mon 12/5/22	77
79		Trench and Install Water Piping	7 days	Tue 12/6/22	Wed 12/14/2	78
80		Trench and Install Storm/Sewer	7 days	Tue 12/6/22	Wed 12/14/2	78
81		Conduit Install	15 days	Tue 12/6/22	Mon 12/26/2	78
82		Form and Pour Pads and Foundation	20 days	Tue 12/27/22	Mon 1/23/23	81
83		Building Construction	50 days	Tue 1/24/23	Mon 4/3/23	82
84		Interior Mechanical	20 days	Tue 4/4/23	Mon 5/1/23	83
85		Electrical and MCC Panels	10 days	Tue 4/4/23	Mon 4/17/23	83
86		Treatment and Equipment Install	15 days	Tue 4/4/23	Mon 4/24/23	83
87		Wiring and Electrical Top Out	15 days	Tue 4/25/23	Mon 5/15/23	86
88		Down Well Mechanical and Pump Install	5 days	Tue 5/16/23	Mon 5/22/23	87
89		Perimeter Fencing Install	10 days	Tue 5/23/23	Mon 6/5/23	88
90		Final Grading and Paving	5 days	Tue 6/6/23	Mon 6/12/23	89
91		Electrical Testing, Start-up, and Commissioning	15 days	Tue 6/13/23	Mon 7/3/23	90
92		Final Verification, Demobilizatin	5 days	Tue 7/4/23	Mon 7/10/23	91



Project: CHWD_Ella Way Well_S
Date: Thu 10/7/21

Task	Project Summary	Manual Task	Start-only	Deadline
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Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

EXHIBIT B

Schedule of Charges/Payments

Consultant will invoice District on a monthly cycle. Consultant will include with each invoice a detailed progress report that indicates the amount of budget spent on each task. Consultant will inform District regarding any out-of-scope work prior to commencing as stipulated in Item 3, Additional Work. This is a time-and-materials contract.

Project Costs

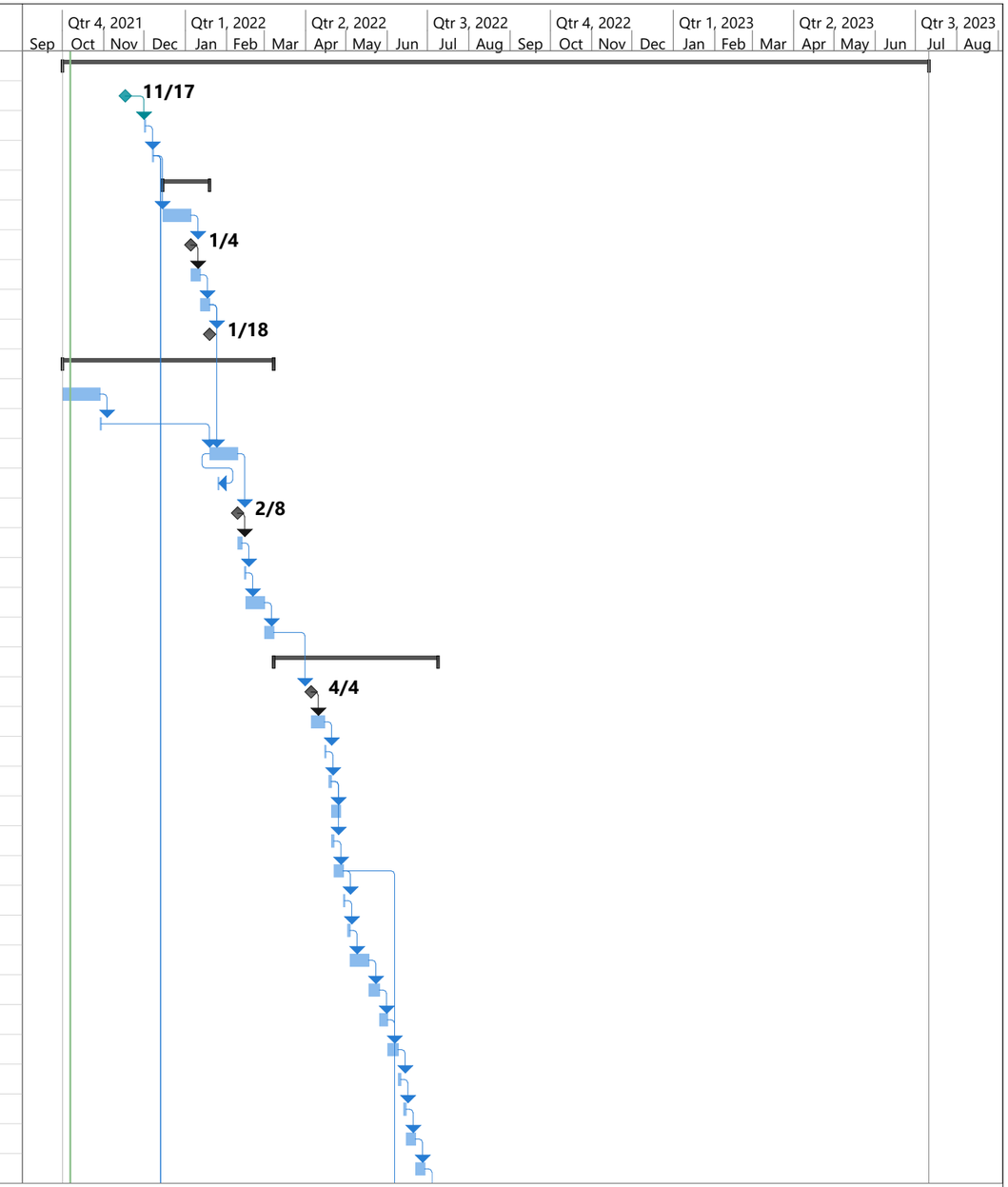
Task No.	Task Description	WSC											GEI	TJCAA	Geocon	El Dorado	Leonard Rice	ALL FIRMS
		Principal In Charge	QA/QC	Project Manager	Project Engineer	Engineering Support	Designer	Administrator	WSC Labor Hours	WSC Labor Fee	Expenses	WSC Fee	Labor Fee	Labor Fee	Labor Fee	Labor Fee	Labor Fee	Total Fee
		Joshua Reynolds	Joseph Kingsbury	Jeffery Lawrence	Robert Natoli													
	Billing rates, $/hr	*$285*	*$230*	*$285*	*$245*	*$180*	*$160*	*$145*										
1	**Well Drilling**																	
1.1	Kickoff Meeting			1	3				**4**	**$ 1,020**	**$ -**	**$ 1,020**	$ 1,287					**$ 2,307**
1.2	Drilling and Well Construction Specifications and Plans		6	6	8				**20**	**$ 5,050**	**$ 200**	**$ 5,250**	$ 16,817					**$ 22,067**
1.3	Drilling and Well Construction Bid Phase Support								**0**	**$ -**	**$ -**	**$ -**	$ 6,216					**$ 6,216**
1.4	Drilling and Well Construction Phase Support								**0**	**$ -**	**$ -**	**$ -**	$ 71,423					**$ 71,423**
	SUBTOTAL	**0**	**6**	**7**	**11**	**0**	**0**	**0**	**24**	**$ 6,070**	**$ 200**	**$ 6,270**	**$ 95,743**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 102,013**
2	**Design of Surface Facilities**																	
2.1	Preliminary Engineering and Field Investigations			3	3	8	8		**22**	**$ 4,310**	**$ 200**	**$ 4,510**			$ 9,350			**$ 13,860**
2.2	Operations Memorandum			3	12	16			**31**	**$ 6,675**	**$ 300**	**$ 6,975**	$ 1,289					**$ 8,264**
2.3	Basis of Design TM	6	3	6	12	28	12		**67**	**$ 14,010**	**$ 600**	**$ 14,610**	$ 2,579					**$ 17,189**
2.4	Construction Plans and Specifications	20		42	68	110	140	14	**394**	**$ 78,560**	**$ 3,100**	**$ 81,660**	$ 3,868	$ 100,643				**$ 186,171**
2.5	Surface Facilities Bid Phase Services			7	8	6	12		**33**	**$ 6,955**	**$ 300**	**$ 7,255**						**$ 7,255**
	SUBTOTAL	**26**	**3**	**61**	**103**	**168**	**172**	**14**	**547**	**$ 110,510**	**$ 4,500**	**$ 115,010**	**$ 7,736**	**$ 100,643**	**$ 9,350**	**$ -**	**$ -**	**$ 232,739**
3	**Surface Facilities Construction Phase Services**																	
3.1	Pre-Construction Meeting			2	2				**4**	**$ 1,060**	**$ -**	**$ 1,060**						**$ 1,060**
3.2	Engineering Services During Construction	4		22	19	62		10	**117**	**$ 24,675**	**$ 1,000**	**$ 25,675**		$ 36,120				**$ 61,795**
3.3	Construction Management and Inspection Services								**0**	**$ -**	**$ -**	**$ -**	$ 164,231					**$ 164,231**
3.4	Record Drawing Development			2	4	6	18		**30**	**$ 5,510**	**$ 200**	**$ 5,710**						**$ 5,710**
3.5	Drinking Water Source Assessment Close-out			1	4	8			**13**	**$ 2,705**	**$ 100**	**$ 2,805**						**$ 2,805**
	SUBTOTAL	**4**	**0**	**27**	**29**	**76**	**18**	**10**	**164**	**$ 33,950**	**$ 1,300**	**$ 35,250**	**$ 164,231**	**$ 36,120**	**$ -**	**$ -**	**$ -**	**$ 235,601**
4	**Design Review Meetings**																	
4.1	50% Design Review Meeting			2	2	3			**7**	**$ 1,600**	**$ 100**	**$ 1,700**						**$ 1,700**
4.2	95% Design Review Meeting			2	2	3			**7**	**$ 1,600**	**$ 100**	**$ 1,700**						**$ 1,700**
4.3	Regular Project Status Meetings			10					**10**	**$ 2,850**	**$ 100**	**$ 2,950**						**$ 2,950**
	SUBTOTAL	**0**	**0**	**14**	**4**	**6**	**0**	**0**	**24**	**$ 6,050**	**$ 300**	**$ 6,350**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 6,350**
	COLUMN TOTALS	**30**	**9**	**109**	**147**	**250**	**190**	**24**	**759**	**$ 156,580**	**$ 6,300**	**$ 162,880**	**$ 267,710**	**$ 136,763**	**$ 9,350**	**$ -**	**$ -**	**$ 576,703**
OT 1	**Architectural Services**																	
OT 1.1	Architectural Design Phase			2	4				**6**	**$ 1,550**	**$ 100**	**$ 1,650**				$ 41,318		**$ 42,968**
OT 1.2	Architectural Bidding Support								**0**	**$ -**	**$ -**	**$ -**				$ 3,630		**$ 3,630**
OT 1.3	Architectural Construction Phase Support								**0**	**$ -**	**$ -**	**$ -**				$ 10,527		**$ 10,527**
	Architectural Services TOTAL	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**6**	**$ 1,550**	**$ 100**	**$ 1,650**	**$ -**	**$ -**	**$ -**	**$ 55,475**	**$ -**	**$ 57,125**
OT 2	**Engineer's Opinion of Probable Cost Estimate**																	
OT 2.1	Project Cost Estimates			6	16	28			**50**	**$ 10,670**	**$ 400**	**$ 11,070**						**$ 11,070**
	Engineer's Opinion of Probable Cost Estimate TOTAL	**0**	**0**	**6**	**16**	**28**	**0**	**0**	**50**	**$ 10,670**	**$ 400**	**$ 11,070**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,070**

EXHIBIT C

Activity Schedule

Project Schedule

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		**Ella Way Well Project**	**462 days**	**Fri 10/1/21**	**Mon 7/10/23**	
2		Board Approval of Engineering Services for Ella Way Well Projec	0 days	Wed 11/17/2	Wed 11/17/2	
3		Notice to Proceed	1 day	Wed 12/1/21	Wed 12/1/21	2FS+10 days
4		Kick Off Meeting	1 day	Tue 12/7/21	Tue 12/7/21	3FS+3 days
5		**Well Design**	**25 days**	**Wed 12/15/2**	**Tue 1/18/22**	
6		Prepare Draft Well Drilling Construction Documents	15 days	Wed 12/15/2	Tue 1/4/22	4FS+5 days
7		Deliver Draft Construction Documents	0 days	Tue 1/4/22	Tue 1/4/22	6
8		CHWD Review of Draft Construction Documents	5 days	Wed 1/5/22	Tue 1/11/22	7
9		Prepare Final Well Drilling Construction Documents	5 days	Wed 1/12/22	Tue 1/18/22	8
10		Deliver Final Construction Documents	0 days	Tue 1/18/22	Tue 1/18/22	9
11		**Well Bid Phase**	**112 days**	**Fri 10/1/21**	**Mon 3/7/22**	
12		Prequalify Well Drillers	20 days	Fri 10/1/21	Thu 10/28/21	
13		Bid Package to Board	1 day	Fri 10/29/21	Fri 10/29/21	12
14		Advertise Project	3 wks	Wed 1/19/22	Tue 2/8/22	13,9
15		Pre-bid Meeting	1 day	Tue 1/25/22	Tue 1/25/22	14SF+5 days
16		Well Driller Bids Due/Bid Opening	0 days	Tue 2/8/22	Tue 2/8/22	14
17		Bid Review	3 days	Wed 2/9/22	Fri 2/11/22	16
18		Board Approval/Contract Award	1 day	Mon 2/14/22	Mon 2/14/22	17
19		Contracting, Bonds, Insurance	10 days	Tue 2/15/22	Mon 2/28/22	18
20		Notice to Proceed - Well Drilling	5 days	Tue 3/1/22	Mon 3/7/22	19
21		**Well Drilling and Construction**	**89 days**	**Tue 3/8/22**	**Fri 7/8/22**	
22		Submittals and Submittal Review	20 days	Tue 3/8/22	Mon 4/4/22	20
23		Equipment/Materials Acquisition	8 days	Tue 4/5/22	Thu 4/14/22	22
24		Site Mobilization/Preparation	1 day	Fri 4/15/22	Fri 4/15/22	23
25		Conductor Casing	2 days	Mon 4/18/22	Tue 4/19/22	24
26		Sound Wall Installation	5 days	Wed 4/20/22	Tue 4/26/22	25
27		Rig Mobilization	2 days	Wed 4/20/22	Thu 4/21/22	25
28		Pilot Hole Drilling	5 days	Fri 4/22/22	Thu 4/28/22	27
29		Geophysical Logging	1 day	Fri 4/29/22	Fri 4/29/22	28
30		Data Analysis and Final Well Design	2 days	Mon 5/2/22	Tue 5/3/22	29
31		Await Materials	10 days	Wed 5/4/22	Tue 5/17/22	30
32		Well Reaming	6 days	Wed 5/18/22	Wed 5/25/22	31
33		Well Construction	4 days	Thu 5/26/22	Tue 5/31/22	32
34		Well Development with Rig	6 days	Wed 6/1/22	Wed 6/8/22	33
35		Rig Demobilization	2 days	Thu 6/9/22	Fri 6/10/22	34
36		Development Pump Installation	2 days	Mon 6/13/22	Tue 6/14/22	35
37		Pump Development	5 days	Wed 6/15/22	Tue 6/21/22	36
38		Testing (Step, Constant Rate, Spinner Log)	5 days	Wed 6/22/22	Tue 6/28/22	37



Project: CHWD_Ella Way Well_S
Date: Thu 10/7/21

Task		Project Summary		Manual Task		Start-only		Deadline	
Split		Inactive Task		Duration-only		Finish-only		Progress	
Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
Summary		Inactive Summary		Manual Summary		External Milestone			

Project Schedule Continued

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
39		Pump Removal	1 day	Wed 6/29/22	Wed 6/29/22	38
40		Brush and Bail	1 day	Thu 6/30/22	Thu 6/30/22	39
41		Video Log	1 day	Fri 7/1/22	Fri 7/1/22	40
42		Alignment/Gyro Test	1 day	Mon 7/4/22	Mon 7/4/22	41
43		Disinfection/BacT Sampling	2 days	Tue 7/5/22	Wed 7/6/22	42
44		Demobilization	2 days	Thu 7/7/22	Fri 7/8/22	43
45		**Well Equipping and Facilities Design**	**179 days**	**Wed 12/8/21**	**Mon 8/15/22**	
46		Data Review	3 days	Wed 12/8/21	Fri 12/10/21	4
47		Geotechnical Investigation (field and lab)	2 wks	Mon 12/13/2	Fri 12/24/21	46
48		Draft Geotechnical Report	5 days	Mon 12/27/2	Fri 12/31/21	47
49		WSC-CHWD Review Geotech Report	2 days	Mon 1/3/22	Tue 1/4/22	48
50		Final Geotechnical Report	2 days	Wed 1/5/22	Thu 1/6/22	49
51		Draft Basis of Design TM/Design Confirmation	20 days	Wed 12/8/21	Tue 1/4/22	4
52		CHWD Review of Draft BODTM	5 days	Wed 1/5/22	Tue 1/11/22	51
53		Design Confirmation Review Meeting	1 day	Wed 1/12/22	Wed 1/12/22	52
54		Final BODTM	5 days	Thu 1/13/22	Wed 1/19/22	53
55		Prepare 50% Well Equipping Construction Documents	50 days	Fri 3/18/22	Thu 5/26/22	28FF+20 days,51
56		Deliver 50% Construction Documents	0 days	Thu 5/26/22	Thu 5/26/22	55
57		CHWD Review of 50% Construction Documents	10 days	Fri 5/27/22	Thu 6/9/22	56
58		50% Design Review Meeting	1 day	Fri 6/10/22	Fri 6/10/22	57
59		Prepare 95% Well Equipping Construction Documents	30 days	Mon 6/13/22	Fri 7/22/22	58
60		Deliver 95% Construction Documents	0 days	Fri 7/22/22	Fri 7/22/22	59
61		CHWD Review of 95% Construction Documents	10 days	Mon 7/25/22	Fri 8/5/22	60
62		95% Design Review Meeting	1 day	Mon 8/8/22	Mon 8/8/22	61
63		Prepare Final Well Equipping Construction Documents	5 days	Tue 8/9/22	Mon 8/15/22	62
64		Deliver Final Construction Documents	0 days	Mon 8/15/22	Mon 8/15/22	63
65		**Well Equipping and Facilities Bid Phase**	**61 days**	**Mon 7/25/22**	**Mon 10/17/2**	
66		Contractor Outreach and Notification	10 days	Mon 7/25/22	Fri 8/5/22	60
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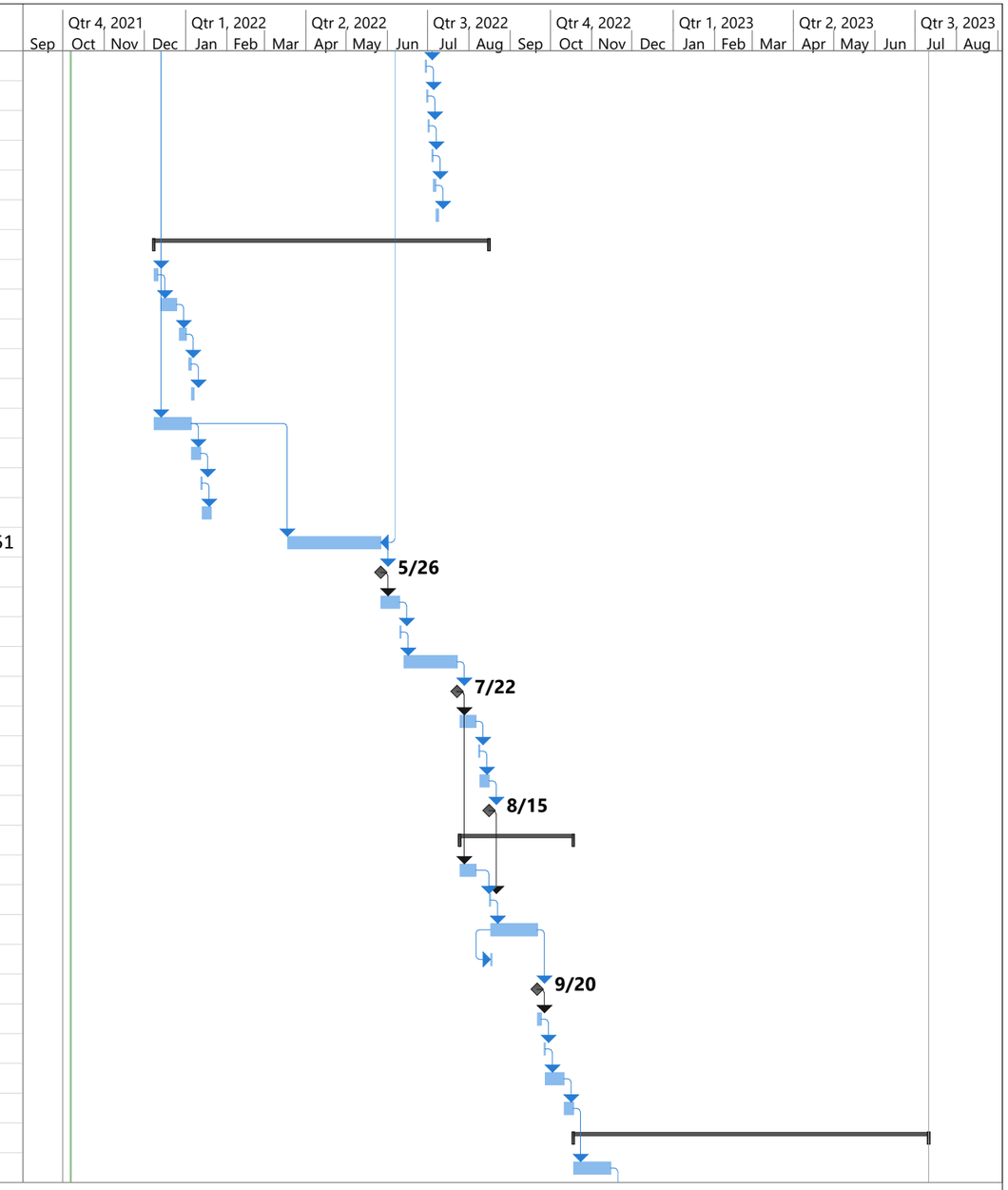
68		Advertise Project	5 wks	Wed 8/17/22	Tue 9/20/22	67
69		Pre-bid Meeting	1 day	Wed 8/17/22	Wed 8/17/22	68SS
70		Contractor Bids Due/Bid Opening	0 days	Tue 9/20/22	Tue 9/20/22	68
71		Bid Review	3 days	Wed 9/21/22	Fri 9/23/22	70
72		Board Approval/Contract Award	1 day	Mon 9/26/22	Mon 9/26/22	71
73		Contracting, Bonds, Insurance	10 days	Tue 9/27/22	Mon 10/10/2	72
74		Notice to Proceed - Well Equipping and Facilities	5 days	Tue 10/11/22	Mon 10/17/2	73
75		**Well Equipping and Facilities Construction**	**190 days**	**Tue 10/18/22**	**Mon 7/10/23**	
76		Submittals and Submittal Review	20 days	Tue 10/18/22	Mon 11/14/2	74



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79		Trench and Install Water Piping	7 days	Tue 12/6/22	Wed 12/14/2	78
80		Trench and Install Storm/Sewer	7 days	Tue 12/6/22	Wed 12/14/2	78
81		Conduit Install	15 days	Tue 12/6/22	Mon 12/26/2	78
82		Form and Pour Pads and Foundation	20 days	Tue 12/27/22	Mon 1/23/23	81
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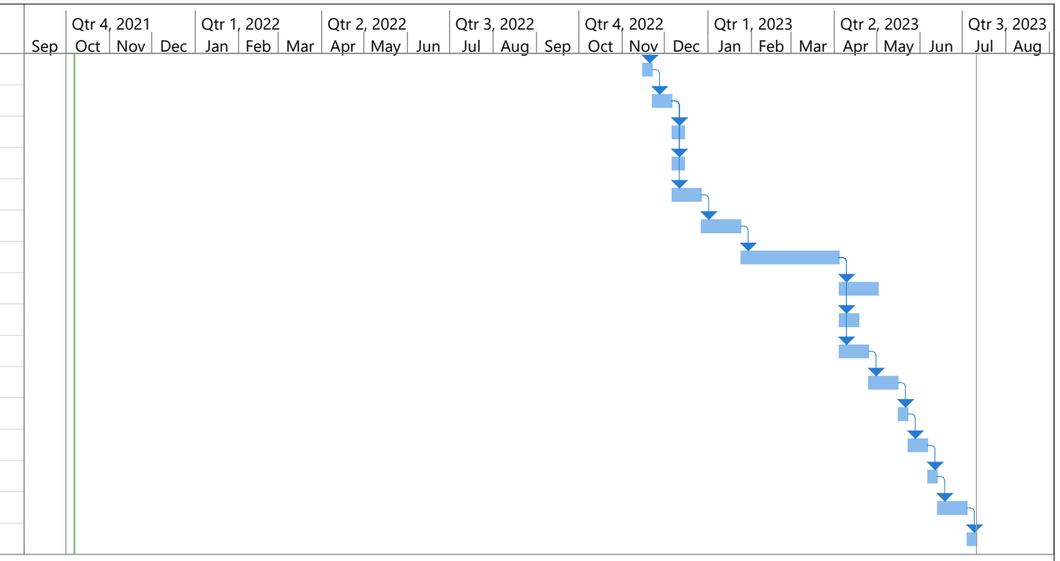
84		Interior Mechanical	20 days	Tue 4/4/23	Mon 5/1/23	83
85		Electrical and MCC Panels	10 days	Tue 4/4/23	Mon 4/17/23	83
86		Treatment and Equipment Install	15 days	Tue 4/4/23	Mon 4/24/23	83
87		Wiring and Electrical Top Out	15 days	Tue 4/25/23	Mon 5/15/23	86
88		Down Well Mechanical and Pump Install	5 days	Tue 5/16/23	Mon 5/22/23	87
89		Perimeter Fencing Install	10 days	Tue 5/23/23	Mon 6/5/23	88
90		Final Grading and Paving	5 days	Tue 6/6/23	Mon 6/12/23	89
91		Electrical Testing, Start-up, and Commissioning	15 days	Tue 6/13/23	Mon 7/3/23	90
92		Final Verification, Demobilizatin	5 days	Tue 7/4/23	Mon 7/10/23	91



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CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT	:	DISCUSSION AND POSSIBLE ACTION TO APPROVE A PROFESSIONAL SERVICES AGREEMENT WITH WALLACE-KUHL & ASSOCIATES
STATUS	:	Action Item
REPORT DATE	:	October 13, 2021
PREPARED BY	:	Paul Dietrich, Project Manager Missy Pieri, Director of Engineering/District Engineer

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OBJECTIVE:
Consider approval of a professional services agreement with Wallace-Kuhl & Associates for geotechnical services.

BACKGROUND AND ANALYSIS:
During the past two (2) years, Wallace-Kuhl & Associates (Wallace-Kuhl) has provided geotechnical services for Citrus Heights Water District (CHWD or District) to complete several capital improvement projects, including asphalt subgrade testing services, asphaltic concrete testing services, and utility subgrade testing services. CHWD staff has leveraged Wallace-Kuhl's work and resources to complete assigned projects in a timely and effective manner.

Utilizing contract resources such as Wallace-Kuhl with locally available laboratory facilities and prompt responsive testing is essential to keeping ongoing operating expenses down, while assuring that the resources are available as required and on an as-needed basis to complete projects in a timely and effective manner. Wallace-Kuhl provides detailed reports matching industry standards which allows consistent compliance with roadway restoration standards.

Currently, the District has an agreement with Wallace-Kuhl that is a limited term with a maximum amount of $20,000. As the District has been pleased with the quality and timeliness of the work performed under the initial agreement, and with the initial agreement amount almost expended, a new agreement will need to be approved. It is recommended that CHWD formalize a new task order style professional services agreement with Wallace-Kuhl. The task order style agreement is structured to offer the options of a Time-and-Materials/Hourly Billable arrangement or Project Basis/Not-to-Exceed (NTE) amount with a defined scope of work, schedule, and a not-to-exceed budget. The term of the updated agreement is ongoing, but includes a fifteen (15) day termination provision by CHWD or a sixty (60) day termination provision by Wallace-Kuhl without cause.

Funding for the various services covered in the agreement are budgeted for in the yearly Capital Improvement Budget. Work performed will be subject to the availability of budgeted funds.

RECOMMENDATION:
Approve the professional services agreement with Wallace-Kuhl & Associates, and authorize the General Manager to execute the agreement.

ATTACHMENT:
Professional Services Agreement for Geotechnical Services

ACTION:

Moved by Director _____, Seconded by Director _____, Carried _____

CITRUS HEIGHTS WATER DISTRICT
GEOTECHNICAL SERVICES AGREEMENT

1. PARTIES AND DATE.

This Agreement is made and entered into this _____ day of ____, 20__ by and between the Citrus Heights Water District, a municipal corporation organized under the laws of the State of California with its principal place of business at 6230 Sylvan Road, Citrus Heights, California ("District") and River City Geoprofessionals, Inc., dba Wallace-Kuhl & Associates, a California corporation, with its principal place of business at 3050 Industrial Boulevard, West Sacramento, CA 95691 ("Consultant"). District and Consultant are sometimes individually referred to as "Party" and collectively as "Parties" in this Agreement.

2. RECITALS.

2.1 Consultant.

Consultant desires to perform and assume responsibility for the provision of certain geotechnical services required by the District on the terms and conditions set forth in this Agreement. Consultant represents that it is experienced in providing Concrete Testing Services, Asphalt Concrete Testing Services, Asphalt Subgrade Testing Services, and Utility Subgrade Backfill Testing Services to public clients, that it and its employees or subconsultants have all necessary licenses and permits to perform the Services in the State of California, and that is familiar with the plans of District. Consultant shall not subcontract any portion of the work required by this Agreement, except as expressly stated herein, without prior written approval of District. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement.

2.2 Project.

District desires to engage Consultant to render such services on an on-call basis. Services shall be ordered by Task Order(s) to be issues pursuant to this Agreement for future projects as set forth herein (each such project shall be designated a "Project" under this Agreement).

3. TERMS.

3.1 Scope of Services and Term and Maximum Amount.

3.1.1 General Scope of Services. Consultant promises and agrees to furnish to the District all labor, materials, tools, equipment, services, and incidental and customary work necessary to fully and adequately supply Concrete Testing Services, Asphalt Concrete Testing Services, Asphalt Subgrade Testing Services, and Utility Subgrade Backfill Testing Services ("Services"). The Services shall be more particularly described in the individual Task Order issued by the District's General Manager or designee. No Service shall be performed unless authorized by a fully executed Task Order in the form attached hereto as Exhibit "B". All Services shall be subject to, and performed in accordance with, this Agreement, the relevant Task Order, the exhibits

attached hereto and incorporated herein by reference, and, as is consistent with the generally accepted professional standard of care, applicable local, state and federal laws, rules and regulations.

3.1.2 Term. The term of this Agreement shall continue in force for a period of one year from the date of execution. Upon expiration thereof, this Agreement will continue in force until either Party notifies the other Party in writing of its intent to terminate this Agreement as outlined in Section 3.4.1, or until otherwise terminated in accordance with this Agreement. Consultant shall meet any other established schedules and deadlines set forth in the applicable Task Order. All applicable indemnification provisions of this Agreement shall remain in effect following the termination of this Agreement.

3.2 Responsibilities of Consultant.

3.2.1 Control and Payment of Subordinates; Independent Consultant. The Services shall be performed by Consultant or under its supervision. Consultant will determine the means, methods and details of performing the Services subject to the requirements of this Agreement. District retains Consultant on an independent Consultant basis and not as an employee. Consultant retains the right to perform similar or different services for others during the term of this Agreement. Any additional personnel performing the Services under this Agreement on behalf of Consultant shall also not be employees of District and shall at all times be under Consultant's exclusive direction and control. Consultant shall pay all wages, salaries, and other amounts due such personnel in connection with their performance of Services under this Agreement and as required by law. Consultant shall be responsible for all reports and obligations respecting such additional personnel, including, but not limited to: social security taxes, income tax withholding, unemployment insurance, disability insurance, and workers' compensation insurance.

3.2.2 Schedule of Services. Consultant shall perform the Services expeditiously, within the term of this Agreement, and in accordance with the specific schedule that shall be set forth in the Task Order ("Schedule of Services"). Consultant shall be required to commence work within 15 calendar days, or as soon thereafter as reasonably practicable, of receiving a fully executed Task Order. Consultant represents that it has the professional and technical personnel required to perform the Services in conformance with such conditions. In order to facilitate Consultant's conformance with the Schedule of Services, District shall respond to Consultant's submittals in a timely manner. Upon request of District, Consultant shall provide a more detailed schedule of anticipated performance to meet the Schedule of Services.

3.2.3 Conformance to Applicable Requirements. All work prepared by Consultant shall be subject to the approval of District.

3.2.4 District's Representative. The District hereby designates the District's General Manager, or its designee, to act as its representative for the performance of this Agreement ("District's Representative"). District's Representative shall have the power to act on behalf of the District for all purposes under this Agreement. Consultant shall not accept direction or orders from any person other than the District's Representative or his or her designee.

3.2.5 Consultant's Representative. Consultant hereby designates Brian Kirkegaard, or his designee, to act as its representative for the performance of this Agreement ("Consultant's Representative"). Consultant's Representative shall have full authority to represent and act on behalf of the Consultant for all purposes under this Agreement. The Consultant's Representative shall supervise and direct the Services, using his or her best skill and attention, and shall be responsible for all means, methods, techniques, sequences and procedures and for the satisfactory coordination of all portions of the Services under this Agreement.

3.2.6 Coordination of Services. Consultant agrees to work closely with District staff in the performance of Services and shall be available to District's staff, other contractors, consultants, and other staff at all reasonable times.

3.2.7 Standard of Care; Performance of Employees. Consultant shall perform all Services under this Agreement in a skillful and competent manner, consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California. Consultant represents and maintains that it is skilled in the professional calling necessary to perform the Services. Consultant warrants that all employees and subconsultants shall have sufficient skill and experience to perform the Services assigned to them. Finally, Consultant represents that it, its employees and subconsultants have all licenses, permits, qualifications and approvals of whatever nature that are legally required to perform the Services, including any required business license, and that such licenses and approvals shall be maintained throughout the term of this Agreement. As provided for in the indemnification provisions of this Agreement, Consultant shall perform, at its own cost and expense and without reimbursement from the District, any services necessary to correct errors or omissions which are caused by the Consultant's failure to comply with the standard of care provided for herein. Any employee of the Consultant or its subconsultants who is determined by the District to be uncooperative, incompetent, a threat to the adequate or timely completion of the Project, a threat to the safety of persons or property, or any employee who fails or refuses to perform the Services in a manner acceptable to the District, shall be promptly removed from the Project by the Consultant and shall not be re-employed to perform any of the Services or to work on the Project.

3.2.8 Period of Performance. Consultant shall perform and complete all Services under this Agreement within the established schedules and deadlines set forth in the applicable Task Order ("Performance Time").

3.2.9 Disputes. Should any dispute arise respecting the true value of any work done, of any work omitted, or of any extra work which Consultant may be required to do, or respecting the size of any payment to Consultant during the performance of this Agreement, Consultant shall continue to perform the Services while said dispute is decided by the District. If Consultant disputes the District's decision, Consultant shall have such remedies as may be provided by law.

3.2.10 Laws and Regulations; Employee/Labor Certifications. Consultant shall keep itself fully informed of and in compliance with all local, state and federal laws, rules and regulations in any manner affecting the performance of the Project or the Services, including all Cal/OSHA requirements, and shall give all notices required by law. Consultant shall be liable for all violations of such laws and regulations in connection with Services. If the Consultant performs

any work knowing it to be contrary to such laws, rules and regulations and without giving written notice to the District, Consultant shall be solely responsible for all costs arising therefrom. District is a public entity of the State of California subject to certain provisions of the Health & Safety Code, Government Code, Public Contract Code, and Labor Code of the State. It is stipulated and agreed that all provisions of the law applicable to the public contracts of a municipality are a part of this Agreement to the same extent as though set forth herein and will be complied with. These include but are not limited to the payment of prevailing wages, the stipulation that eight (8) hours' labor shall constitute a legal day's work and that no worker shall be permitted to work in excess of eight (8) hours during any one calendar day except as permitted by law. Consultant shall defend, indemnify and hold District, its officials, officers, employees and agents free and harmless, pursuant to the indemnification provisions of this Agreement, from any claim or liability arising out of any failure or alleged failure to comply with such laws, rules or regulations.

3.2.10.1 Employment Eligibility; Consultant. By executing this Agreement, Consultant verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time. Such requirements and restrictions include, but are not limited to, examination and retention of documentation confirming the identity and immigration status of each employee of the Consultant. Consultant also verifies that it has not committed a violation of any such law within the five (5) years immediately preceding the date of execution of this Agreement, and shall not violate any such law at any time during the term of the Agreement. Consultant shall avoid any violation of any such law during the term of this Agreement by participating in an electronic verification of work authorization program operated by the United States Department of Homeland Security, by participating in an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, or by some other legally acceptable method. Consultant shall maintain records of each such verification, and shall make them available to the District or its representatives for inspection and copy at any time during normal business hours. The District shall not be responsible for any costs or expenses related to Consultant's compliance with the requirements provided for in Section 3.2.10 or any of its sub-sections.

3.2.10.2 Employment Eligibility; Subconsultants and Subcontractors. To the same extent and under the same conditions as Consultant, Consultant shall require all of its subconsultants, sub-subconsultants and subcontractors performing any work relating to the Project or this Agreement to make the same verifications and comply with all requirements and restrictions provided for in Section 3.2.10.1.

3.2.10.3 Employment Eligibility; Failure to Comply. Each person executing this Agreement on behalf of Consultant verifies that they are a duly authorized officer of Consultant, and understands that any of the following shall be grounds for the District to terminate the Agreement for cause: (1) failure of Consultant or its subconsultants, sub-subconsultants or contractors to meet any of the requirements provided for in Sections 3.2.10.1 or 3.2.10.2; (2) any misrepresentation or material omission concerning compliance with such requirements (including in those verifications provided to the Consultant under Section 3.2.10.2); or (3) failure to immediately remove from the Project any person found not to be in compliance with such requirements.

3.2.10.4 Labor Certification. By its signature hereunder, Consultant certifies that it is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that Code, and agrees to comply with such provisions before commencing the performance of the Services.

3.2.10.5 Equal Opportunity Employment. Consultant represents that it is an equal opportunity employer and it shall not discriminate against any subconsultant, employee or applicant for employment because of race, religion, color, national origin, handicap, ancestry, sex or age. Such non-discrimination shall include, but not be limited to, all activities related to initial employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination.

3.2.10.6 Air Quality. Consultant must fully comply with all applicable laws, rules and regulations in furnishing or using equipment and/or providing services, including, but not limited to, emissions limits and permitting requirements imposed by the California Air Resources Board (CARB). Consultant shall specifically be aware of the CARB limits and requirements' application to "portable equipment", which definition is considered by CARB to include any item of equipment with a fuel-powered engine. Consultant shall indemnify District against any fines or penalties imposed by CARB or any other governmental or regulatory agency for violations of applicable laws, rules and/or regulations by Consultant, its subconsultants, or others for whom Consultant is responsible under its indemnity obligations provided for in this Agreement.

3.2.10.7 Water Quality.

(A) Management and Compliance. To the extent applicable, Consultant's Services must account for, and fully comply with, all local, state and federal laws, rules and regulations that may impact water quality compliance, including, without limitation, all applicable provisions of the Federal Water Pollution Control Act (33 U.S.C. §§ 1300); the California Porter-Cologne Water Quality Control Act (Cal Water Code §§ 13000-14950); laws, rules and regulations of the Environmental Protection Agency and the State Water Resources Control Board; the District's ordinances regulating discharges of storm water; and any and all regulations, policies, or permits issued pursuant to any such authority regulating the discharge of pollutants, as that term is used in the Porter-Cologne Water Quality Control Act, to any ground or surface water in the state.

(B) Liability for Non-Compliance. Failure to comply with the laws, regulations and policies described in this Section is a violation of law that may subject Consultant or District to penalties, fines, or additional regulatory requirements. Consultant shall defend, indemnify and hold the District, its officials, officers, employees, volunteers and agents free and harmless, pursuant to the indemnification provisions of this Agreement, from and against any and all fines, penalties, claims or other regulatory requirements imposed as a result of Consultant's non-compliance with the laws, regulations and policies described in this Section, unless such non-compliance is the result of the sole established negligence, willful misconduct or active negligence of the District, its officials, officers, agents, employees or authorized volunteers.

(C) Training. In addition to any other standard of care requirements set forth in this Agreement, Consultant warrants that all employees and subconsultants shall have sufficient skill and experience to perform the Services assigned to them without impacting water quality in violation of the laws, regulations and policies described in this Section. Consultant further warrants that it, its employees and subconsultants will receive adequate training, as determined by District, regarding the requirements of the laws, regulations and policies described in this Section as they may relate to the Services provided under this Agreement. Upon request, District will provide Consultant with a list of training programs that meet the requirements of this paragraph.

3.2.11 Insurance.

3.2.11.1 Time for Compliance. Consultant shall not commence Services under this Agreement until it has provided evidence satisfactory to the District that it has secured all insurance required under this Section. In addition, Consultant shall not allow any subconsultant to commence work on any subcontract until it has provided evidence satisfactory to the District that the subconsultant has secured all insurance required under this Section.

3.2.11.2 Minimum Requirements. Consultant shall, at its expense, procure and maintain for the duration of the Agreement insurance against claims for injuries or death to persons or damages to property which may arise from or in connection with the performance of the Agreement by the Consultant, its agents, representatives, employees or subconsultants. Consultant shall also require all of its subconsultants to procure and maintain the same insurance for the duration of the Agreement. Such insurance shall meet at least the following minimum levels of coverage:

(A) Minimum Scope of Insurance. Coverage shall be at least as broad as the latest version of the following: (1) *General Liability*: Insurance Services Office Commercial General Liability coverage (occurrence form CG 0001); (2) *Automobile Liability*: Insurance Services Office Business Auto Coverage form number CA 0001, code 1 (any auto); and (3) *Workers' Compensation and Employer's Liability*: Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance; (4) *Professional Liability (errors and omissions)* insurance appropriate to Consultant's profession. The policy shall not contain any exclusion contrary to the Agreement, including but not limited to endorsements or provisions limiting coverage for (1) contractual liability (including but not limited to ISO CG 24 26 or 21 29); or (2) cross liability for claims or suits by one insured against another.

(B) Minimum Limits of Insurance. Consultant shall maintain limits no less than: (1) *General Liability:* $1,000,000 MINIMUM; per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with general aggregate limit is used including, but not limited to, form CG 2503, either the general aggregate limit shall apply separately to this Agreement/location or the general aggregate limit shall be twice the required occurrence limit; (2) *Automobile Liability:* $1,000,000 MINIMUM; per accident for bodily injury and property damage; and (3) *Workers' Compensation and Employer's Liability:* Workers' Compensation limits as required by the Labor Code of the State of California. Employer's Liability limits of $1,000,000 MINIMUM; per accident for bodily injury or disease: (4) *Professional Liability:* $1,000,000 per claim and aggregate (errors and

omissions). Defense costs shall be paid in addition to the limits. Consultant's excess or umbrella insurance may be used to meet the minimum insurance limits.

(C) Notices; Cancellation or Reduction of Coverage. At least fifteen (15) days prior to the expiration of any such policy, evidence showing that such insurance coverage has been renewed or extended shall be filed with the District. If such coverage is cancelled or materially reduced, Consultant shall, within ten (10) days after receipt of written notice of such cancellation or reduction of coverage, file with the District evidence of insurance showing that the required insurance has been reinstated or has been provided through another insurance company or companies. In the event any policy of insurance required under this Agreement does not comply with these specifications or is canceled and not replaced, the District has the right but not the duty to obtain the insurance it deems necessary and any premium paid by the District will be promptly reimbursed by Consultant or the District may withhold amounts sufficient to pay premium from Consultant payments. In the alternative, the District may suspend or terminate this Agreement.

(D) Additional Insured. The Citrus Heights Water District, its officials, officers, employees, agents, and volunteers shall be named as additional insureds on Consultant's and its subconsultants' policies of commercial general liability and automobile liability insurance using the endorsements and forms specified herein or exact equivalents.

3.2.11.3 Insurance Endorsements. The insurance policies shall contain the following provisions, or Consultant shall provide endorsements on forms supplied or approved by the District to add the following provisions to the insurance policies:

(A) General Liability. The general liability policy shall include or be endorsed (amended) to state that: (1) using ISO CG forms 20 10 and 20 37, or endorsements providing the exact same coverage, the Citrus Heights Water District, its officials, officers, employees, agents, and volunteers shall be covered as additional insured with respect to the Services or ongoing and complete operations performed by or on behalf of the Consultant, including materials, parts or equipment furnished in connection with such work; and (2) using ISO form 20 01, or endorsements providing the exact same coverage, the insurance coverage shall be primary insurance as respects the District, its officials, officers, employees, agents, and volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Consultant's scheduled underlying coverage. Any excess insurance shall contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of the District, before the District's own primary insurance or self-insurance shall be called upon to protect it as a named insured. Any insurance or self-insurance maintained by the District, its officials, officers, employees, agents, and volunteers shall be excess of the Consultant's insurance and shall not be called upon to contribute with it in any way. Notwithstanding the minimum limits set forth in Section 3.2.11.2(B), any available insurance proceeds in excess of the specified minimum limits of coverage shall be available to the parties required to be named as additional insureds pursuant to this Section 3.2.11.3(A).

(B) Automobile Liability. The automobile liability policy shall include or be endorsed (amended) to state that: (1) the District, its officials, officers, employees, agents, and volunteers shall be covered as additional insureds with respect to the ownership,

operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Consultant or for which the Consultant is responsible; and (2) the insurance coverage shall be primary insurance as respects the District, its officials, officers, employees, agents, and volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Consultant's scheduled underlying coverage. Any insurance or self-insurance maintained by the District, its officials, officers, employees, agents, and volunteers shall be excess of the Consultant's insurance and shall not be called upon to contribute with it in any way. Notwithstanding the minimum limits set forth in Section 3.2.11.2(B), any available insurance proceeds in excess of the specified minimum limits of coverage shall be available to the parties required to be named as additional insureds pursuant to this Section 3.2.11.3(B).

(C) Workers' Compensation and Employer's Liability Coverage. The insurer shall agree to waive all rights of subrogation against the District, its officials, officers, employees, agents, and volunteers for losses paid under the terms of the insurance policy which arise from work performed by the Consultant.

(D) All Coverages. Each insurance policy required by this Agreement shall be endorsed to state that: (A) coverage shall not be suspended, voided, reduced or canceled except after thirty (30) days (10 days for nonpayment of premium) prior written notice by certified mail, return receipt requested, has been given to the District; and (B) any failure to comply with reporting or other provisions of the policies, including breaches of warranties, shall not affect coverage provided to the District, its officials, officers, employees, agents, and volunteers. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the District, its officials, officers, employees, agents and volunteers, or any other additional insureds.

(E) Professional Liability (Errors and Omissions). At all times during the performance of the work under this Agreement the Consultant shall maintain professional liability or Errors and Omissions insurance appropriate to its profession, in a form and with insurance companies acceptable to the District and in an amount indicated herein. This insurance shall be endorsed to include contractual liability applicable to this Agreement and shall be written on a policy form coverage specifically designed to protect against acts, errors or omissions of the Consultant. "Covered Professional Services" as designated in the policy must specifically include work performed under this Agreement. The policy must "pay on behalf of" the insured.

3.2.11.4 Separation of Insureds; No Special Limitations; Waiver of Subrogation. All insurance required by this Section shall contain standard separation of insureds provisions. In addition, such insurance shall not contain any special limitations on the scope of protection afforded to the District, its officials, officers, employees, agents, and volunteers. All policies shall waive any right of subrogation of the insurer against the District, its officials, officers, employees, agents, and volunteers, or any other additional insureds, or shall specifically allow Consultant or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Consultant hereby waives its own right of recovery against District, its officials, officers, employees, agents, and volunteers, or any other additional insureds, and shall require similar written express waivers and insurance clauses from each of its subconsultants.

3.2.11.5 Deductibles and Self-Insurance Retentions. Any deductibles or self-insured retentions must be declared to and approved by the District.

3.2.11.6 Subconsultant Insurance Requirements. Consultant shall not allow any subconsultants to commence work on any subcontract relating to the work under the Agreement until they have provided evidence satisfactory to the District that they have secured all insurance required under this Section. If requested by Consultant, the District may approve different scopes or minimum limits of insurance for particular subconsultants. The Consultant and the District shall be named as additional insureds on all subconsultants' policies of Commercial General Liability using ISO form 20 38, or coverage at least as broad.

3.2.11.7 Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating no less than A:VIII, licensed to do business in California, and satisfactory to the District.

3.2.11.8 Verification of Coverage. Consultant shall furnish District with original certificates of insurance and endorsements effecting coverage required by this Agreement on forms satisfactory to the District. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf, and shall be on forms provided by the District if requested. All certificates and endorsements must be received and approved by the District before work commences. The District reserves the right to require complete, certified copies of all required insurance policies, at any time.

3.2.11.9 Reporting of Claims. Consultant shall report to the District, in addition to Consultant's insurer, any and all insurance claims submitted by Consultant in connection with the Services under this Agreement.

3.2.12 Safety. Consultant shall execute and maintain its work so as to avoid injury or damage to any person or property. In carrying out its Services, the Consultant shall at all times be in compliance with all applicable local, state and federal laws, rules and regulations, and shall exercise all necessary precautions for the safety of its employees appropriate to the nature of the work and the conditions under which the work is to be performed. Safety precautions as applicable shall include, but shall not be limited to: (A) adequate life protection and life-saving equipment and procedures; (B) instructions in accident prevention for all employees and subconsultants, such as safe walkways, scaffolds, fall protection ladders, bridges, gang planks, confined space procedures, trenching and shoring, equipment and other safety devices, equipment and wearing apparel as are necessary or lawfully required to prevent accidents or injuries; and (C) adequate facilities for the proper inspection and maintenance of all safety measures.

3.2.13 Bonds. [Removed]

3.2.14 [Removed]

3.3 Fees and Payments.

3.3.1 Compensation. Consultant shall receive compensation, including authorized reimbursements, for all Services rendered under this Agreement at the rates set forth in Exhibit "A," attached hereto and incorporated herein by reference. The total compensation per Task Order shall be set forth in the relevant Task Order, and Consultant shall be compensated in one of two billable methods: a) Time and Materials/Hourly Billable; or b) Project Basis/Not-to-Exceed (NTE) amount. Extra Work may be authorized, as described below; and if authorized, said Extra Work will be compensated at the rates and manner set forth in this Agreement.

3.3.2 Payment of Compensation. Consultant shall submit to District a monthly itemized invoice which indicates work completed and hours of Services rendered by Consultant. The invoice shall reference the relevant Task Order and describe the amount of Services and supplies provided since the initial commencement date of Services under this Agreement, and since the start of the subsequent billing periods, through the date of the invoice. Consultant shall include a Project Task Tracking Sheet with each invoice submitted. District shall, within forty-five (45) days of receiving such invoice and Project Task Tracking Sheet, review the invoice and pay all approved charges thereon.

3.3.3 Reimbursement for Expenses. Consultant shall not be reimbursed for any expenses unless authorized in writing by District.

3.3.4 Extra Work. At any time during the term of this Agreement, District may request that Consultant perform Extra Work. As used herein, "Extra Work" means any work which is determined by District to be necessary for the proper completion of the Project, but which the parties did not reasonably anticipate would be necessary at the execution of this Agreement. Consultant shall not perform, nor be compensated for, Extra Work without written authorization from District's Representative.

3.3.5 Prevailing Wages. Consultant is aware of the requirements of California Labor Code Section 1720, et seq., and 1770, et seq., as well as California Code of Regulations, Title 8, Section 16000, et seq., ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. Since the Services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is $1,000 or more, Consultant agrees to fully comply with such Prevailing Wage Laws. District shall provide Consultant with a copy of the prevailing rates of per diem wages in effect at the commencement of this Agreement. Consultant shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to execute the Services available to interested parties upon request, and shall post copies at the Consultant's principal place of business and at the project site. Consultant shall defend, indemnify and hold the District, its officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws. It shall be mandatory upon the Consultant and all subconsultants to comply with all California Labor Code provisions, which include but are not limited to prevailing wages (Labor Code Sections 1771, 1774 and 1775), employment of apprentices (Labor Code Section 1777.5), certified payroll records (Labor Code Section 1776), hours of labor (Labor Code Sections 1813 and 1815) and debarment of consultants and subconsultants (Labor Code Sections 1777.1).

3.3.6 Registration. Since the Services are being performed as part of an applicable "public works" or "maintenance" project, then pursuant to Labor Code Sections 1725.5 and 1771.1, the Consultant and all subconsultants must be registered with the Department of Industrial Relations. Consultant shall maintain registration for the duration of the Project and require the same of any subconsultant. This Project may also be subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be Consultant's sole responsibility to comply with all applicable registration and labor compliance requirements.

3.4 Termination of Agreement.

3.4.1 Grounds for Termination. Either Party may terminate the whole or any part of this Agreement at any time and without cause by giving written notice to the other Party of such termination, and specifying the effective date thereof, at least fifteen (15) business days before the effective date of such termination if notice is given by District, and at least sixty (60) calendar days before the effective date of such termination if notice is given by Consultant. Upon termination, Consultant shall be compensated only for those Services which have been adequately rendered to District, and Consultant shall be entitled to no further compensation. In addition, either Party may terminate this Agreement for material breach of this Agreement at any time upon no less than ten (10) calendar days' notice to the other Party and opportunity to cure.

3.4.2 Effect of Termination. If this Agreement is terminated as provided herein, District may require Consultant to provide all finished or unfinished Documents and Data and other information of any kind prepared by Consultant in connection with the performance of Services under this Agreement. Consultant shall be required to provide such document and other information within fifteen (15) days of the request.

3.4.3 Additional Services. In the event this Agreement is terminated in whole or in part as provided herein, District may procure, upon such terms and in such manner as it may determine appropriate, services similar to those terminated.

3.5 General Provisions.

3.5.1 Delivery of Notices. All notices permitted or required under this Agreement shall be given to the respective Parties at the following address, or at such other address as the respective Parties may provide in writing for this purpose:

Consultant:

River City Geoprofessionals, Inc. dba Wallace Kuhl & Associates
3050 Industrial Boulevard
West Sacramento, CA 95691
Attn: Matthew S. Moyneur, or his designee

District:

Attn: Paul Dietrich, Project Manager
Citrus Heights Water District
6230 Sylvan Road
Citrus Heights, California 95610

Such notice shall be deemed made when personally delivered or when mailed, forty-eight (48) hours after deposit in the U.S. Mail, first class postage prepaid and addressed to the party at its applicable address. Actual notice shall be deemed adequate notice on the date actual notice occurred, regardless of the method of service.

3.5.2 Indemnification.

3.5.2.1 Scope of Indemnity**.** To the fullest extent permitted by law, Consultant shall defend, indemnify and hold the District, its officials, officers, employees, volunteers and agents free and harmless from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, in any manner arising out of, pertaining to, or incident to any alleged acts, errors or omissions of Consultant, its officials, officers, employees, subconsultants, Consultants or agents in connection with the performance of the Consultant's Services, the Project or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys' fees and other related costs and expenses. Notwithstanding the foregoing, to the extent Consultant's Services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant.

3.5.2.2 Additional Indemnity Obligations. Consultant shall defend, with Counsel of District's choosing and at Consultant's own cost, expense and risk, any and all claims, suits, actions or other proceedings of every kind covered by Section 3.5.2.1 that may be brought or instituted against District or its officials, officers, employees, volunteers and agents. Consultant shall pay and satisfy any judgment, award or decree that may be rendered against District or its officials, officers, employees, volunteers and agents as part of any such claim, suit, action or other proceeding. Consultant shall also reimburse District for the cost of any settlement paid by District or its officials, officers, employees, agents or volunteers as part of any such claim, suit, action or other proceeding. Such reimbursement shall include payment for District's attorneys' fees and costs, including expert witness fees. Consultant shall reimburse District and its officials, officers, employees, agents, and/or volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Consultant's obligation to indemnify shall survive expiration or termination of this Agreement, and shall not be restricted to insurance proceeds, if any, received by the District, its officials officers, employees, agents, or volunteers. Notwithstanding the foregoing, for any claim alleged to have been caused by the negligent performance of the Consultant's services, the Consultant's shall have no immediate obligation to provide the defense of any indemnified party under its professional liability (errors and omissions) policy, but rather the Consultant shall reimburse indemnified parties reasonable defense costs ultimately determined to have been caused by the Consultant and proportionate to the degree of fault determined by an arbiter or court of competent jurisdiction.

3.5.3 Governing Law; Government Code Claim Compliance. This Agreement shall be governed by the laws of the State of California. Venue shall be in Sacramento County, California. In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra work, disputed work, claims and/or changed conditions, Consultant must comply with the claim procedures set forth in Government Code sections 900 et

seq. prior to filing any lawsuit against the District. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to extra work, disputed work, claims, and/or changed conditions have been followed by Consultant. If no such Government Code claim is submitted, or if any prerequisite contractual requirements are not otherwise satisfied as specified herein, Consultant shall be barred from bringing and maintaining a valid lawsuit against the District.

3.5.4 Time of Essence. Time is of the essence for each and every provision of this Agreement.

3.5.5 District's Right to Employ Other Consultants. District reserves right to employ other consultants in connection with this Project.

3.5.6 Successors and Assigns. This Agreement shall be binding on the successors and assigns of the Parties.

3.5.7 Assignment or Transfer. Consultant shall not assign, hypothecate or transfer, either directly or by operation of law, this Agreement or any interest herein without the prior written consent of the District. Any attempt to do so shall be null and void, and any assignees, hypothecates or transferees shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer.

3.5.8 Construction; References; Captions. Since the Parties or their agents have participated fully in the preparation of this Agreement, the language of this Agreement shall be construed simply, according to its fair meaning, and not strictly for or against any Party. Any term referencing time, days or period for performance shall be deemed calendar days and not work days. All references to Consultant include all personnel, employees, agents, and subconsultants of Consultant, except as otherwise specified in this Agreement. All references to District include its officials, officers, employees, agents, and volunteers except as otherwise specified in this Agreement. The captions of the various articles and paragraphs are for convenience and ease of reference only, and do not define, limit, augment, or describe the scope, content or intent of this Agreement.

3.5.9 Amendment; Modification. No supplement, modification or amendment of this Agreement shall be binding unless executed in writing and signed by both Parties.

3.5.10 Waiver. No waiver of any default shall constitute a waiver of any other default or breach, whether of the same or other covenant or condition. No waiver, benefit, privilege, or service voluntarily given or performed by a Party shall give the other Party any contractual rights by custom, estoppel or otherwise.

3.5.11 No Third Party Beneficiaries. Except to the extent expressly provided for in Section 3.5.7, there are no intended third party beneficiaries of any right or obligation assumed by the Parties.

3.5.12 Invalidity; Severability. If any portion of this Agreement is declared invalid, illegal, or otherwise unenforceable by a court of competent jurisdiction, the remaining provisions shall continue in full force and effect.

3.5.13 Prohibited Interests. Consultant maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement. Further, Consultant warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. Consultant further agrees to file, or shall cause its employees or subconsultants to file, a Statement of Economic Interest with the District's Filing Officer as required under state law in the performance of the Services. For breach or violation of this warranty, District shall have the right to rescind this Agreement without liability. For the term of this Agreement, no official, officer or employee of District, during the term of his or her service with District, shall have any direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

3.5.14 Cooperation; Further Acts. The Parties shall fully cooperate with one another, and shall take any additional acts or sign any additional documents as may be necessary, appropriate or convenient to attain the purposes of this Agreement.

3.5.15 Attorneys' Fees and Costs. If any action in law or equity, including an action for declaratory relief, is brought to enforce or interpret the provisions of this Agreement, the prevailing Party shall be entitled to recover from the losing party attorney's fees and costs in an amount determined to be reasonable by a court of competent jurisdiction.

3.5.16 Authority to Enter Agreement. Consultant has all requisite power and authority to conduct its business and to execute, deliver, and perform the Agreement. Each Party warrants that the individuals who have signed this Agreement have the legal power, right, and authority to make this Agreement and bind each respective Party.

3.5.17 Counterparts. This Agreement may be signed in counterparts, each of which shall constitute an original.

3.5.18 Entire Agreement. This Agreement contains the entire Agreement of the parties with respect to the subject matter hereof, and supersedes all prior negotiations, understandings or agreements. This Agreement may only be modified by a writing signed by both parties.

[SIGNATURES ON NEXT PAGE]

SIGNATURE PAGE FOR MAINTENANCE SERVICES AGREEMENT BETWEEN THE CITRUS HEIGHTS WATER DISTRICT AND WALLACE KUHL AND ASSOCIATES.

IN WITNESS WHEREOF, the Parties have entered into this Agreement as of the _____ day of May, 2019.

CITRUS HEIGHTS WATER DISTRICT	RIVER CITY GEOPROFESSIONALS, INC. DBA WALLACE KUHL AND ASSOCIATES
By: _____	By: _____
Hilary M. Straus General Manager	Matthew S. Moyneur Senior Engineer
	Federal Tax ID No. 27-2347235 CA DIR Registration: 1000006168

EXHIBIT "A"

SCOPE OF SERVICES

Based on the District's needs and issuance of an approved Task Order (see Exhibit "B"), River City Geoprofessionals, Inc. dba Wallace Kuhl & Associates will accomplish one or more of the following tasks in the performance of providing requested geotechnical services including:

1. Geotechnical Services
    - Concrete Testing Services
    - Asphalt Concrete Testing Services
    - Asphalt Subgrade Testing Services
    - Utility Subgrade Backfill Testing Services
    - Other Services as Requested within Consultants List of Professional Services and Schedule of Fees (Exhibit B)

EXHIBIT "B"
SAMPLE TASK ORDER FORM

TASK ORDER

Task Order No. _____ (YEAR - ##)

Contract: Geotechnical Services Agreement with Citrus Heights Water District

Consultant: River City Geoprofessionals, Inc. dba Wallace Kuhl & Associates

The Consultant is hereby authorized to perform the following work subject to the provisions of the Contract identified above:

List any attachments: (Please provide if any.)

Compensation Form:[INSERT HOURLY OR PROJECT BUDGET/NOT-TO-EXCEED (NTE)]

Reimbursements:[INSERT WHETHER MILEAGE AND OTHER REIMBURSEMENTS WILL BE PROVIDED]

Dollar Amount of Task Order: Not to exceed $_____,_____.00 (If NTE)

Completion Date: _____, 20__

The undersigned Consultant hereby agrees that it will provide all labor, equipment, furnish all materials, except as may be otherwise noted above, and perform all services for the work above specified in accordance with the Contract identified above and will accept as full payment therefore the amount shown above.

Citrus Heights Water District	**River City Geoprofessionals, Inc. dba Wallace Kuhl & Associates Consultant**
Dated: _____	Dated: _____
By: _____	By: _____

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 REGULAR MEETING

SUBJECT : AWARD OF A CONTRACT FOR 2022/23 ON-CALL CONCRETE RESTORATION SERVICES
STATUS : Action Item
REPORT DATE : November 3, 2021
PREPARED BY : Rebecca Scott, Director of Operations

OBJECTIVE:
Award a contract to B&M Builders for 2022/23 on-call concrete restoration services throughout the District service area for the amount of $24 per square foot for concrete flatwork restoration and $65 per linear foot of concrete curb and gutter restoration.

BACKGROUND AND ANALYSIS:
The District's Operations work crews maintain the District's underground water infrastructure, which includes, but is not limited to, sidewalk, curb, gutter, and driveway excavation for repair to and/or replacement work. After the District repairs and/or replaces the underground infrastructure within a concrete area, restoration is necessary. Due to the specialized nature of the work, required resources and annual workload requirements, the District does not maintain the equipment or have the staffing resources to restore concrete on an as-needed basis; therefore, contracting out concrete restoration work is essential.

The quantities of the concrete repairs vary between 500 to 2,500 square feet during any two-month period. The District is located within four municipal jurisdictions, which include the City of Citrus Heights, Sacramento County, Placer County, and the City of Roseville. The scope of work requires the contractor to comply with the requirements set forth by each jurisdictional inspector, as well as a District inspector.

The District issued a Bid Solicitation for on-call concrete restoration services on October 5, 2021. The proposed two-year agreement allows for two, one-year extensions (if both parties wish to continue the agreement) with a built in price increase provided by the bidders. As the cost of construction is currently high, CHWD staff intends to revisit the agreement prior to its initial two-year expiration, and may decide to go back out to bid instead of extending it.

In response to the bid solicitation, three sealed bids were received on October 27, 2021, at which time they were opened and read publicly. The apparent low bidder is B&M Builders of Rancho Cordova, CA. Bids received are as follows:

Bidder	Flatwork Restoration (per square foot)	Curb & Gutter Restoration (per linear foot)	Total for ***Estimated*** Annual Quantities (2,000 square feet of flatwork & 200 linear feet of curb/gutter)	Price Escalator for Years 3 & 4 (if contract is extended by both parties)
1. B&M Builders	$24	$65	**$61,000**	Flatwork: 20% Curb & Gutter: 25%
2. Central Valley Engineering & Asphalt, Inc.	$34	$128	**$93,600**	Flatwork: 12% Curb & Gutter: 12%
3. Sierra National Construction, Inc.	$39	$119	**$101,800**	Flatwork: 5% Curb & Gutter: 5%

RECOMMENDATION:

Approve the accompanying contract with B&M Builders for 2022/23 on-call concrete restoration services throughout the District service area for the amount of $24 per square foot for concrete flatwork restoration and $65 per linear foot of concrete curb and gutter restoration and authorize the General Manager to execute the agreement.

ATTACHMENTS:

Contract with B&M Builders for 2022/23 On-Call Concrete Restoration Services

ACTION:

Moved by Director _____, Seconded by Director _____, Carried _____

CITRUS HEIGHTS WATER DISTRICT

CONSTRUCTION CONTRACT
2022/2023 ON-CALL CONCRETE RESTORATION

1. PARTIES AND DATE.

This Contract is made and entered into this 3rd day of January, 2022 by and between Citrus Heights Water District, an irrigation district organized and operating under the laws of the State of California ("District") and B&M Builders, Inc. a Corporation with its principal place of business at 11330 Sunrise Park Drive, Ste. C ("Contractor"). District and Contractor are sometimes individually referred to as "Party" and collectively as "Parties" in this Contract.

2. RECITALS.

2.1 District. District is a public agency organized under the laws of the State of California, with power to contract for services necessary to achieve its purpose.

2.2 Contractor. Contractor desires to perform and assume responsibility for the provision of certain construction services required by the District on the terms and conditions set forth in this Contract. Contractor represents that it is duly licensed and experienced in providing services for on-call pavement restoration related construction services to public clients, that it and its employees or subcontractors have all necessary licenses and permits to perform the services in the State of California, and that it is familiar with the plans of District. The following license classifications are required for this Project:

- California State Class A – General Engineering Contractor's License
- California State Class C12 – Earthwork and Paving Contractor's License

2.3 Project. District desires to engage Contractor to render such services for the Citrus Heights Water District 2022/2023 On-Call Concrete Restoration Project ("Project") as set forth in this Contract.

2.4 Project Documents & Certifications. Contractor has obtained, and delivers concurrently herewith, a performance bond, a payment bond, and all insurance documentation, as required by the Contract.

3. TERMS

3.1 Incorporation of Documents. This Contract includes and hereby incorporates in full by reference the following documents, including all exhibits, drawings, specifications and documents therein, and attachments and addenda thereto:

- Services/Schedule (Exhibit "A")
- Special Provisions (Exhibit "B")
- Construction Details (Exhibit "C")
- Bid Form (Exhibit "D")
- Bond Requirements (Exhibit "E")

- Contractor's Certificate Regarding Workers' Compensation (Exhibit "F")
- Public Works Contractor Registration Certification (Exhibit "G")
- Payment and Performance Bonds (Exhibit "H")
- Addenda
- Change Orders executed by the District
- 2015 Edition of the Standard Specifications for Public Works Construction (The Greenbook), Excluding Sections 1-9
- Notice Inviting Bids
- Instructions to Bidders
- Contractor's Bid

3.2 Contractor's Basic Obligation; Scope of Work. Contractor promises and agrees, at its own cost and expense, to furnish to the District all labor, materials, tools, equipment, services, and incidental and customary work necessary to fully and adequately complete the Project, including all structures and facilities necessary for the Project or described in the Contract (hereinafter sometimes referred to as the "Work"), for a not-to-exceed Total Contract Price as specified pursuant to this Contract. All Work shall be subject to, and performed in accordance with the above referenced documents, as well as the exhibits attached hereto and incorporated herein by reference. The plans and specifications for the Work are further described in Exhibit "B" attached hereto and incorporated herein by this reference. Special Conditions, if any, relating to the Work are described in Exhibit "C" attached hereto and incorporated herein by this reference.

3.2.1 Change in Scope of Work. Any change in the scope of the Work, method of performance, nature of materials or price thereof, or any other matter materially affecting the performance or nature of the Work shall not be paid for or accepted unless such change, addition or deletion is approved in writing by a valid change order executed by the District. Should Contractor request a change order due to unforeseen circumstances affecting the performance of the Work, such request shall be made within five (5) business days of the date such circumstances are discovered or shall waive its right to request a change order due to such circumstances. If the Parties cannot agree on any change in price required by such change in the Work, the District may direct the Contractor to proceed with the performance of the change on a time and materials basis.

3.2.2 Substitutions/"Or Equal". Pursuant to Public Contract Code Section 3400(b), the District may make a finding that designates certain products, things, or services by specific brand or trade name. Unless specifically designated in this Contract, whenever any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such Specifications shall be deemed to be used for the purpose of facilitating the description of the material, process or article desired and shall be deemed to be followed by the words "or equal."

Contractor may, unless otherwise stated, offer for substitution any material, process or article which shall be substantially equal or better in every respect to that so indicated or specified in this Contract. However, the District may have adopted certain uniform standards for certain materials, processes and articles. Contractor shall submit requests, together with substantiating data, for substitution of any "or equal" material, process or article no later than thirty-five (35) days after award of the Contract. To facilitate the construction schedule and sequencing, some requests may need to be submitted before thirty-five (35) days after award of

Contract. Provisions regarding submission of "or equal" requests shall not in any way authorize an extension of time for performance of this Contract. If a proposed "or equal" substitution request is rejected, Contractor shall be responsible for providing the specified material, process or article. The burden of proof as to the equality of any material, process or article shall rest with Contractor.

The District has the complete and sole discretion to determine if a material, process or article is an "or equal" material, process or article that may be substituted. Data required to substantiate requests for substitutions of an "or equal" material, process or article data shall include a signed affidavit from Contractor stating that, and describing how, the substituted "or equal" material, process or article is equivalent to that specified in every way except as listed on the affidavit. Substantiating data shall include any and all illustrations, specifications, and other relevant data including catalog information which describes the requested substituted "or equal" material, process or article, and substantiates that it is an "or equal" to the material, process or article. The substantiating data must also include information regarding the durability and lifecycle cost of the requested substituted "or equal" material, process or article. Failure to submit all the required substantiating data, including the signed affidavit, to the District in a timely fashion will result in the rejection of the proposed substitution.

Contractor shall bear all of the District's costs associated with the review of substitution requests. Contractor shall be responsible for all costs related to a substituted "or equal" material, process or article. Contractor is directed to the Special Conditions (if any) to review any findings made pursuant to Public Contract Code section 3400.

3.3 Period of Performance and Liquidated Damages. Contractor shall perform and complete the Work under this Contract necessary to comply with each on-call request within 60 days, beginning the effective date of a Notice to Proceed for that call-out ("Contract Time"). Contractor shall perform its Work in strict accordance with any completion schedule, construction schedule or project milestones developed by the District. Such schedules or milestones may be included as part of Exhibits "A" or "B" attached hereto, or may be provided separately in writing to Contractor. Contractor agrees that if such Work is not completed within the aforementioned Contract Time and/or pursuant to any such completion schedule, construction schedule or project milestones developed pursuant to provisions of the Contract, it is understood, acknowledged and agreed that the District will suffer damage. Pursuant to Government Code Section 53069.85, Contractor shall pay to the District as fixed and liquidated damages the sum of ($200.00) per day for each and every calendar day of delay beyond the Contract Time or beyond any completion schedule, construction schedule or Project milestones established pursuant to the Contract.

3.4 Standard of Performance; Performance of Employees. Contractor shall perform all Work under this Contract in a skillful and workmanlike manner, and consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California. Contractor represents and maintains that it is skilled in the professional calling necessary to perform the Work. Contractor warrants that all employees and subcontractors shall have sufficient skill and experience to perform the Work assigned to them. Finally, Contractor represents that it, its employees and subcontractors have all licenses, permits, qualifications and approvals of whatever nature that are legally required to perform the Work, including a District business license, and that such licenses and approvals shall be maintained throughout the term of this Contract. As provided for in the indemnification provisions of this Contract, Contractor shall perform, at its own cost and expense and without reimbursement from the District, any work

necessary to correct errors or omissions which are caused by Contractor's failure to comply with the standard of care provided for herein. Any employee who is determined by the District to be uncooperative, incompetent, a threat to the safety of persons or the Work, or any employee who fails or refuses to perform the Work in a manner acceptable to the District, shall be promptly removed from the Project by Contractor and shall not be re-employed on the Work.

3.5 Control and Payment of Subordinates; Contractual Relationship. District retains Contractor on an independent contractor basis and Contractor is not an employee of District. Any additional personnel performing the work governed by this Contract on behalf of Contractor shall at all times be under Contractor's exclusive direction and control. Contractor shall pay all wages, salaries, and other amounts due such personnel in connection with their performance under this Contract and as required by law. Contractor shall be responsible for all reports and obligations respecting such additional personnel, including, but not limited to: social security taxes, income tax withholding, unemployment insurance, and workers' compensation insurance.

3.6 District's Basic Obligation. District agrees to engage and does hereby engage Contractor as an independent contractor to furnish all materials and to perform all Work according to the terms and conditions herein contained for the sum set forth above. Except as otherwise provided in the Contract, the District shall pay to Contractor, as full consideration for the satisfactory performance by Contractor of the services and obligations required by this Contract, the below-referenced compensation in accordance with compensation provisions set forth in the Contract.

3.7 Compensation and Payment.

3.7.1 Amount of Compensation. As consideration for performance of the Work required herein, District agrees to pay Contractor the unit price per square foot for patch paving restoration, pipeline trench paving restoration, and grind & paving restoration as specified on the Contract Bid Item Form, and as work is requested by the District. The total amount paid to Contractor shall not exceed One Hundred Twenty Five Thousand Dollars ($125,000.00) ("Total Contract Price") provided that such amount shall be subject to adjustment pursuant to the applicable terms of this Contract or written change orders approved and signed in advance by the District.

3.7.2 Payment of Compensation. The District will pay Contractor on a monthly basis as provided for herein. On or before the twenty first (21st) day of each month, Contractor shall submit to the District an itemized application for payment in the format supplied by the District indicating the amount of Work completed since commencement of the Work or since the last progress payment. These applications shall be supported by evidence which is required by this Contract and such other documentation as the District may require. The Contractor shall certify that the Work for which payment is requested has been done and that the materials listed are stored where indicated. Contractor may be required to furnish a detailed schedule of values upon request of the District and in such detail and form as the District shall request, showing the quantities, unit prices, overhead, profit, and all other expenses involved in order to provide a basis for determining the amount of progress payments.

3.7.3 Prompt Payment. District shall review and pay all progress payment requests in accordance with the provisions set forth in Section 20104.50 of the California Public

Contract Code. However, no progress payments will be made for Work not completed in accordance with this Contract. Contractor shall comply with all applicable laws, rules and regulations relating to the proper payment of its employees, subcontractors, suppliers or others.

3.7.4 Contract Retentions. From each approved progress estimate, five percent (5%) will be deducted and retained by the District, and the remainder will be paid to Contractor. All Contract retention shall be released and paid to Contractor and subcontractors pursuant to California Public Contract Code Section 7107.

3.7.5 Other Retentions. In addition to Contract retentions, the District may deduct from each progress payment an amount necessary to protect District from loss because of: (1) liquidated damages which have accrued as of the date of the application for payment; (2) any sums expended by the District in performing any of Contractor's obligations under the Contract which Contractor has failed to perform or has performed inadequately; (3) defective Work not remedied; (4) stop notices as allowed by state law; (5) reasonable doubt that the Work can be completed for the unpaid balance of the Total Contract Price or within the scheduled completion date; (6) unsatisfactory prosecution of the Work by Contractor; (7) unauthorized deviations from the Contract; (8) failure of Contractor to maintain or submit on a timely basis proper and sufficient documentation as required by the Contract or by District during the prosecution of the Work; (9) erroneous or false estimates by Contractor of the value of the Work performed; (10) any sums representing expenses, losses, or damages as determined by the District, incurred by the District for which Contractor is liable under the Contract; and (11) any other sums which the District is entitled to recover from Contractor under the terms of the Contract or pursuant to state law, including Section 1727 of the California Labor Code. The failure by the District to deduct any of these sums from a progress payment shall not constitute a waiver of the District's right to such sums.

3.7.6 Substitutions for Contract Retentions. In accordance with California Public Contract Code Section 22300, the District will permit the substitution of securities for any monies withheld by the District to ensure performance under the Contract. At the request and expense of Contractor, securities equivalent to the amount withheld shall be deposited with the District, or with a state or federally chartered bank in California as the escrow agent, and thereafter the District shall then pay such monies to Contractor as they come due. Upon satisfactory completion of the Contract, the securities shall be returned to Contractor. For purposes of this Section and Section 22300 of the Public Contract Code, the term "satisfactory completion of the contract" shall mean the time the District has issued written final acceptance of the Work and filed a Notice of Completion as required by law and provisions of this Contract. Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon. The escrow agreement used for the purposes of this Section shall be in the form provided by the District.

3.7.7 Title to Work. As security for partial, progress, or other payments, title to Work for which such payments are made shall pass to the District at the time of payment. To the extent that title has not previously been vested in the District by reason of payments, full title shall pass to the District at delivery of the Work at the destination and time specified in this Contract. Such transferred title shall in each case be good, free and clear from any and all security interests, liens, or other encumbrances. Contractor promises and agrees that it will not pledge, hypothecate, or otherwise encumber the items in any manner that would result in any lien, security interest,

charge, or claim upon or against said items. Such transfer of title shall not imply acceptance by the District, nor relieve Contractor from the responsibility to strictly comply with the Contract, and shall not relieve Contractor of responsibility for any loss of or damage to items.

3.7.8 Labor and Material Releases. Contractor shall furnish District with labor and material releases from all subcontractors performing work on, or furnishing materials for, the Work governed by this Contract prior to final payment by District.

3.7.9 Prevailing Wages. Contractor is aware of the requirements of California Labor Code Section 1720 et seq., and 1770 et seq., as well as California Code of Regulations, Title 8, Section 16000 et seq., ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. Since the Services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is $1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. District shall provide Contractor with a copy of the prevailing rates of per diem wages in effect at the commencement of this Contract. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to execute the Services available to interested parties upon request, and shall post copies at Contractor's principal place of business and at the project site. Contractor shall defend, indemnify and hold the District, its officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws. Contractor and any subcontractor shall forfeit a penalty of up to $200 per calendar day or portion thereof for each worker paid less than the prevailing wage rates.

3.7.10 Apprenticeable Crafts. When Contractor employs workmen in an apprenticeable craft or trade, Contractor shall comply with the provisions of Section 1777.5 of the California Labor Code with respect to the employment of properly registered apprentices upon public works. The primary responsibility for compliance with said section for all apprenticeable occupations shall be with Contractor. The Contractor or any subcontractor that is determined by the Labor Commissioner to have knowingly violated Section 1777.5 shall forfeit as a civil penalty an amount not exceeding $100 for each full calendar day of noncompliance, or such greater amount as provided by law.

3.7.11 Hours of Work. Contractor is advised that eight (8) hours labor constitutes a legal day's work. Pursuant to Section 1813 of the California Labor Code, Contractor shall forfeit a penalty of $25.00 per worker for each day that each worker is permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week, except when payment for overtime is made at not less than one and one-half (1-1/2) times the basic rate for that worker.

3.7.12 Payroll Records. Contractor and each subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. The payroll records shall be certified and shall be available for inspection at all reasonable hours at the principal office of Contractor in the manner provided in Labor Code section 1776. In the event of noncompliance with the requirements of this section, Contractor shall have

10 days in which to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with this section. Should noncompliance still be evident after such 10-day period, Contractor shall, as a penalty to District, forfeit not more than $100.00 for each calendar day or portion thereof, for each worker, until strict compliance is effectuated. The amount of the forfeiture is to be determined by the Labor Commissioner. A contractor who is found to have violated the provisions of law regarding wages on Public Works with the intent to defraud shall be ineligible to bid on Public Works contracts for a period of one to three years as determined by the Labor Commissioner. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payments then due. The responsibility for compliance with this section is on Contractor.

3.7.13 Contractor and Subcontractor Registration. Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. Contractor is directed to review, fill out and execute the Public Works Contractor Registration Certification attached hereto as Exhibit "E" prior to contract execution.

3.7.14 Labor Compliance. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be the Contractor's sole responsibility to evaluate and pay the cost of complying with all labor compliance requirements under this Contract and applicable law.

3.8 Performance of Work; Jobsite Obligations.

3.8.1 Water Quality Management and Compliance.

3.8.1.1 Water Quality Management and Compliance. Contractor shall keep itself and all subcontractors, staff, and employees fully informed of and in compliance with all local, state and federal laws, rules and regulations that may impact, or be implicated by the performance of the Work including, without limitation, all applicable provisions of the Federal Water Pollution Control Act (33 U.S.C. §§ 1300); the California Porter-Cologne Water Quality Control Act (Cal Water Code §§ 13000-14950); local ordinances regulating discharges of storm water; and any and all regulations, policies, or permits issued pursuant to any such authority regulating the discharge of pollutants, as that term is used in the Porter-Cologne Water Quality Control Act, to any ground or surface water in the State.

3.8.1.2 Compliance with the Statewide Construction General Permit. Contractor shall comply with all conditions of the most recent iteration of the National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity, issued by the California State Water Resources Control Board ("Permit"). It shall be Contractor's sole responsibility to file a Notice of Intent and procure coverage under the Permit for all construction activity which results in the disturbance of more than one acre of total land area or which is part of a larger common area of development or sale. Prior to initiating work, Contractor shall be solely responsible for preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) as required by the Permit. Contractor shall be

responsible for procuring, implementing and complying with the provisions of the Permit and the SWPPP, including the standard provisions, and monitoring and reporting requirements as required by the Permit. The Permit requires the SWPPP to be a "living document" that changes as necessary to meet the conditions and requirements of the job site as it progresses through difference phases of construction and is subject to different weather conditions. It shall be Contractor's sole responsibility to update the SWPPP as necessary to address conditions at the project site.

3.8.1.3 Other Water Quality Rules Regulations and Policies. Contractor shall comply with the lawful requirements of any applicable municipality, drainage District, or local agency regarding discharges of storm water to separate storm drain systems or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs.

3.8.1.4 Cost of Compliance. Storm, surface, nuisance, or other waters may be encountered at various times during construction of The Work. Therefore, the Contractor, by submitting a Bid, hereby acknowledges that it has investigated the risk arising from such waters, has prepared its Bid accordingly, and assumes any and all risks and liabilities arising therefrom.

3.8.1.5 Liability for Non-Compliance. Failure to comply with the Permit is a violation of federal and state law. Pursuant to the indemnification provisions of this Contract, Contractor hereby agrees to defend, indemnify and hold harmless the District and its officials, officers, employees, volunteers and agents for any alleged violations. In addition, District may seek damages from Contractor for any delay in completing the Work in accordance with the Contract, if such delay is caused by or related to Contractor's failure to comply with the Permit.

3.8.1.6 Reservation of Right to Defend. District reserves the right to defend any enforcement action brought against the District for Contractor's failure to comply with the Permit or any other relevant water quality law, regulation, or policy. Pursuant to the indemnification provisions of this Contract, Contractor hereby agrees to be bound by, and to reimburse the District for the costs (including the District's attorney's fees) associated with, any settlement reached between the District and the relevant enforcement entity.

3.8.1.7 Training. In addition to the standard of performance requirements set forth in paragraph 3.4, Contractor warrants that all employees and subcontractors shall have sufficient skill and experience to perform the Work assigned to them without impacting water quality in violation of the laws, regulations and policies described in paragraph 3.8.1. Consultant further warrants that it, its employees and subcontractors will receive adequate training, as determined by District, regarding the requirements of the laws, regulations and policies described in paragraph 3.8.1 as they may relate to the Work provided under this Agreement. Upon request, District will provide the Contractor with a list of training programs that meet the requirements of this paragraph.

3.8.2 Safety. Contractor shall execute and maintain its work so as to avoid injury or damage to any person or property. Contractor shall comply with the requirements of the specifications relating to safety measures applicable in particular operations or kinds of work. In carrying out its Work, Contractor shall at all times be in compliance with all applicable local, state

and federal laws, rules and regulations, and shall exercise all necessary precautions for the safety of employees appropriate to the nature of the Work and the conditions under which the Work is to be performed. Safety precautions as applicable shall include, but shall not be limited to, adequate life protection and lifesaving equipment; adequate illumination for underground and night operations; instructions in accident prevention for all employees, such as machinery guards, safe walkways, scaffolds, ladders, bridges, gang planks, confined space procedures, trenching and shoring, fall protection and other safety devices, equipment and wearing apparel as are necessary or lawfully required to prevent accidents or injuries; and adequate facilities for the proper inspection and maintenance of all safety measures. Furthermore, Contractor shall prominently display the names and telephone numbers of at least two medical doctors practicing in the vicinity of the Project, as well as the telephone number of the local ambulance service, adjacent to all telephones at the Project site.

3.8.3 Laws and Regulations. Contractor shall keep itself fully informed of and in compliance with all local, state and federal laws, rules and regulations in any manner affecting the performance of the Contract or the Work, including all Cal/OSHA requirements, and shall give all notices required by law. Contractor shall be liable for all violations of such laws and regulations in connection with Work. If Contractor observes that the drawings or specifications are at variance with any law, rule or regulation, it shall promptly notify the District in writing. Any necessary changes shall be made by written change order. If Contractor performs any work knowing it to be contrary to such laws, rules and regulations and without giving written notice to the District, Contractor shall be solely responsible for all costs arising therefrom. District is a public entity of the State of California subject to certain provisions of the Health & Safety Code, Government Code, Public Contract Code, and Labor Code of the State. It is stipulated and agreed that all provisions of the law applicable to the public contracts of a municipality are a part of this Contract to the same extent as though set forth herein and will be complied with. Contractor shall defend, indemnify and hold District, its officials, officers, employees and agents free and harmless, pursuant to the indemnification provisions of this Contract, from any claim or liability arising out of any failure or alleged failure to comply with such laws, rules or regulations.

3.8.4 Permits and Licenses. Contractor shall be responsible for securing District permits and licenses necessary to perform the Work described herein, including, but not limited to, a county or city business license. While Contractor will not be charged a fee for any District permits, Contractor shall pay the District's applicable business license fee. Any ineligible contractor or subcontractor pursuant to Labor Code Sections 1777.1 and 1777.7 may not perform work on this Project.

3.8.5 Trenching Work. If the Total Contract Price exceeds $25,000 and if the Work governed by this Contract entails excavation of any trench or trenches five (5) feet or more in depth, Contractor shall comply with all applicable provisions of the California Labor Code, including Section 6705. To this end, Contractor shall submit for District's review and approval a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer.

3.8.6 Hazardous Materials and Differing Conditions. As required by California Public Contract Code Section 7104, if this Contract involves digging trenches or other excavations

that extend deeper than four (4) feet below the surface, Contractor shall promptly, and prior to disturbance of any conditions, notify District of: (1) any material discovered in excavation that Contractor believes to be a hazardous waste that is required to be removed to a Class I, Class II or Class III disposal site; (2) subsurface or latent physical conditions at the site differing from those indicated by District; and (3) unknown physical conditions of an unusual nature at the site, significantly different from those ordinarily encountered in such contract work. Upon notification, District shall promptly investigate the conditions to determine whether a change order is appropriate. In the event of a dispute, Contractor shall not be excused from any scheduled completion date and shall proceed with all Work to be performed under the Contract, but shall retain all rights provided by the Contract or by law for making protests and resolving the dispute.

3.8.7 Underground Utility Facilities. To the extent required by Section 4215 of the California Government Code, District shall compensate Contractor for the costs of: (1) locating and repairing damage to underground utility facilities not caused by the failure of Contractor to exercise reasonable care; (2) removing or relocating underground utility facilities not indicated in the construction drawings; and (3) equipment necessarily idled during such work. Contractor shall not be assessed liquidated damages for delay caused by failure of District to provide for removal or relocation of such utility facilities.

3.8.8 Air Quality. Contractor must fully comply with all applicable laws, rules and regulations in furnishing or using equipment and/or providing services, including, but not limited to, emissions limits and permitting requirements imposed by the California Air Resources Board (CARB). Although CARB limits and requirements are more broad, Contractor shall specifically be aware of their application to "portable equipment", which definition is considered by CARB to include any item of equipment with a fuel-powered engine. Contractor shall indemnify District against any fines or penalties imposed by CARB, or any other governmental or regulatory agency for violations of applicable laws, rules and/or regulations by Contractor, its subcontractors, or others for whom Contractor is responsible under its indemnity obligations provided for in this Agreement.

3.8.9 State Recycling Mandates. Contractor shall comply with State Recycling Mandates. Any recyclable materials/debris collected by the contractor that can be feasibly diverted via reuse or recycling must be hauled by the appropriate handler for reuse or recycling.

3.9 Completion of Work. When Contractor determines that it has completed the Work required herein, Contractor shall so notify District in writing and shall furnish all labor and material releases required by this Contract. District shall thereupon inspect the Work. If the Work is not acceptable to the District, the District shall indicate to Contractor in writing the specific portions or items of Work which are unsatisfactory or incomplete. Once Contractor determines that it has completed the incomplete or unsatisfactory Work, Contractor may request a re-inspection by the District. Once the Work is acceptable to District, District shall pay to Contractor the Total Contract Price remaining to be paid, less any amount which District may be authorized or directed by law to retain. Payment of retention proceeds due to Contractor shall be made in accordance with Section 7107 of the California Public Contract Code.

3.10 Claims; Government Code Claim Compliance.

3.10.1 Resolution of Claims. Notwithstanding any other provision herein, all claims shall be resolved pursuant to the claims resolution process set forth in Public Contract Code Section 9204. Furthermore, the resolution of claims of $375,000 or less shall also comply with the claims resolution procedures set forth in California Public Contract Code §§ 20104, et seq.

3.10.2 Third Party Claims. Pursuant to Public Contract Code Section 9201, the District shall provide Contractor with timely notification of the receipt of any third-party claim, relating to the Contract. The District is entitled to recover its reasonable costs incurred in providing such notification.

3.10.3 Government Code Claims. In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra work, disputed work, claims and/or changed conditions, Contractor must comply with the claim procedures set forth in Government Code sections 900 et seq. prior to filing any lawsuit against the District. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to extra work, disputed work, claims, and/or changed conditions have been followed by Contractor. If no such Government Code claim is submitted, or if any prerequisite contractual requirements are not otherwise satisfied as specified herein, Contractor shall be barred from bringing and maintaining a valid lawsuit against the District.

3.11 Loss and Damage. Except as may otherwise be limited by law, Contractor shall be responsible for all loss and damage which may arise out of the nature of the Work agreed to herein, or from the action of the elements, or from any unforeseen difficulties which may arise or be encountered in the prosecution of the Work until the same is fully completed and accepted by District. In the event of damage proximately caused by an Act of God, as defined by Section 7105 of the Public Contract Code, the District may terminate this Contract pursuant to Section 3.17.3; provided, however, that the District needs to provide Contractor with only one (1) day advanced written notice.

3.12 Indemnification.

3.12.1 Scope of Indemnity. To the fullest extent permitted by law, Contractor shall defend, indemnify and hold the District, its officials, employees, agents and authorized volunteers free and harmless from any and all claims, demands, causes of action, suits, actions, proceedings, costs, expenses, liability, judgments, awards, decrees, settlements, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, (collectively, "Claims") in any manner arising out of, pertaining to, or incident to any alleged acts, errors or omissions, or willful misconduct of Contractor, its officials, officers, employees, subcontractors, consultants or agents in connection with the performance of the Contractor's services, the Project or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys' fees and other related costs and expenses. Notwithstanding the foregoing, to the extent required by Civil Code section 2782, Contractor's indemnity obligation shall not apply to liability for damages for death or bodily injury to persons, injury to property, or any other loss, damage or expense arising from the sole or active negligence or willful misconduct of the District or the District's agents, servants, or independent contractors who are directly responsible to the District, or for defects in design furnished by those persons.

3.12.2 Additional Indemnity Obligations**.** Contractor shall defend, with counsel of District's choosing and at Contractor's own cost, expense and risk, any and all Claims covered by this section that may be brought or instituted against District or its officials, employees, agents and authorized volunteers. In addition, Contractor shall pay and satisfy any judgment, award or decree that may be rendered against District or its officials, employees, agents and authorized volunteers as part of any such claim, suit, action or other proceeding. Contractor shall also reimburse District for the cost of any settlement paid by District or its officials, employees, agents and authorized volunteers as part of any such claim, suit, action or other proceeding. Such reimbursement shall include payment for District's attorney's fees and costs, including expert witness fees. Contractor shall reimburse District and its officials, employees, agents and authorized volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Contractor's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the District, its officials, employees, agents and authorized volunteers.

3.13 Insurance.

3.13.1 Time for Compliance. Contractor shall not commence Work under this Contract until it has provided evidence satisfactory to the District that it has secured all insurance required under this section. In addition, Contractor shall not allow any subcontractor to commence work on any subcontract until it has provided evidence satisfactory to the District that the subcontractor has secured all insurance required under this section. Failure to provide and maintain all required insurance shall be grounds for the District to terminate this Contract for cause.

3.13.2 Minimum Requirements. Contractor shall, at its expense, procure and maintain for the duration of the Contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder by Contractor, its agents, representatives, employees or subcontractors. Contractor shall also require all of its subcontractors to procure and maintain the same insurance for the duration of the Contract. Such insurance shall meet at least the following minimum levels of coverage:

3.13.2.1 Minimum Scope of Insurance. Coverage shall be at least as broad as the latest version of the following: (1) *General Liability:* Insurance Services Office Commercial General Liability coverage (occurrence form CG 00 01) OR Insurance Services Office Owners and Contractors Protective Liability Coverage Form (CG 00 09 11 88) (coverage for operations of designated contractor); (2) *Automobile Liability:* Insurance Services Office Business Auto Coverage form number CA 00 01, code 1 (any auto); and (3) *Workers' Compensation and Employer's Liability:* Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance. Policies shall not contain exclusions contrary to this Contract.

3.13.2.2 Minimum Limits of Insurance. Contractor shall maintain limits no less than: (1) *General Liability:* $2,000,000 per occurrence and $4,000,000 aggregate for bodily injury, personal injury and property damage; (2) *Automobile Liability:* $2,000,000 per accident for bodily injury and property damage; and (3) *Workers' Compensation and Employer's Liability:* Workers' compensation limits as required by the Labor Code of the State of California. Employer's Liability limits of $1,000,000 each accident, policy limit bodily injury or disease, and each employee bodily injury or disease. Defense costs shall be available in addition to the limits.

Notwithstanding the minimum limits specified herein, any available coverage shall be provided to the parties required to be named as additional insureds pursuant to this Contract.

3.13.3 Insurance Endorsements. The insurance policies shall contain the following provisions, or Contractor shall provide endorsements (amendments) on forms supplied or approved by the District to add the following provisions to the insurance policies:

3.13.3.1 General Liability. (1) Such policy shall give the District, its officials, employees, agents and authorized volunteers additional insured status using ISO endorsements CG20 10 10 01 plus CG20 37 10 01, or endorsements providing the exact same coverage, with respect to the Work or operations performed by or on behalf of Contractor, including materials, parts or equipment furnished in connection with such work; (2) all policies shall waive or shall permit Contractor to waive all rights of subrogation which may be obtained by the Contractor or any insurer by virtue of payment of any loss or any coverage provided to any person named as an additional insured pursuant to this Contract, and Contractor agrees to waive all such rights of subrogation; and (3) the insurance coverage shall be primary insurance as respects the District, its officials, employees, agents and authorized volunteers, or if excess, shall stand in an unbroken chain of coverage excess of Contractor's scheduled underlying coverage. Any insurance or self-insurance maintained by the District, its officials, employees, agents and authorized volunteers shall be excess of Contractor's insurance and shall not be called upon to contribute with it.

3.13.3.2 Automobile Liability. (1) Such policy shall give the District, its officials, employees, agents and authorized volunteers additional insured status with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by Contractor or for which Contractor is responsible; (2) all policies shall waive or shall permit Contractor to waive all rights of subrogation which may be obtained by the Contractor or any insurer by virtue of payment of any loss or any coverage provided to any person named as an additional insured pursuant to this Contract, and Contractor agrees to waive all such rights of subrogation; and (3) the insurance coverage shall be primary insurance as respects the District, its officials, employees, agents and authorized volunteers, or if excess, shall stand in an unbroken chain of coverage excess of Contractor's scheduled underlying coverage. Any insurance or self-insurance maintained by the District, its officials, employees, agents and authorized volunteers shall be excess of Contractor's insurance and shall not be called upon to contribute with it in any way.

3.13.3.3 Workers' Compensation and Employer's Liability Coverage. The insurer shall agree to waive all rights of subrogation against the District, its officials, employees, agents and authorized volunteers for losses paid under the terms of the insurance policy which arise from work performed by Contractor.

3.13.3.4 All Coverages. Each insurance policy required by this Contract shall be endorsed to state that: (1) coverage shall not be suspended, voided, reduced or canceled except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the District; and (2) any failure to comply with reporting or other provisions of the policies, including breaches of warranties, shall not affect coverage provided to the District, its officials, employees, agents and authorized volunteers.

3.13.4 Separation of Insureds; No Special Limitations. All insurance required by this Section shall contain standard separation of insureds provisions. In addition, such insurance shall not contain any special limitations on the scope of protection afforded to the District, its officials, employees, agents and authorized volunteers.

3.13.5 Deductibles and Self-Insurance Retentions. Any deductibles or self-insured retentions must be declared to and approved by the District. Contractor shall guarantee that, at the option of the District, either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the District, its officials, employees, agents and authorized volunteers; or (2) the Contractor shall procure a bond or other financial guarantee acceptable to the District guaranteeing payment of losses and related investigation costs, claims and administrative and defense expenses.

3.13.6 Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating no less than A:VII, licensed to do business in California, and satisfactory to the District. Exception may be made for the State Compensation Insurance Fund when not specifically rated.

3.13.7 Verification of Coverage. Contractor shall furnish District with original certificates of insurance and endorsements effecting coverage required by this Contract on forms satisfactory to the District. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf, and shall be on forms supplied or approved by the District. All certificates and endorsements must be received and approved by the District before work commences. The District reserves the right to require complete, certified copies of all required insurance policies, at any time.

3.13.8 Subcontractors. All subcontractors shall meet the requirements of this Section before commencing Work. Contractor shall furnish separate certificates and endorsements for each subcontractor. Subcontractor policies of General Liability insurance shall name the District, its officials, employees, agents and authorized volunteers as additional insureds using form ISO 20 38 04 13 or endorsements providing the exact same coverage. All coverages for subcontractors shall be subject to all of the requirements stated herein except as otherwise agreed to by the District in writing.

3.13.9 Reporting of Claims. Contractor shall report to the District, in addition to Contractor's insurer, any and all insurance claims submitted by Contractor in connection with the Work under this Contract.

3.14 Bond Requirements.

3.14.1 Payment Bond. If required by law or otherwise specifically requested by District in Exhibit "C" attached hereto and incorporated herein by reference, Contractor shall execute and provide to District concurrently with this Contract a Payment Bond in an amount required by the District and in a form provided or approved by the District. If such bond is required, no payment will be made to Contractor until the bond has been received and approved by the District.

3.14.2 Performance Bond. If specifically requested by District in Exhibit "C" attached hereto and incorporated herein by reference, Contractor shall execute and provide to District concurrently with this Contract a Performance Bond in an amount required by the District and in a form provided or approved by the District. If such bond is required, no payment will be made to Contractor until the bond has been received and approved by the District.

3.14.3 Bond Provisions. Should, in District's sole opinion, any bond become insufficient or any surety be found to be unsatisfactory, Contractor shall renew or replace the effected bond within (ten) 10 days of receiving notice from District. In the event the surety or Contractor intends to reduce or cancel any required bond, at least thirty (30) days prior written notice shall be given to the District, and Contractor shall post acceptable replacement bonds at least ten (10) days prior to expiration of the original bonds. No further payments shall be deemed due or will be made under this Contract until any replacement bonds required by this Section are accepted by the District. To the extent, if any, that the Total Contract Price is increased in accordance with the Contract, Contractor shall, upon request of the District, cause the amount of the bond to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the District. If Contractor fails to furnish any required bond, the District may terminate the Contract for cause.

3.14.4 Surety Qualifications. Only bonds executed by an admitted surety insurer, as defined in California Code of Civil Procedure Section 995.120, shall be accepted. If a California-admitted surety insurer issuing bonds does not meet these requirements, the insurer will be considered qualified if it is in conformance with Section 995.660 of the California Code of Civil Procedure, and proof of such is provided to the District.

3.15 Warranty. Contractor warrants all Work under the Contract (which for purposes of this Section shall be deemed to include unauthorized work which has not been removed and any non-conforming materials incorporated into the Work) to be of good quality and free from any defective or faulty material and workmanship. Contractor agrees that for a period of one year (or the period of time specified elsewhere in the Contract or in any guarantee or warranty provided by any manufacturer or supplier of equipment or materials incorporated into the Work, whichever is later) after the date of final acceptance, Contractor shall within ten (10) days after being notified in writing by the District of any defect in the Work or non-conformance of the Work to the Contract, commence and prosecute with due diligence all Work necessary to fulfill the terms of the warranty at its sole cost and expense. Contractor shall act sooner as requested by the District in response to an emergency. In addition, Contractor shall, at its sole cost and expense, repair and replace any portions of the Work (or work of other contractors) damaged by its defective Work or which becomes damaged in the course of repairing or replacing defective Work. For any Work so corrected, Contractor's obligation hereunder to correct defective Work shall be reinstated for an additional one year period, commencing with the date of acceptance of such corrected Work. Contractor shall perform such tests as the District may require to verify that any corrective actions, including, without limitation, redesign, repairs, and replacements comply with the requirements of the Contract. All costs associated with such corrective actions and testing, including the removal, replacement, and reinstitution of equipment and materials necessary to gain access, shall be the sole responsibility of Contractor. All warranties and guarantees of subcontractors, suppliers and manufacturers with respect to any portion of the Work, whether express or implied, are deemed to be obtained by Contractor for the benefit of the District, regardless of whether or not such

warranties and guarantees have been transferred or assigned to the District by separate agreement and Contractor agrees to enforce such warranties and guarantees, if necessary, on behalf of the District. In the event that Contractor fails to perform its obligations under this Section, or under any other warranty or guaranty under this Contract, to the reasonable satisfaction of the District, the District shall have the right to correct and replace any defective or non-conforming Work and any work damaged by such work or the replacement or correction thereof at Contractor's sole expense. Contractor shall be obligated to fully reimburse the District for any expenses incurred hereunder upon demand.

3.16 Employee/Labor Certifications.

3.16.1 Contractor's Labor Certification. By its signature hereunder, Contractor certifies that he is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of that Code, and agrees to comply with such provisions before commencing the performance of the Work. A certification form for this purpose, which is attached to this Contract as Exhibit "D" and incorporated herein by reference, shall be executed simultaneously with this Contract.

3.16.2 Equal Opportunity Employment. Contractor represents that it is an equal opportunity employer and that it shall not discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, sex, age or other interests protected by the State or Federal Constitutions. Such non-discrimination shall include, but not be limited to, all activities related to initial employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination.

3.16.3 Verification of Employment Eligibility. By executing this Contract, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time, and shall require all subconsultants and sub-subconsultants to comply with the same.

3.17 General Provisions.

3.17.1 District's Representative. The District hereby designates the General Manager, or his or her designee, to act as its representative for the performance of this Contract ("District's Representative"). District's Representative shall have the power to act on behalf of the District for all purposes under this Contract. Contractor shall not accept direction or orders from any person other than the District's Representative or his or her designee.

3.17.2 Contractor's Representative. Before starting the Work, Contractor shall submit in writing the name, qualifications and experience of its proposed representative who shall be subject to the review and approval of the District ("'Contractor's Representative"). Following approval by the District, Contractor's Representative shall have full authority to represent and act on behalf of Contractor for all purposes under this Contract. Contractor's Representative shall supervise and direct the Work, using his best skill and attention, and shall be responsible for all construction means, methods, techniques, sequences and procedures and for the satisfactory coordination of all portions of the Work under this Contract. Contractor's Representative shall

devote full time to the Project and either he or his designee, who shall be acceptable to the District, shall be present at the Work site at all times that any Work is in progress and at any time that any employee or subcontractor of Contractor is present at the Work site. Arrangements for responsible supervision, acceptable to the District, shall be made for emergency Work which may be required. Should Contractor desire to change its Contractor's Representative, Contractor shall provide the information specified above and obtain the District's written approval.

3.17.3 Termination. This Contract may be terminated by District at any time, either with our without cause, by giving Contractor three (3) days advance written notice. In the event of termination by District for any reason other than the fault of Contractor, District shall pay Contractor for all Work performed up to that time as provided herein. In the event of breach of the Contract by Contractor, District may terminate the Contract immediately without notice, may reduce payment to Contractor in the amount necessary to offset District's resulting damages, and may pursue any other available recourse against Contractor. Contractor may not terminate this Contract except for cause. In the event this Contract is terminated in whole or in part as provided, District may procure, upon such terms and in such manner as it may determine appropriate, services similar to those terminated. Further, if this Contract is terminated as provided, District may require Contractor to provide all finished or unfinished documents, data, diagrams, drawings, materials or other matter prepared or built by Contractor in connection with its performance of this Contract.

3.17.4 Contract Interpretation. Should any question arise regarding the meaning or import of any of the provisions of this Contract or written or oral instructions from District, the matter shall be referred to District's Representative, whose decision shall be binding upon Contractor.

3.17.5 Anti-Trust Claims. This provision shall be operative if this Contract is applicable to California Public Contract Code Section 7103.5. In entering into this Contract to supply goods, services or materials, Contractor hereby offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2, commencing with Section 16700, of Part 2 of Division 7 of the Business and Professions Code) arising from purchases of goods, services, or materials pursuant to the Contract. This assignment shall be made and become effective at the time the District tender final payment to Contractor, without further acknowledgment by the Parties.

3.17.6 Notices. All notices hereunder and communications regarding interpretation of the terms of the Contract or changes thereto shall be provided by the mailing thereof by registered or certified mail, return receipt requested, postage prepaid and addressed as follows:

CONTRACTOR:

B&M Builders, Inc.
11330 Sunrise Park Drive, Suite C.
Rancho Cordova, CA 95742
Attn: Patrick Mullen

DISTRICT:

Citrus Heights Water District
6230 Sylvan Road
Citrus Heights, California 95610
Attn: General Manager

Any notice so given shall be considered received by the other Party three (3) days after deposit in the U.S. Mail as stated above and addressed to the Party at the above address. Actual notice shall be deemed adequate notice on the date actual notice occurred, regardless of the method of service.

3.17.7 Time of Essence. Time is of the essence in the performance of this Contract.

3.17.8 Assignment Forbidden. Contractor shall not, either voluntarily or by action of law, assign or transfer this Contract or any obligation, right, title or interest assumed by Contractor herein without the prior written consent of District. If Contractor attempts an assignment or transfer of this Contract or any obligation, right, title or interest herein, District may, at its option, terminate and revoke the Contract and shall thereupon be relieved from any and all obligations to Contractor or its assignee or transferee.

3.17.9 No Third Party Beneficiaries. There are no intended third party beneficiaries of any right or obligation assumed by the Parties.

3.17.10 Laws, Venue, and Attorneys' Fees. This Agreement shall be interpreted in accordance with the laws of the State of California. If any action is brought to interpret or enforce any term of this Agreement, the action shall be brought in a state or federal court situated in the County of Sacramento, State of California.

3.17.11 Counterparts. This Contract may be executed in counterparts, each of which shall constitute an original.

3.17.12 Successors. The Parties do for themselves, their heirs, executors, administrators, successors, and assigns agree to the full performance of all of the provisions contained in this Contract.

3.17.13 [Reserved]

3.17.14 Solicitation. Contractor maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Contractor, to solicit or secure this Contract. Further, Contractor warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Contractor, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Contract. For breach or violation of this warranty, District shall have the right to terminate this Contract without liability.

3.17.15 Conflict of Interest. Contractor maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Contractor, to solicit or secure this Agreement. Further, Contractor warrants that it has not

paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Contractor, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, District shall have the right to rescind this Agreement without liability. For the term of this Contract, no official, officer or employee of District, during the term of his or her service with District, shall have any direct interest in this Contract, or obtain any present or anticipated material benefit arising therefrom. In addition, Contractor agrees to file, or to cause its employees or subcontractors to file, a Statement of Economic Interest with the District's Filing Officer as required under state law in the performance of the Work.

3.17.16 Certification of License.

3.17.16.1 Contractor certifies that as of the date of execution of this Contract, Contractor has a current contractor's license of the classification indicated below under Contractor's signature.

3.17.16.2 Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four (4) years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within ten (10) years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

3.17.17 Authority to Enter Contract. Each Party warrants that the individuals who have signed this Contract have the legal power, right and authority to make this Contract and bind each respective Party.

3.17.18 Entire Contract; Modification. This Contract contains the entire agreement of the Parties with respect to the subject matter hereof, and supersedes all prior negotiations, understandings or agreements. This Contract may only be modified by a writing signed by both Parties.

3.17.19 Non-Waiver. None of the provisions of this Agreement shall be considered waived by either party, unless such waiver is specifically specified in writing.

3.17.20 District's Right to Employ Other Contractors. District reserves right to employ other contractors in connection with this Project or other projects.

[SIGNATURES ON NEXT PAGE]

SIGNATURE PAGE FOR CONSTRUCTION CONTRACT BETWEEN THE CITRUS HEIGHTS WATER DISTRICT AND B&M BUILDERS, INC.

IN WITNESS WHEREOF, the Parties have entered into this Agreement as of the 3rd day of January, 2022.

CITRUS HEIGHTS WATER DISTRICT	B&M BUILDERS, INC.
By: _____	By: _____
Hilary M. Straus General Manager	Its: _____
	Printed Name:_____

ATTEST:

By: _____
Clerk of the Board

EXHIBIT "A"

SERVICES / SCHEDULE

The work described herein shall be performed according to the Citrus Heights Water District General Specifications as follows:

1. SCOPE OF WORK

The Scope of Work for this project consists of furnishing mobilization, traffic control, and permits, all materials, labor, equipment, fuel, tools, transportation and services for on-call concrete restoration to include final saw cutting, sub-surface compaction, doweling, sweeping, pavement markings, reflective buttons, and hauling and disposal of spoils throughout the Citrus Heights Water District Service Area as shown on the map provided at the end of this Exhibit. The Citrus Heights Water District Service Area is within four local jurisdictions which include the City of Citrus Heights, Sacramento County, Placer County, and the City of Roseville.

Each Notice to Proceed shall be issued by the District as needed and are typically issued five (5) to ten (10) times per year. The quantities of these repairs shall be listed in each Notice to Proceed and may vary.

The estimate of construction quantities set forth in the Contract is approximate only, being given as a basis for the comparison of bids, and the District does not expressly or by implication agree that the actual amount of work will correspond therewith, but reserves the right to revise the amount of any class or portion of the work or to omit portions of the work as may be deemed necessary or expedient by the District.

2. DISTRICT FURNISHED ITEMS

- The District shall provide subsurface restoration as required.
- The District shall provide and maintain temporary paving during the time allotted the Contractor, as specified in the Notice to Proceed, to complete the work.
- The District shall provide inspection of the work at no cost to the Contractor.

3. CONTRACTOR FURNISHED ITEMS

- The Contractor shall obtain Encroachment Permits from the City of Citrus Heights, County of Sacramento, County of Placer, or the City of Roseville, as required.
- The Contractor shall furnish Traffic Control Plans approved by the City of Citrus Heights, County of Sacramento, County of Placer, or the City of Roseville as required for each permit.

- The Contractor shall furnish all other material including but not limited to final saw cutting or grinding, recompaction, tack coating, final paving, sand sealing, sweeping, striping, pavement markings, reflective buttons, and hauling and disposal of spoils.

4. ITEMS OF WORK, MEASUREMENT AND PAYMENT

Bid Item 1, Concrete Flatwork Restoration:

This work includes all items outlined below as required:

This work includes mobilization, finish saw cutting, removal and disposal of saw cuttings, subsurface recompaction with 4" minimum 3/4" aggregate base compacted to 95%, and replacement with six-sack concrete mix, and finish to match existing. All restoration shall be completed in accordance with County of Sacramento Standard Construction Specifications Plan 4-30, and Section 27 "Curbs, Gutters, Sidewalks, and Drainage Structures" of the County of Sacramento Standard Construction Specifications, Placer County requirements, or the City of Roseville requirements. Spoils from demolition shall be properly disposed of by the Contractor outside City and County right of way.

The contract unit price paid per square foot for Concrete Flatwork Restoration shall include compensation for all labor, materials, tools, equipment and incidentals and for doing all work involved in Concrete Flatwork Restoration, including placing aggregate base material, concrete pouring and finishing, complete in place, as specified in these specifications, and as directed by the Encroachment Inspector and District Inspector. Payment shall be based upon the square footage of Concrete Flatwork Restoration, not the square footage of the work zone.

Bid Item 2, Concrete Curb and Gutter Restoration:

This work includes all items outlined below as required:

This work includes mobilization, finish saw cutting, removal and disposal of saw cuttings, subsurface recompaction with 4" minimum 3/4" aggregate base compacted to 95%, and replacement with six-sack concrete mix, and finish to match existing. All restoration shall be completed in accordance with County of Sacramento Standard Construction Specifications Plan 4-30, and Section 27 "Curbs, Gutters, Sidewalks, and Drainage Structures" of the County of Sacramento Standard Construction Specifications, Placer County requirements, or the City of Roseville requirements. Spoils from demolition shall be properly disposed of by the Contractor outside City and County right of way.

The contract unit price paid per linear foot for Concrete Curb and Gutter Restoration shall include compensation for all labor, materials, tools, equipment and incidentals and for doing all work involved in Concrete Curb and Gutter Restoration, including placing aggregate base material, concrete pouring and finishing, complete in place, as specified in these specifications, and as directed by the Encroachment Inspector and District Inspector. Payment shall be based

upon the linear footage of Concrete Curb and Gutter Restoration, not the square footage of the work zone.

Included in the Bid Items:

Includes obtaining Encroachment Permits from the City of Citrus Heights, County of Sacramento, County of Placer, or the City of Roseville, as required. The Contractor shall be responsible for payment of fees associated with all Encroachment Permits including but not limited to submittal fees, drawdown account minimum balances, and inspection fees from the issuing agencies. Includes all costs associated with fully complying with the requirements of the Encroachment Permits and the Encroachment Inspector.

Includes preparing and obtaining approval for Traffic Control Plans as required by the agency issuing the Encroachment Permit. Includes procurement, placement, and removal of all traffic control materials, equipment, and markings, and fulfillment of all other requirements as specified in the approved Traffic Control Plans. The Contractor shall coordinate required inspections with the issuing agency's Encroachment Inspector. The Contractor shall comply with the approved Encroachment Permit, and shall implement traffic control procedures as directed by the Encroachment Inspector. The Contract unit price paid includes compensation for all labor, materials, tools, equipment and incidentals and for all work involved with Traffic Control Plans and implementation, including placement of surface mounted channelizers, electronic advance message boards, flashing arrow boards, construction area and stationary mounted signs, project information signs, flagging, and removal of all traffic control materials, equipment, and markings from the site upon completion of work, complete in place, and as directed by the Encroachment Inspector and the District Inspector.

5. ORDER OF WORK

The order of work outlined below is to minimize public inconvenience. The Contractor is to submit a more detailed written schedule of the order of work based on this outline.

1. Obtain required Encroachment Permits and develop and obtain approval for required Traffic Control Plans.

2. Obtain Notice to Proceed from designated District Operations Staff Member.

3. Order and coordinate delivery of material and equipment, and request location services from Underground Service Alert (USA). Telephone: 1-800-642-2444 or 811.

4. Complete Concrete Flatwork and/or Curb and Gutter Restoration including all items therein, using locations and square and/or linear footages as specified in the Notice to Proceed.

5. Request inspection from the District.

6. HOURS OF WORK

The Contractor shall schedule all work activities per the issuing agency's Encroachment Permit. Overtime work shall not entitle the Contractor to any compensation in addition to that stipulated in the contract for the kind of work performed. In case of extra work ordered by the District, no additional payment shall be made to the Contractor because of the payment by Contractor of overtime wage rates for such work, unless the use of overtime work in connection with such extra work is specifically ordered in writing by the District, and then only to such extent as extra payment is regularly being made by the Contractor to Contractor's personnel for overtime work of a similar nature in the same locality.

7. VARIATIONS FROM PLANS AND SPECIFICATIONS OR OTHER CONTRACT DOCUMENTS

Any portions of the work, which do not conform to the General Specifications, Special Provisions, or other Contract Documents, shall be clearly identified by the Contractor in a written letter noting such variation. In the event of a conflict between the General Specifications and Special Provisions, the Special Provisions shall prevail.

The District reserves the right to make such modifications or alterations, reductions or omissions, extra or additional work to the General Specifications and Contract Documents, including the right to increase or decrease the quantity of any item or portion of the work or to omit any item or portion of the work, as may be deemed by the District as necessary or advisable, and to require such extra work as may be determined by the District to be required for the proper completion or construction of the whole work contemplated. All charges shall be considered a part hereof and subject to each and all of its terms and requirements.

Increases or decreases in the quantities shown in the bid schedule, regardless of the magnitude of the change, the percentage change from the bid schedule quantity or the elimination of a contract item of work does not constitute a change requiring a change order, a change in the scope of the work, or a change in the character of the work. Contractor shall be paid the unit price quoted in the Proposal for Construction Services for the actual quantities installed.

No change or deviation from the Contract Documents or General Specifications shall be made by the Contractor without written authorization from the District setting forth a complete description of the change.

8. REMOVAL, RELOCATION OR PROTECTION OF EXISTING UTILITIES

In accordance with the provisions of Section 4215 of the California Government Code, any contract to which a public agency, as defined in Section 4402, is a party, the public agency shall assume the responsibility, between the parties to the contract, for the timely removal, relocation, or protection of existing main or trunk-line utility facilities located on the site of any construction project that is a subject of the contract, if such utilities are not identified by the public agency in

the Project Plans and general specifications made a part of the Notice Inviting Bids. The agency shall compensate the Contractor for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the plans and general specifications with reasonable accuracy, and for equipment on the Project necessarily idled during such work.

The Contractor shall not be assessed liquidated damages for delay in completion of the Project, when such delay was caused by the failure of the public agency or the owner of the utility to provide for removal or relocation of such utility facilities.

Nothing herein shall be deemed to require the public agency to indicate the presence of existing service laterals or appurtenances when the presence of such utilities on the site of the construction project can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site or construction; provided, however, nothing herein shall relieve the public agency from identifying main or trunk lines in the Project Plans and specifications.

If the Contractor, while performing the Contract, discovers utility facilities not identified by the public agency in the contract Documents it shall immediately notify the public agency and utility in writing.

The public utility, where they are the owners, shall have the sole discretion to perform such repairs or relocation work or permit the Contractor to do such repairs or relocation work at a negotiated price.

9. CALIFORNIA CONTRACTOR'S LICENSE CLASSIFICATION

In accordance with the provisions of California Public Contract Code Section 3300, the District has determined that the Contractor must possess a valid California State Class A - General Engineering Contractor Contractor's License or a California State Class C12 - Earthwork and Paving Contractor's License at the time that the Contract is awarded and throughout the Contract's duration. Failure to possess the specified license shall render the bid as non-responsive, and shall act as a bar to award the Contract to any bidder not possessing said license at the time of award.

10. SUBCONTRACT DOCUMENTS

Subcontractor(s) shall possess a valid California State Contractor's License as applicable to the work performed. All subcontracts shall include provisions that the Contract between the District and Contractor is part of the subcontract, and that all terms and provisions of said Contract are incorporated in the subcontract. Copies of the subcontract shall be made available to the District upon written request and shall be provided to the District at the time any litigation is filed against the District concerning the Project. The Contractor shall pay subcontractor(s) for completed work within thirty (30) days of receipt of payment from the District.

11. CITRUS HEIGHTS WATER DISTRICT SERVICE AREA MAP

The map on the following page is provided to illustrate the service area of the Citrus Heights Water District and to show boundaries within the District of the City of Citrus Heights, Sacramento County, Placer County, and the City of Roseville.

12. CONTRACT TIMELINE

The term of this Contract shall be from the date the Contract is executed until December 31, 2023 and/or the date the District provides the Contractor written notice of completion of said Contract, unless earlier terminated pursuant to the Contract Provisions herein. A Contract Extension Letter Agreement may be issued by the District for a period not to exceed twenty-four (24) months beyond December 31, 2023. Applicable Performance and Payment Bonds will be required as part of the Contract Extension Letter Agreement.

EXHIBIT "B"

SPECIAL PROVISIONS

1. Existing Utilities

Prior to beginning any excavation, the Contractor shall call Underground Service Alert (USA) (800) 642-2444 or 811, at least two (2) working days in advance, to arrange for utility location. The Contractor shall be responsible for the location and protection of all existing utilities. **If a utility is damaged, the Contractor shall contact the utility company immediately for repair.** The Contractor shall pay all costs for such repair if said damage is determined to be the responsibility of the Contractor.

2. U.S.A. Markings and Tire Markings

The District shall be responsible for removal of the District's U.S.A. markings. The Contractor shall be responsible for removal of the Contractor's U.S.A. markings. The Contractor shall be responsible for removal of tire markings from their construction equipment via power-washing or other approved method at no additional expense to the District.

3. Damage to Pavement and Concrete

The Contractor shall provide all necessary protection to existing pavement and concrete so as to avoid scraping, gouging, imprinting, cracking edges or otherwise causing damage at each location. The District Inspector or the City of Citrus Heights, County of Sacramento, County of Placer, or the City of Roseville Encroachment Inspector shall direct the contractor to repair any damage as deemed necessary. The Contractor shall repair said damage using methods required by the Inspector or shall agree to an alternative method in advance of said repairs. All costs of repairs to existing pavement and concrete due to damage caused by the Contractor shall be solely the responsibility of the Contractor.

4. Storage of Equipment and Materials

Storage of equipment and materials on the properties shall not be permitted without the written permission of the property owner. The Contractor shall contact the City of Citrus Heights, County of Sacramento, County of Placer, of the City of Roseville to determine if any use permits are required and obtain same, if required, at no additional expense to the District.

Storage of equipment and materials within the governing agencies right-of-way shall require coordination with the District Inspector and the City of Citrus Heights, County of Sacramento, County of Placer, or the City of Roseville Encroachment Inspector.

5. Concrete Restoration

Prior to Concrete Restoration, the District shall spray paint, in white, the limits of concrete removal and restoration. The District shall place ¾" Class 2 aggregate base, compact and place temporary asphalt cutback over the restoration area, if applicable. The Contractor, upon commencement of work, shall remove the cutback, sawcut/grind to the concrete limits, recompact the surface, and place the appropriate thickness. Concrete Restoration shall be in conformance with the governing agencies requirements (City of Citrus Heights, County of Sacramento, County of Placer, or the City of Roseville). No traffic shall be introduced onto the work zone until the concrete has set and cured properly.

6. Maintaining Traffic, Public Convenience and Safety

The Contractor shall be responsible for the safety of traffic within the Project limits and on the approaches to the Project. The Contractor shall be responsible for maintaining local property access and access to the existing public cross-streets within the limits of this contract.

The Contractor shall provide 72 hour advance notification to the occupants of property to which the existing access or frontage parking will be closed for a period of time exceeding two (2) hours. Notification will be by written notice placed on or near the building entrance or the property access point to be closed. The Contractor shall be responsible for making access available into the existing driveways at any time during their work day to emergency type vehicles such as fire, ambulance, police, and etcetera.

Personal vehicles of the Contractor's employees shall not be parked within the right-of-way.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if in the opinion of the District Inspector, public traffic and convenience will be better served and the work expedited. These deviations shall not be adopted by the Contractor until the City/County and District have approved them in writing.

Any closure or detour of pedestrian access for Contractor's convenience shall be approved in writing by the City/County and District prior to scheduling work in the area under question. Any request for temporary closure or detour of pedestrians shall be made in writing and include plans and information showing requested duration, days of the week, routes, signing and safety measures. Approval or rejection of requests will be at the sole discretion of the City/County and District. Additional signing and safety measures for pedestrians approved as part of a pedestrian access modification shall be considered as included in the prices paid for the various contract items of work involved and no additional payment shall be made therefore.

EXHIBIT "C"

Construction Details

CITRUS HEIGHTS WATER DISTRICT
2022/23 ON-CALL CONCRETE RESTORATION PROJECT

The following Construction Details pertain to Citrus Heights Water District's 2022/23 On-Call Concrete Restoration Project:

Detail FH_683	Fire Hydrant Access Pad
Detail SWPPP_100	Storm Drain Inlet Protection – Filter Bag Installation
Detail SWPPP_101	Storm Drain Inlet Protection – Curb Inlet Installation
Detail SWPPP_102	Storm Drain Inlet Protection – Sediment Trap
Detail SWPPP_103	Storm Drain Inlet Protection – Area Inlet Installation
Detail SWPPP_125	Concrete Washout Facility – Sign
Detail VB_810	Water Main Valve Box – Landscape
Detail VB_811	Water Main Valve Box – Street/Driveway
Detail VB_815	Blow-off Valve Box
Detail WS_100CU	1" Copper Water Service – 1" Water Meter
	New Construction (Typical Water Service Box Install)

EXHIBIT "D"

BID FORM

NAME OF BIDDER:_____

The undersigned, hereby declare that we have read and examined the Contract Documents, including all specifications and all addenda, if any, for the following Project:

2022/2023 ON-CALL CONCRETE RESTORATION SERVICES

We hereby propose to furnish all labor, equipment, fuel, tools, transportation and services for hauling materials, and to discharge all duties and obligations necessary and required to perform and complete the Project in strict accordance with the Contract Documents for the UNIT PRICES listed below.

CONTRACT BID ITEMS

Item #	Description	Unit	Unit Price
1	Concrete Flatwork Restoration*	square feet	
2	Concrete Curb and Gutter Restoration*	linear feet	
	GRAND TOTAL ALL ITEMS		

*Annually, the District completes approximately 2,000 square feet of concrete flatwork restoration and 200 linear feet of concrete curb and gutter restoration. However, quantities are not guaranteed.

As an optional addition to the Bid items for the 24 months following the completion of this contract, please provide a percent increase to the Bid items below:

Item #	Description	% Increase
1	Concrete Flatwork Restoration	
2	Concrete Curb and Gutter Restoration	

Payments will be based on actual installed quantities measured in the field. The estimate of construction quantities set forth above is approximate only, being given as a basis for the comparison of bids, and the District does not expressly or by implication agree that the actual amount of work will correspond therewith, but reserves the right to increase the amount of any

class or portion of the work or to omit portions of the work as may be deemed necessary or expedient by the District.

The bid item as listed is meant to encompass all construction and work items as called out in these contract specifications.

All incidental and overhead costs such as administration, permits, mobilization, demobilization, bonds and insurance, etc., shall be included in the bid item.

All bids will be compared on the basis of the District's estimate of the quantities of the work to be done.

The undersigned agrees that the bid accompanied by this Bid Form constitutes a firm offer to the District which cannot be withdrawn for the number of calendar days indicated in the Notice Inviting Bids from and after the bid opening, or until a Contract for the Work is fully executed by the District and a third party, whichever is earlier.

The Contract duration shall commence on the date stated in the District's Notice to Proceed, and shall be completed by the Contractor in the time specified in the Contract Documents. In no case shall the Contractor commence services prior to the date stated in the District's Notice to Proceed, or before providing the required evidence of insurance.

Bidder certifies that it is licensed in accordance with the law providing for the registration of Contractors, License No. _____, Expiration Date _____, class of license _____. Bidder certifies that it is registered with the Department of Industrial Relations to perform public work, Registration No. _____. If the bidder is a joint venture, each member of the joint venture must include the above information.

The undersigned acknowledges understanding and full consideration of the electronically issued addenda to the Contract Documents.

I hereby certify under penalty of perjury under the laws of the State of California, that all of the information submitted in connection with this Bid and all of the representations made herein are true and correct.

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____

END OF BID FORM

CONTRACTOR INFORMATION AND EXPERIENCE FORM

A. INFORMATION ABOUT BIDDER

Failure to completed all information may render your bid non-responsive. [**Indicate not applicable ("N/A") where appropriate.**]

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: _____

2.0 Type, if Entity: _____

3.0 Bidder Address: _____

_____

_____

_____

Facsimile Number Telephone Number

4.0 How many years has Bidder's organization been in business as a Contractor? _____

5.0 How many years has Bidder's organization been in business under its present name? _____

5.1 Under what other or former names has Bidder's organization operated?:_____

6.0 If Bidder's organization is a corporation, answer the following:

6.1 Date of Incorporation: _____

6.2 State of Incorporation: _____

6.3 President's Name: _____

6.4 Vice-President's Name(s): _____

_____

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: _____

7.2 Name and address of all partners (state whether general or limited partnership):

_____

_____

_____

8.0 If other than a corporation or partnership, describe organization and name principals:

_____

_____

9.0 List other states in which Bidder's organization is legally qualified to do business.

_____

_____

_____

11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

_____

_____

12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

_____

_____

EXHIBIT "E"

BOND REQUIREMENTS

ARTICLE 1. BONDS

Within ten (10) calendar days from the date the Contractor is notified of award of the Contract, the Contractor shall deliver to the District four identical counterparts of the Performance Bond and Payment Bond on the forms supplied by the District and included as Exhibit "F" to the Contract. Failure to do so may, in the sole discretion of District, result in the forfeiture of Contractor's bid security. The surety supplying the bond must be an admitted surety insurer, as defined in Code of Civil Procedure Section 995.120, authorized to do business as such in the State of California and satisfactory to the District. The Performance Bond and the Payment Bond shall be for one hundred percent (100%) of the Total Contract Price.

EXHIBIT "F"

CERTIFICATION
LABOR CODE - SECTION 1861

I, the undersigned Contractor, am aware of the provisions of Section 3700, et seq., of the California Labor Code which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of the Code, and I, the undersigned Contractor, agree to and will comply with such provisions before commencing the performance of the Work on this Contract.

{CONTRACTOR}

By: _____
Signature

_____
Name (Print)

_____
Title (Print)

EXHIBIT "G"

PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION

If this bid is due on or after March 1, 2015, then pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. See http://www.dir.ca.gov/Public-Works/PublicWorks.html for additional information.

No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work.

Contractor hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the Department of Industrial Relations.

Name of Contractor: _____

DIR Registration Number:_____

Contractor further acknowledges:

1. Contractor shall maintain a current DIR registration for the duration of the project.

2. Contractor shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.

3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Signature:_____

Name and Title: _____

Dated: _____

EXHIBIT "H"

PAYMENT AND PERFORMANCE BONDS

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, the Citrus Heights Water District (hereinafter referred to as "District") has awarded to _____, (hereinafter referred to as the "Contractor") _____ an agreement for _____ (hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in the Contract Documents for the Project dated _____, (hereinafter referred to as "Contract Documents"), the terms and conditions of which are expressly incorporated herein by reference; and

WHEREAS, the Contractor is required by said Contract Documents to perform the terms thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and _____ as Surety, a corporation organized and duly authorized to transact business under the laws of the State of California, are held and firmly bound unto the District in the sum of _____ DOLLARS, ($_____), said sum being not less than one hundred percent (100%) of the total amount of the Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract Documents and any alteration thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill all obligations including the one-year guarantee of all materials and workmanship; and shall indemnify and save harmless the District, its officers and agents, as stipulated in said Contract Documents, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a condition precedent to the satisfactory completion of the Contract Documents, unless otherwise provided for in the Contract Documents, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by District, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the District from loss or damage resulting from or caused by defective materials or faulty workmanship, Surety shall undertake and faithfully fulfill all such obligations. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the District's rights or the Contractor or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

Whenever Contractor shall be, and is declared by the District to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the District's option:

(1) Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or

(2) Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a Contract between such bidder, the Surety and the District, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the District under the Contract and any modification thereto, less any amount previously paid by the District to the Contractor and any other set offs pursuant to the Contract Documents.

(3) Permit the District to complete the Project in any manner consistent with local, California and federal law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the District under the Contract and any modification thereto, less any amount previously paid by the District to the Contractor and any other set offs pursuant to the Contract Documents.

Surety expressly agrees that the District may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the District, when declaring the Contractor in default, notifies Surety of the District's objection to Contractor's further participation in the completion of the Project.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project, including but not limited to the provisions of sections 2819 and 2845 of the California Civil Code.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20__).

(Corporate Seal)

_____
Contractor/ Principal

By _____

Title _____

(Corporate Seal) _____

Surety

By _____
Attorney-in-Fact

Signatures of those signing for the Contractor and Surety must be notarized and evidence of corporate authority attached.

(Attach Attorney-in-Fact Certificate) Title _____

The rate of premium on this bond is _____ per thousand. The total amount of premium charges, $_____.
(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety) _____
_____
_____

(Name and Address of Agent or Representative for service of process in California, if different from above) _____
_____
_____

(Telephone number of Surety and Agent or Representative for service of process in California) _____

NOTE: A copy of the Power-of-Attorney authorizing the person signing on behalf of the Surety to do so must be attached hereto.

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 2018, before me, _____, Notary Public, personally

appeared _____, who proved to me on the basis of satisfactory

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:
Signer is representing:
Name Of Person(s) Or Entity(ies)

_____
_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS That

WHEREAS, the Citrus Heights Water District (hereinafter designated as the "District"), by action taken or a resolution passed_____, 20____has awarded to _____ hereinafter designated as the "Principal," a contract for the work described as follows:

_____ (the "Project"); and

WHEREAS, the work to be performed by the Principal is more particularly set forth in the Contract Documents for the Project dated _____ ("Contract Documents"), the terms and conditions of which are expressly incorporated by reference; and

WHEREAS, said Principal is required to furnish a bond in connection with said contract; providing that if said Principal or any of its Subcontractors shall fail to pay for any materials, provisions, provender, equipment, or other supplies used in, upon, for or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the Unemployment Insurance Code or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of said Principal and its Subcontractors with respect to such work or labor the Surety on this bond will pay for the same to the extent hereinafter set forth.

NOW THEREFORE, we, the Principal and _____ as Surety, are held and firmly bound unto the District in the penal sum of _____ _____ Dollars ($_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his or its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Section 9100 of the Civil Code, fail to pay for any materials, provisions or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department or Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Section 18663 of the Revenue and Taxation Code, with respect to such work and labor the Surety or Sureties will pay for the same, in an amount not exceeding the sum herein above specified.

This bond shall inure to the benefit of any of the persons named in Section 9100 of the Civil Code so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

It is further stipulated and agreed that the Surety on this bond shall not be exonerated or released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described, or pertaining or relating to the furnishing of labor, materials, or equipment therefore, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement herein above described, nor by any rescission or attempted rescission of the contract, agreement or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any fraud practiced by

any person other than the claimant seeking to recover on the bond and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or District and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Section 9100 of the Civil Code, and has not been paid the full amount of his claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned and the provisions of sections 2819 and 2845 of the California Civil Code.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20__.

(Corporate Seal)

_____
Contractor/ Principal

By _____

Title _____

_____
Surety

(Corporate Seal)

By _____
Attorney-in-Fact

Title _____

Signatures of those signing for the Contractor and Surety must be notarized and evidence of corporate authority attached. A Power-of-Attorney authorizing the person signing on behalf of the Surety to do so much be attached hereto.

NOTE: A copy of the Power-of-Attorney authorizing the person signing on behalf of the Surety to do so must be attached hereto.

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 2018, before me, _____, Notary Public, personally

appeared _____, who proved to me on the basis of satisfactory

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:
Signer is representing:
Name Of Person(s) Or Entity(ies)

_____
_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

EXHIBIT "I"

FEDERAL REQUIREMENTS

[***NOT APPLICABLE***]

AGENDA ITEM: CC-21

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 REGULAR MEETING

SUBJECT	:	RECEIVE AND FILE THE SACRAMENTO REGION WATER UTILITY COLLABORATION/ INTEGRATION STUDY REPORT
STATUS	:	Action Item
REPORT DATE	:	November 1, 2021
PREPARED BY	:	Hilary Straus, General Manager Steve Anderson, General Counsel Rod Wood, Retired Annuitant Robert Churchill, Retired Annuitant Susan Talwar, Director of Finance and Administrative Services Rebecca Scott, Director of Operations

OBJECTIVE:
Receive and file the Sacramento Region Water Utility Collaboration/Integration Study Report

BACKGROUND AND ANALYSIS:

In an effort to explore regional collaboration opportunities, the Sacramento Suburban Water District (SSWD) Board of Directors implemented a Water Management/Re-Organization Ad Hoc Committee (Committee) with the San Juan Water District (SJWD) in May 2018.

The Committee directed the SSWD and SJWD General Managers to extend an invitation to all Water District/Utility General Managers in the Sacramento Region to explore identifying opportunities for coordinating or integrating policies, programs, services, projects and activities to create efficiencies, improve results and achieve an overall cost benefit to the Agencies' customers.

The following agencies participated in the discussions: SSWD, SJWD, Citrus Heights Water District (CHWD or District), Carmichael Water District, Rio Linda / Elverta Community Water District, Del Paso Manor Water District, and the City of Folsom (Parties). As a result of these discussions, in February 2020 the Parties executed a Memorandum of Understanding to participate in the Sacramento Region Water Utility Collaboration/Integration Study (Study), with SSWD as the project manager. Fair Oaks Water District and Orange Vale Water Company opted not to participate in the Study.

The Parties developed a Request for Proposals and ultimately selected Raftelis/Tully & Young (RTY) to facilitate the Study with the following scope of work: Project Initiation; an Assessment of the Utilities, their Services, Current Collaborations and Existing Approaches; Identification of Stakeholders and Development of a Communications Plan; Identification of Performance Measures; and Identification of Opportunities for Collaboration and Consolidation. These areas were ultimately combined into three activity phases which each have their own report.

RTY presented the results of each activity phase to an Ad Hoc Committee of members of each Board of Directors or City Council of each of the Parties (three meetings total). A Steering Committee made up of staff from the Parties also met regularly with RTY to provide input and review each activity phase.

The Activity 1 Report included an assessment of existing conditions, which included a compilation of data

RTY requested from the Parties. In response to the first report, CHWD provided a comment letter (Attachment 1) expressing opposition to the frequent references of collaboration/consolidation, which highlighted a clear bias. CHWD's comment letter also referenced the need for the Regional Water Authority's Regional Water Reliability Study to be completed prior to developing the findings and recommendations in the RTY Study. While most of the minor Activity 1 Report edits requested by CHWD were made by RTY, some factual errors remained.

The Activity 2 Report identified performance measures and conducted peer benchmarking for the following seven areas jointly identified by the participating agencies for study: Distribution System Preventive Maintenance, Human Resources, Leak Detection, Paving, Stand-by / Emergency Operations, Conservation Programs, and Water Supply. CHWD staff concluded that the Activity 2 Draft Report lacked the full correlation and sufficiency of data to support the numerous comparisons between agencies and conclusions on how to better manage operations and water supply. CHWD's comment letter highlighting these issues and more is attached as Attachment 2. The substantial issues that CHWD raised in the Activity 2 Report were not addressed when the Activity 2 Report was revised and ultimately finalized.

The Activity 3 Report included an assessment of a range of delivery options for the seven prioritized collaboration opportunities listed above; each of which were analyzed using a Business Case Evaluation approach. This Report recommended that agencies further analyze potential collaboration opportunities for joint on-call paving and concrete contracts, leak detection services, etc. This Report also included analysis of a range of collaboration options, including status quo, external joint contracts, internal joint contracts, outside organization support and consolidated provision.

While CHWD staff sees the potential benefits to further analyzing potential collaboration opportunities, staff concluded that the Activity 3 Report lacked quantitative data to back up various tables, findings and recommendations. The Report also lacked jurisdictional and organizational analyses for managing operations and water supply and included some actionable items that would negatively affect CHWD's water supply reliability in dry years. The Final Report includes a brief, insufficient section on reorganization, which provides little evidence for the need for or benefit of reorganization. CHWD's comment letter on the Activity 3 Report is attached as Attachment 3. None of CHWD's requested changes to the Activity 3 Report were incorporated into the Final Report.

Overall, CHWD staff concludes that the majority of conclusions in the Final Draft Report do not have sufficient backup data provided. In addition, some of the factual errors CHWD reported during the first Study phase were still not corrected by RTY in the Final Report. However, there are some potential collaboration opportunities addressed in the report that CHWD is interested in. As an example, the Regional Water Authority is looking into a joint materials purchasing contract for agencies in the region. CHWD staff will continue attending regional meetings and researching potential collaboration opportunities.

At this time, CHWD staff recommends that the Board of Directors receive and file the Sacramento Region Water Utility Collaboration/Integration Study Report.

RECOMMENDATION:

1. Receive and file the Sacramento Region Water Utility Collaboration/Integration Study Report

ATTACHMENTS:

1. Citrus Heights Water District Comments on Draft Activity #1 Report
2. Citrus Heights Water District Comments on Draft Activity #2 Report
3. Citrus Heights Water District Comments on Draft Activity #3 Report
4. Sacramento Region Water Utility Collaboration/Integration Study Final Report

ACTION:

Moved by Director _____, Seconded by Director _____, Carried _____

ATTACHMENT 1

Citrus Heights Water District Comments on
Draft Activity #1 Report

CITRUS HEIGHTS WATER DISTRICT

6230 Sylvan Road
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Board of Directors

Raymond A. Riehle
David C. Wheaton
Caryl F. Sheehan

General Manager/ Secretary
Hilary M. Straus

Director of Finance and Administrative Services/Treasurer
Susan K. Talwar

Accounting Manager/ Assessor/Collector
Alberto Preciado

Mr. Seth Garrison, Senior Manager
Raftelis
227 W. Trade Street, Suite 1400
Charlotte, NC 28202

August 31, 2020

Re: Sacramento Regional Water Utility Collaboration Study
1. Project Charter Comments
2. Description of Current Environment Comments
3. Strategic Communications Plan Comments
4. Study Administration and Processes Comments

Dear Mr. Garrison:

Citrus Heights Water District (CHWD) is one of the seven agencies participating in this Study. These agencies have a long and productive history of collaboration on many varied fronts in the Sacramento region. This Sacramento Regional Water Utility Collaboration Study (Study) has potential to expand on those opportunities.

Thank you for the opportunity to present our comments at this early point in the Study. Especially thank you for the extended time to granted to the agencies to provide Raftelis with our comments. This additional time enabled our District to better coordinate with our team in providing insight to this effort. This letter outlines our comments related to the four topic/report items listed above.

Inasmuch as this Study is in its first phase and is documenting existing conditions, the participants and the Consultant need to exercise caution and restraint in expressing premature outcomes of this endeavor for their respective agencies or the region until such time as future phases of this Study are completed. It is not the purpose of Task 1 to assume outcomes. All references and opinions in Task 1 as to what this Study will or won't provide need to be deleted until such time as future Tasks demonstrate and are backed by supporting quantitative and qualitative data.

Our expectation is that you will be sharing our comments with the other Steering Committee members and that each agency will have an opportunity to review each other's comments to you. Transparency among all Study participants is one essential factory that can lead to positive outcomes for this Study.

1. Project Charter

As a Project Charter which should be fairly precise in its goals or tasks, this draft leaves items undefined or open for broad interpretation. There should be a preamble in this Charter that states that this Study is intended to identify through quantitative and qualitative feasibility analyses, a comprehensive list of opportunities and impacts resulting from collaboration, not just for water supply as it is currently focused. This Study is about opportunities for collaboration, not about determining the best collective means of providing water service or management and distribution of available water supplies. The Charter's tone identifies issues as problems rather than opportunities. There needs to be a

more positive tone about what we can do to better our individual circumstances through interagency collaboration.

Attached for your consideration is our mark-up of the Project Charter with our recommended edits in addition to our comments below.

Challenges:

a) 7- We don't believe this is an accurate statement in the broader context of advocacy. It suggests lobbying cannot be successful without a full time effort. Even small, understaffed agencies that use their elected officials and staff to lobby can have substantial impact and even more impact as an "underdog". Further, it can be more effective in a hearing or meeting to have 15 agencies present rather than just one. This statement also negates the potential use of other agencies with resources like RWA, ACWA and others to assist and coordinate in that effort. This issue underscores the necessity to include RWA as a Study participant since that agency is the best positioned in this region to be an effective advocate on policy and/or regulatory issues at the Federal and State levels.

Goals:

a) 1- Not sure what "optimize" means or "enhance" so that term needs a better definition. Is this overlapping the RWA study on long term resource strategies? If this is about a different reallocation of water, this should be more clearly defined as to what it includes and means.

b) 2- Is this not what RWA is doing?

c) 3- This sounds like a third party conducting this work area-wide as opposed to finding ways for each agency individually to reduce costs and develop financial options. If this is about collective bidding or using an outside party to consolidate construction efforts, the Project Charter needs to say as much.

d) There should be an Item 6 that discusses exposing ways to better utilize regional organizations like RWA or Sac County and Statewide associations; perhaps even the California League of Cities and CSAC as Counties also have water systems or other utilities with the similar issues. The goal here would be to start a comprehensive process to coordinate our efforts with all affected parties that could assist.

Participants and Stakeholders:

a) Does this list include Fair Oaks Water District and Orange Vale Water Company?

b) Does this include regional bodies like RWA? Does it include state-wide organizations like ACWA?

c) The goal of this Section should be to have the Steering Committee and Raftelis identify precisely who these participants and stakeholders are. If we are going to outreach, we need to know exactly who we are going to reach out to.

Critical Success Factors:

a) This Section should provide that all decisions and actions go through the Steering Committee before anything happens regarding the Study or outreach to anyone else.

b) We are very cautious regarding benchmarks and metrics in government services as they often do not include the policy variables of individual agencies. There is a wide range of service levels and community uniqueness's that makes accurate standardized benchmarking very difficult. In our case we also have to be careful with the differences of operating a wholesale versus a retail agency. SJWD could have separate sets of benchmarks for each of its operations.

2. Description of the Current Environment – July 2020 Draft

Attached for your consideration is our mark-up of the Current Environment Report with our recommended edits in addition to our comments below.

This Report should be retitled "Current or Existing Conditions" as the word "environment" transmits a number of different meanings and responses among the wide range of stakeholders suggested and many of those understandings are not necessarily related to organizational matters.

There needs to be a statement of purpose highlighting that the Study is to explore the feasibility of potential new partnerships, ranging from "status quo" on the one end of the spectrum, policy/program/project/task-level specific partnerships, to multi-faceted partnerships/shared activities or services. A graphic showing this continuum would be appropriate.

Summary:

a) Page 1, Paragraph 4, 1st Sentence; it is premature to say they've already "identified numerous options for collaboration"? This is only paper #1, documentation and inventory of existing conditions.

b) Page 1, Paragraph 4, Last Sentence; reference to "even consolidations" should be deleted. This phase of the Study is about voluntary collaborative activities not reorganization/ consolidation of agencies. That analysis is anticipated to be explored in the second phase of the Study project. Including consolidation in the first phase of the Collaboration Study will only cause unnecessary concern that the Study is not impartial and is being structured to support reorganization/consolidation.

Introduction:

a) Page 2, 1st Sentence; should read as an exploration/study to identify the feasibility for increased collaboration.

b) We don't see any mention of financial data or other data already collected or how it is to be used.

c) We are unclear what is meant by "High Level data" and what the "other sources" for this data are. This needs to be clarified.

d) The issues of local control for this first phase of the Study should be focused on efforts to limit State and Federal intrusions into local control.

Review of Participating Agencies:

a) Page 3; Board Member interviews; if any Board Member for one agency is interviewed, then at least one policy-level/elected official should be interviewed for all participating agencies.

b) Page 3, Bottom Paragraph; there is not any mention of RWA. We believe RWA remains a critical stakeholder/interested party to this Study.

c) Page 4, Paragraph 1; the paragraph mentions a number of joint or collaborative agreements among the 27 water agencies in Sacramento County. We think it would be useful to catalog those current arrangements as an Appendix to this Report. It would be useful for future reference to see if the Participating Agencies might want join in any of those current arrangements rather than reinvent the wheel. Collaborations could range from anything such as mutual aid agreements, interconnection agreements or groundwater transfers just to name a few.

Data and Information Summary:

a) SJWD data for wholesale and retail should be segregated as the activities involve different data sets and benchmarks, which should be documented separately in the Tables inasmuch as the other six agencies are retail only. Doing so provides a side-by-side comparison of all seven agencies' retail function.

b) Page 6, 1st Bullet; the use of the word "entrenched" in bullet 1 when describing existing norms pejoratively connotes negativity. Replace with "established" throughout.

c) Page 6, 3rd Bullet; the point made in the third bullet should be based upon the number of connections, not the populations in each service area.

d) Page 6, 4th Bullet; this point is precisely why RWA must be a participant in this Study for it to have any real validity.

e) Page 6, 5th Bullet; use of meter asset management as an example fails to acknowledge that efforts at multi-agency collaboration are already under way.

f) Page 9, CHWD; there needs to be 1.) reference to CHWD's groundwater/conjunctive use, 2.) CHWD's expansion of groundwater resources and 3.) CHWD's historical use of surface water from the American River including its role along with FOWD and OVWC that led to the formation of SJWD in 1954. See also item "k" below.

g) Page 9, CHWD, New Paragraph; we believe, based on experience that "bigger isn't necessarily better." In fact, medium sized organizations are often the most efficient. Medium sized organizations have enough resources (i.e., staffing and budget to retain additional resources when needed) to get the job done, but without excessive red tape and too many "chefs in the kitchen" that you see with larger organizations such as State and Federal governments.

h) Page 9, CHWD, Paragraph 2, Second to last Sentence; we believe opportunities exist not only through potential use of private contractors, but also strategic use of in-house limited term full-time/part-time staff and on-going part-time staff.

i) Page 9, Paragraph 2, Line 8; we don't recall stating that joint contracting might not work, just that it takes added coordination. It can change the scale of the bid and eliminate some smaller, local contractors that are often very cost effective.

j) Page 9, CHWD, Paragraph 2, Last Sentence; we are open to exploring the full range of joint materials purchases via written agreement.

k) Page 9, CHWD Service Highlights, Paragraph 1; 1st paragraph—We are in active stages of land acquisition for additional well sites and intend to grow to as many as 10 wells within CHWD's existing service area. Moreover, as part of our well site expansion, CHWD is exploring adding storage and Aquifer Storage and Recovery (ASR) technology; both retro-fitting of existing wells and utilizing that technology moving forward with new well site development.

Preliminary Opportunities:

It is noteworthy that this topic is included with documenting existing conditions and seems premature at this point in the Study. As such, we are obligated to comment however reserving the position to re-evaluate later. This Study should be framed around long-term use and as such be equally valuable and usable to future staffs of the agencies so opportunities are not forgotten by staff turnover over time. In relation to the list of collaborative opportunities, we recommend we compile two companion lists. First, prepare a list of all the current and past collaborations among the regional agencies so the public and media know we have not just realized after all these decades that joint opportunities exist and that we have done a wide range of collaborative efforts already. This could include items like joint capital projects, risk management, joint purchasing, etc. Everything item on this list may want to be investigated to see if it is still working as intended or if it should be expanded. Second, compile a list of all other potential additional opportunities not previously undertaken by the agencies in the region based on a nationwide search of what other utilities have done and are doing. We suspect there are a number of additional items that can be added to the current list outlined in the report.

We feel priorities should be based on three categories; most likely to consider, somewhat likely to consider and least likely to consider as opposed to just the top five. If we only look at five, then we leave basic information out regarding the rest. This Study should be about opportunities and what those opportunities involve. The details of how to execute should be future work by those participating agencies since we don't know at this time who would coordinate the collaboration; agencies themselves, a local or regional agency or even a statewide agency that might be interested in this effort. It seems premature to engage in the details of any specific collaboration.

a) This following is a brief outline of some potential additional opportunities we see and with some collective brainstorming there could be more:
   I. Energy is a major cost and much is occurring in the field. We should explore joint purchases, community choice aggregation, co-generation, in-line turbines and conservation opportunities.
   II. Shared equipment ownership to reduce unnecessary duplication of limited use equipment such as portable, emergency backup generators etc.
   III. Closer coordinated disaster and major emergency response coordination beyond traditional mutual aide. Pre-emergency contracts for supplies and materials.
   IV. Better materials and coordination of water conservation programs for customers.
   V. Assistance programs executed by NGO's for elderly, disabled or very low income persons needing financial and/or physical help implementing water conservation measures.

VI. Joint banking services contracts to gain more financial services from the bank without charge.
VII. Leak detection programs and services.

b) This list should be dynamic until the conclusion of the report so additional opportunities that arise during the course of the Study can be added.

c) The collaborative items should not be reduced in number initially by any culling process as it is just laundry list of opportunities for agencies to consider, but rather should be a comprehensive list of all the opportunities. Thereafter, quantitative and qualitative factors that are agreed-upon by the Steering Committee can be applied to assess the feasibility for potential collaboration.

d) Page 16, Joint Contracting; this must be done in a manner that allows each agency to still have control over the information to its customers.

e) Page 17, Resources and Staffing; this should be placed in the list for current collaboration via RWA. It may be valid we want to expand or modify the program as with any program.

f) Page 17, Training; this should be in the exiting efforts list recognizing sharing facilities for training is already happening with SSWD holding many regional trainings at its Antelope Facility.

g) Page 18, Other Opportunities, 2nd and 3rd bullets; we are unclear what this means in relation to the current metering effort. Does this alter the participants, management or the program? The metering asset management effort needs to be on the existing collaborations list.

h) Page 18, Other Opportunities, 4th Bullet; on potential joint bond issuances, while there may be the possibility for bond issuance savings, which are typically one-time in nature, if one of the agencies involved sees a drop in its credit rating, it could negatively impact other agencies. Conversely, if one of the agencies involved sees an improvement in their credit rating, it could impact other agencies positively.

i) Page 18, Other Opportunities, Last Bullet: We agree with the last bullet concerning clarifying RWA's role.

<u>Collaboration Vehicles:</u>

a) Page 19; we agree with this page as all could be stakeholders and possibly even participating agencies as is the case for RWA.

b) Page 19; a statewide organization such as ACWA that might be able to expand these efforts to a larger scale for better pricing. Should SMUD or Sacramento and Placer Counties be on the list?

<u>Regional Water Supply Collaboration Opportunities:</u>

a) Page 20, Paragraph 1, No. 1; perfecting new or expanded water rights or entitlements is an extremely complex subject and likely warrants a Study in and of itself. For the purpose of this Study we should focus on how to work collectively to protect those interests and how to best utilize all available water. To go further, we should wait for the RWA regional water study to be completed. To try to alter current legal entitlements and Federal and State allocations is beyond the scope and budget of this Study other than to include it as a potential future joint project. We need to avoid a duplication of effort at the regional level through RWA and SGA.

b) Page 20, Paragraph 1, No. 4; the objective of selling water to our neighbors is good if it is to help offset wholesale costs and capital investment reducing costs to SJWD member agencies.

c) Page 22, Participating Agencies' Water Assets, Table 1; is that correct about OVWC's groundwater capability at present?

d) Page 22, Participating Agencies' Water Assets, Table 1; the water assets of FOWD and OVWC are included in Table 1, however they are not Participating Agencies and should be so noted.

e) Page 23, SJWD Water Assets, Paragraph 4; SSWD can receive water through the Cooperative Transmission Pipeline (CTP) and CWD could receive water through its interties with FOWD, CHWD and potentially its interties with SSWD. All water deliveries through the CTP need to be in accord with the CTP Ownership, Operations and Maintenance Agreement which quantifies the rights and capacity entitlements for agencies in the Project.

f) Page 23, SJWD Water Assets, Paragraph 4; contains a very significant statement: "CWD recently discovered that a portion of its service area lies within the original place of use of SJWD's North Fork Ditch Company pre-1914 appropriative water right making delivery of this supply less onerous". Research needs to be undertaken to verify North Fork Ditch Company's (NFDC) POU and if it matches the boundary at the formation of SJWD. OVWC, FOWD and CHWD including their predecessors all received water through the NFDC. CHWD archives document that the Citrus Heights Water Taker's Association receiving water through the Fair Oaks pipeline and the similar could be possible for CWD.

g) Page 24, CWD Water Assets; there is potential for an interconnection with CHWD on Dewey Drive where CHWD has a 12" Main. Just south on Dewey Drive is CWD to the southeast with its storage tank at Dewey Drive and Winding Way and SSWD to the southwest.

h) Page 24, CWD Water Assets; CWD has an outlet for future on the SSWD Antelope Transmission Main at Van Maren Lane and Navion Drive in Citrus Heights.

i) Page 25, CHWD Water Assets, Paragraph 1, Last Sentence; incorrect statement in last sentence of first CHWD paragraph that CHWD's demand is predicted to grow. According to the most recent Harris demand forecast as part of Project 2030—Water Main Replacement Study, CHWD's demand is projected to be either flat or declining due to predicted increases in per capita efficiency outstripping any population growth. Although not addressed in the current draft, we take this opportunity to assert that the increase in water use in many agencies like CHWD is experiencing tied to the COVID-19 pandemic should not be factored into any demand projections as it is unknown at this time if the increase in usage is a temporary short-lived and one-time phenomenon or represents a change in demand trajectory for the long-term.

j) Page 28, Water Asset Collaboration Summary; this paragraph should reference the need to include RWA and SGA in the Study if this Study is going to credibly address better management of water supply regionally/optimize regional conjunctive use.

k) Page 29, Conclusion, Last Sentence; it needs to be re-written because it implies that consolidation is a good thing that should be worked toward. We strongly disagree with the Raftelis' contention as it lacks supporting information to validate this assertion. Consolidation is also not an appropriate topic for this phase of the Study.

l) Page 37, Appendix B: Organizational Summary; since debt service coverage ratios are shown, the table needs to include total debt for each agency.

3. Strategic Communications Plan – July 2020 Draft

Attached for your consideration is our mark-up of the Strategic Communications Plan with our recommended edits in addition to our comments below.

A general observation: there are a number of subjects that appear in the Communications Plan that are not in the RFP, Agreement, Project Charter, or Existing Conditions documents. Where did these issues come from and are all of these additional issues part of the core Study for the same price? Will this additional work diminish the efforts on other aspects of the Study to offset costs? All decisions regarding the Communications Plan and any outreach needs to be made by unanimous approval of the Steering Committee. It would be up to each agency's staff representative to obtain any necessary policy direction from their Boards/Councils in order to take action at the Steering Committee. This will require reasonable time periods between the initial request and any actual actions. As stated above, CHWD will retain control of its communications program.

Moreover, why is this communications strategy discussion occurring now other than it being listed in Task 1? We are supposed to be at the inventory of existing agencies/base data collection phase now, before any analysis, findings and recommendations are supposed to have taken place. It seems premature to develop a public relations/political strategy now to support what are pre-anticipated conclusions.

SECTION 1: FOUNDATIONAL ELEMENTS

Sacramento Regional Water Utility Collaboration Study Project Overview:

A lot of language in this Section relates to motivation or intent and not fact. Purpose and goals should be expressed as desires and not obligations.

a) Page 3, Paragraph 4, Sentence 1; states "customers" and it is not clear if this is the retail agencies as customers or the end users? The end users may like to know that we are working together to improve things and control costs in a general sense, but their actual "support" of a complex technical document is not a prerequisite. It is, however, essential that the Boards/Councils of each agency support the Study. We may also need the support of regional organizations as they may function as the entities that facilitate the collaborative efforts which include even more agencies in the collaboration than just the Participants in this Study. This already occurs with training, insurance and other activities. At this point in time, all that appears needed is the agreement of individual agencies unless we use a larger regional agency, such as RWA to assist in components of the collaboration. This would suggest the necessity of regional agencies, like RWA, having closer involvement in this Study.

b) Page 4, Last Bullet; "Avoiding negative organizational impacts to participating agencies", we don't know what this statement means and it should be clarified prior to inclusion to avoid misunderstandings.

c) Page 4, Paragraph 2; We are not certain of the value to reach out to the retail customers in the course of the process other than to announce we have undertaken the Study on their behalf. What

our customers care about is that we are delivering to them reliable, clean, safe water at the lowest price possible with the least adverse impacts on community and environment.

Communicating in Context:

a) Page 4, Paragraph 4. List, 5th Bullet; It is unclear if this bullet on climate change is talking about actions on drought situations to maintain water supply or action on reducing the carbon footprint? These are two very different issues and strategies.

b) Page 4, Paragraph 4, List, 7th Bullet; It is not clear who is "more competition". Is more competition an increase in population, environmental demands, other regions, agriculture? The nature of this stated competition should be better defined.

c) Page 5, 1st Bullet, last Sentence; It uses the term "entrenched" which carries a negative connotation toward employees and their agency. We think a less negative descriptor would be a word like "established". We don't want to cause employees to feel defensive or protective or the public to think we are old fashioned and stuck in the mud.

d) Page 5, Paragraph 1, 2nd Bullet; The three issues that will likely raise concerns among employees are the Reorganization (consolidation) issue, the loss of jobs due to collaborative or contracting efforts, and any regulatory changes due to COVID-19 regulations that may impact wages, benefits (PERS, Health Insurance, etc.) and jobs. An additional background issue could include technology via automation and equipment that displaces jobs.

e) Page 5, Paragraph 1, 5th Bullet; this states "managed as a region" but does not define what managed includes. Further, is this the same issue being studied by RWA and should we not wait for the results of that effort before independently engaging in the issue?

f) Page 6, Benchmarks; we want to raise caution about across-agency benchmarks. They can be very difficult to identify to accommodate the range of policy and service differences between agencies. It can be done but requires real effort to filter the differences between each agency.

g) Page 5, Paragraph 1, 6th Bullet; this is the crux of the issue when creating benchmarks. It also can also cause retail customers confusion in understanding the many often valid reasons why differences can exist, and it does not inherently mean one agency is better than another.

About this Strategic Communications Plan:

a) Page 5, Paragraph 2; the paragraph states that the Steering "Committee members summarized key messaging themes, identified spokespersons, communications channels and resources". This is the first we have seen this. When did the Steering Committee make these decisions? These decisions should be made by the Steering Committee as a body and not by seriatim discussions. Not getting consensus on what and who is communicated will lead to avoidable mixed messages and conflicts.

b) Page 6, Paragraph 2; what are the "goals of this Plan" and are they different than the Project Charter? We don't find specific Communications Plan goals in the documents. Are they dispersed in the Plan? Perhaps we should have a Section on the goals so they are easy to find and assess.

Critical Success Factors:

We have no comments at this time.

Stakeholder Groups:

a) We only agree to communications of which the entire Steering Committee unanimously agrees. These stakeholders are too critical to have information going out upon which there is disagreement. That could lead to sending out separate communications in disagreement with what is sent by Raftelis. We need to avoid this situation.

b) Page 7, List; we need to see a more detailed list of these stakeholders rather than just categories.

SECTION 2: COMMUNICATION STRATEGY

Phase 1: Employees and Governing Bodies:

a) Overall: The outline on communicating and interfacing with employees is reasonable and something that agency leadership is prepared to do at the appropriate time. The actual issues and message points are critical and need to be designed with each agency's uniqueness in mind.

b) Page 8, Paragraph 4, Sentence 1; it is unclear how the term "consolidation" is being used in this sentence and in discussions in general. At times it has been used to refer to inter-agency consolidation of specific functions and at other times full consolidation of two or more agencies. We recommend the term "Integration" and/or "collaboration" for inter-agency functions and "consolidation" and/or "reorganization" involving entire agencies.

c) Page 9, Paragraph 1, Sentence 2; it is suggested to change the name of the Study to meet the desire for a memorable acronym. There is history in getting to the current Study title and recommend not changing. Secondly, this is not a water study which denotes something different than a collaboration of activities study. If changed, it needs to say Collaboration Study in it.

d) Page 9, Paragraph 2; we disagree with the idea of "horizontal alignment" on all communications. It depends if there is full agreement on Raftelis' findings and recommendations. There may be horizontal alignment on some issues and not on others.

Phase 2 Engagement: Communicating to engage key Water Industry Stakeholders:

a) This is an essential effort and we need to specifically identify each water industry stakeholder's potential interest and involvement in the outcomes of the Study and channel the message appropriately. An agency like RWA will have a very different interest than the Federal Bureau of Reclamation as would other regional water agencies and cities.

b) Caution is required to not raise issues or make statements that may draw the attention of other agencies that may unnecessarily cause the agencies to take adverse actions.

Phase 3 Engagement: Communicating to Demonstrate Progress on the Study:

a) Page 13; the Communications Plan does not adequately address a strategy of communications with elected officials of Participating Study agencies ahead of communicating/engaging with outside parties including, but not limited to, the media.

b) Page 14, Paragraph 1; using existing communication platforms that the public is already familiar with as proposed is a better approach then trying to create new communication vehicles.

c) Page 14, Paragraph 4; it refers to the Study's goals. Are the goals the same as stated in the Project Charter or something different? If different, what are the goals and where are they listed and defined?

d) Page 14, Paragraph 4; is there also going to be a separate Mission Statement as stated in Task 1.1? Collecting all of the Participating Agencies' Mission Statements as a precursor could illuminate common themes to be used for this Study.

e) Page 15 Paragraph 2, Sentence 1; it is not clear if this is discussing the long-term financial viability of the water agencies, their delivery systems or their water supplies. This needs to be better defined. This Study is not about water rights, trying to expand or perfect new water rights, or securing/perfecting legal entitlements to current water used beyond what rights and contracts as they currently exist. Evaluating water rights and entitlements is an intensely complex undertaking which is well beyond the scope and budget of this Study.

f) Page 15, Paragraph 3, Sentence B; states we will include stakeholder perspectives. How are those perspectives to be collected? We don't see the need for outreaching to all of the stakeholders identified on Page 7, which could be dozens. How extensive is this and is it built into the current budget?

g) Page 15, Paragraph 4, Sentence 1; this sentence refers to "secure water future" without definition.

Spokespersons:

a) Page 22, Paragraph 4; we are okay with a spokesperson with the media with messages agreed unanimously by the Steering Committee. While the spokesperson may initiate outreach or respond to inquiries, this would not limit others from responding on their own behalf. We don't think anyone from any of the participating agencies should be the spokesperson to the media. This exposes a potential conflict of office if the spokesperson's Board/Council disagrees with the Steering Committee, the message, or with other Boards/Councils. Given some of the sensitivities, this role should be performed by a professional communications person agreed on by the Steering Committee. Only CHWD representatives will authorize communications on behalf of CHWD concerning this Study.

SECTION 3: TACTICS AND TIMELINE

We need to get further along with this Study to determine its direction before committing to any further expenditure of resources and funds for communications related to this Study.

4. Study Administration and Processes

The Agencies have a long and productive history of collaboration. This Collaboration Study has potential to expand on those opportunities. It is important to perform the Study as outlined in the Agreement.

Under the Agreement all decisions are to be made by the Steering Committee. We believe we all agree the process should maintain a full, inclusive and informative process in which each participating agency feels its issues and concerns are understood and addressed by the Consultant and Steering Committee. To maintain the highest level of support for the outcomes of the Study, we should make decisions collectively and by consensus.

1. The Agreement does not provide for a Committee Chair or lead person appointed for either of the Steering or Ad Hoc Committees except for contract administration to assure payments to the Consultant. Raftelis or a third-party facilitator should provide the "Chair function" for both the Steering Committee and Ad Hoc Committee. This approach relieves the committee members from the burden of having to be neutral as a Chair, and at the same, time fully represent their Agency.

2. The Agreement expresses decision making as a group and not by Raftelis. The Steering Committee should be providing collectively the direction and instructions to Raftelis, adoption of meeting agendas and all direction to Raftelis regarding the preparation and modification of Study documents. In this COVID-19 environment this can be cumbersome but accomplished via Zoom for formal decision making and email with all copied on what is sent and what responses are received. We should avoid seriatim meetings; this assures everyone has all the information at the same time and assures that decisions are made collectively.

3. To increase the chance for participant/stakeholder buy-in of the final product, all decisions of the Steering and Ad Hoc Committee should be made by consensus unless otherwise noted as requiring unanimous approval.

4. We should include a mechanism within the document to allow differences of perspective to be included so that the Final document is not a simple "thumbs-up" or "thumbs-down" on the entire document. All or nothing votes should be avoided to prevent dissention and conflict later. The entire concept of collaboration is that each agency will decide on what and how it chooses to participate, understanding that unilateral/bi-lateral/tri-lateral/etc. decisions will be analyzed as to their direct or indirect impacts on other agencies, including agencies that are not participating in this Study. The document should provide the widest range of options to allow that flexible decision making in the future.

5. The Steering Committee should have at least two meetings for each set of documents reviewed. First to review and submit comments to Raftelis on a Working Draft, and to submit questions and suggestions for Steering Committee consideration. The issues and suggestions of each Participating Agency should be shared with the other members of the Steering Committee for consideration. The second meeting is then to review Raftelis' suggested Final Draft and resolve differences prior to its presentation to the Ad Hoc Committee for concurrence from a policy perspective.

6. Any priority settings within the document should be considered by the Participants Boards/Councils as those are policy issues that should and ultimately will be determined by the Boards/Councils and not by staff.

7. Realistic time-frames need to be established for Steering Committee review as we realized with this first set of documents. A week or two is not adequate. We do not want to let inadequate time-frames cause errors or diminish the legitimacy of the analytical and review work required by the Study's Participating Agencies. The expansion from one week to the three weeks worked well for this first set of documents; realistic time-frames should be established by consensus of the Steering Committee for subsequent draft documents based upon their scope, complexity and size.

8. The Steering Committee is not being provided a deliberative process for discussion and decision making. An appropriate process would have each agency submit its individual issues and edits in writing in advance to Raftelis and Steering Committee collectively to allow prior review and consideration by all in order to accommodate an informed and full discussion of all the concerns. Again, transparency among all Study Participants/stakeholders is one necessary ingredient to this

Study's success. Having all of the information in advance will facilitate informed decisions by the Steering Committee during its meetings. The Zoom meeting is proposed to be one hour with no advanced review of individual agency concerns or edits. That is not sufficient time to read, review, discuss and decide on what concerns and edits are or are not included in the redraft. Zoom meetings are far less adaptive and inclusive of open discussion and decision making and more so less productive when limited to a one hour setting.

9. In most group processes the individuals would review and submit their questions, clarifications and edits to the Consultant and group adequately in advance of the meeting to allow all members to review to provide for an informed discussion during the meeting. This process currently proposes no advanced review of individual agency issues, concerns or suggested edits. Worse, this process proposes the individual agencies submit issues and edits to Raftelis who then decides what is modified or not modified and prepares the Final Draft to submit directly to the Ad Hoc Committee without final Steering Committee approval. This protocol or process in unacceptable.

10. There is no hard deadline that we are aware of regarding completion of this Study nor implementation of its findings. A quality Study of this type is more important than a hurried Study.

11. Raftelis should continue circulating early draft Agendas to the Steering Committee members for both the Steering Committee and Ad Hoc Committee meetings comfortably in advance of meetings to seek any additions or modifications by the Steering Committee members. Any member of the Steering Committee should be able to add items to either the Steering or Ad Hoc Committee Agendas.

Thank you for the opportunity to present our comments and edits at this juncture of this important Study. We look forward to the Steering Committee's consideration of our comments and direction to Raftelis to incorporate them into the final drafts of the Project Charter, the Description of Current Environment, and the Strategic Communications Plan for consideration and approval by the Steering Committee.

Again, we request that all Participating Agency's comments be shared among the Participating Agencies so as to expedite the agencies' collective review of the final drafts.

Please do not hesitate to contact the undersigned, preferably by email, if you have any questions or if we may be of further assistance.

Sincerely,

Roderick J. Wood
Special Projects Manager
rodjwood@gmail.com

Robert A. Churchill
Special Projects Manager
rchurchill@chwd.org

ATTACHMENT 2

Citrus Heights Water District Comments on
Draft Activity #2 Report

January 13, 2021

TO: Steering Committee and Ad Hoc Committee
FROM: CHWD Rod Wood, Special Projects Manager & Bob Churchill, Special Projects Manager
SUBJECT: CHWD Comments on November 2020 Draft Activity 2 Report

Our detailed technical comments regarding the Activity 2 Report are incorporated in a red line version of the report attached to this cover memorandum. We have some policy observations and questions noted in this memorandum we believe both the Steering Committee and Ad Hoc Committee need to formally note and comment upon as appropriate prior to proceeding with Activity 3.

Purpose and Adequacy of Activity 2 Report

The Steering Committee, including CHWD, has supported Raftelis' recommendation to diverge from the original contract concept to explore in general terms possible collaboration programs and focus on seven service areas in full detail. We believe these seven programs provide a good cross-section of activities and the detailed development of these programs would provide a respectable road map for implementing the remaining potential collaborative programs. The Ad Hoc will hopefully concur with the minor shift in approach.

The second consideration in adequacy is whether we have sufficient data and benchmarks to fully assess the seven identified collaborative programs and provide an adequate base for the future program considerations.

We believe the Activity 2 Report needs some expansion to address the basic policy considerations noted below. We have included specific suggestions in our red-line mark-up copy of the presented Activity 2 Report.

1. We cannot determine from the data provided the full correlation and sufficiency of that data to support the comparisons among agencies and conclusions presented nor understand the implication between the "apple and orange" issues present in the analysis. Perhaps making the full base data used to develop the Benchmarks available to all participating agencies would support this understanding and provide greater assurance that the benchmarks are accurate.
2. There is a substantive difference in final product costs between the hard costs and financial costs such as debt. To have a sufficient understanding of these variances, the full financial data needs to be incorporated, including debt, unfunded liabilities, eminent capital replacement costs, and direct and indirect costs, including overhead.
3. It needs to be noted that any water not used by the local agencies is reallocated to specific use by the appropriate Federal and State agencies. We need to explore means to perhaps

use that water in a more beneficial manner for local purposes than it is currently allocated by the Federal and State agencies. Specifically, should we account for providing excess water assets to other agencies, and if so, what water and at what price? Should we use excess water to store water for drought periods, and if yes, how much and on what allocation basis?

4. We do not believe that the Activity 2 Report adequately explains the variables affecting accurate comparisons, which could lead to serious misunderstandings by those reading the final report. There seem to be benchmarked service costs that are not fully inclusive of the total internal and external costs. Each collaborative program and benchmark category need to include all costs for the program, including contracted services such as labor, legal, materials, etc.
5. We agreed to secure input in the Activity 2 and 3 work from other potential participating water agencies, the County, and regional organizations such as RWA and ACWA JPIA to ensure we have a full understating of the available opportunities, efficiencies and resources as the agencies are currently engaged in activities such as the Regional Water Reliability Study, and training programs and other programs noted in the 80 potential collaborative programs. Other agencies may also be interested in expanding the opportunities and viability of some of these potential collaborative programs.
6. The Activity 2 Report is a data and benchmark Report and should not include references or conclusions regarding the data or benchmarks. That is more appropriate in the work for Activities 3 and 4.
7. The Report should identify what work is done by Raftelis, Tully and Young or other sub-contractors to allow follow up on the issues and analysis as programs may be studied and implemented in the future.

Benchmarking

There is an extensive range of variables that affect every benchmark in every industry. There are not only the classic “apples and oranges” issues that always arise in data from different sources, but also the parameters of service levels and product purpose. As a result, these variables commonly cause persons not professionally familiar with the industry or technical comparisons to misunderstand or misinterpret those comparisons. These factors can be extremely complex and are frequently misunderstood even by professionals. This generally results in perceiving different agencies to be be more or less efficient or effective than they may be in actual fact. Cost can vary momentously based on factors such as location, regulation, size, industry and market. As an example, you cannot legitimately compare producing the same product or service like a pair of shoes in the US versus Sri Lanka because of these kinds of differentials in the components of costs.

The same is true with water service in the US. The cost of labor, power, governance structures, government mandates, sources of supply and an extensive range of cost components are very

different in South Carolina versus California, and even between different locales in California. Within our region there are variables in the production and delivery cost of water, such as having gravity fed surface water versus pumping groundwater and maintaining pressure in the system, the different levels of quality in the raw water and the level of treatment required. In addition, infrastructure and service costs from the makeup of the customer base such as large rural lots, multi-family, commercial and agriculture all carry different costs per account. In our situation there is also the differentiation of retail versus wholesale activities.

Benchmarks can be profoundly impacted by basic agency policy decisions. Some agencies' standards are based on the highest quality and service possible and others strive to provide water at the lowest, practical cost. How any agency addresses infrastructure, maintenance, depreciation and funding or how they compensate their employees can vary greatly between agencies and obscure financial comparisons. You cannot realistically compare and benchmark the production costs of a Bentley verses a KIA. Both may be equally efficient in production related to the different market quality demand they serve.

While some averaging occurs in broad national comparisons, they rarely, adequately separate the differences among regions. As a consequence, great care needs to be exercised to point out these variables within the text of the document. Benchmarking can be an effective tool for professionals who understand the variables and hence identify legitimate opportunities for enhancement and cost control in their operations. The general public and media may not have the awareness to discern the differences and can seriously misinterpret the information. These misinterpretations often find their way into the public arena during elections, rate increases and bond issues. It can be frustratingly difficult in the heat of the moment to explain that the "report" is more complicated than appears or that the "report" didn't adequately explain all the variables.

In fairness, we have not independently analyzed the extensive AWWA datasets, variables, benchmark characteristics or methodology to know how AWWA addresses the circumstances with the applicable local variables. Hence, we cannot assess if referencing or attaching the AWWA data and criteria would be sufficient should the need arise to explain to the public these variables and what they mean in the comparisons. If an attachment is equally complex, it generally does not help the situation and can often make it worse.

We recommend that the Activity 2 Report be expanded to include a more compressive discussion of these factors related to our specific circumstances.

Process

As a matter of sound business practice, we strongly believe that before final documents are presented to our elected officials or the public they should be reviewed by the Steering Committee. The Committee reviewed the original Draft 2 Report but has not reviewed the

revised consolidated report prior to it being forwarded to the Ad Hoc Committee. We recommend that a Steering Committee meeting be called to collectively review the final report going to the Ad Hoc Committee. This would allow for the Steering Committee to formally endorse the final report or add its comments in a cover memorandum. If there are issues that are raised regarding the proposed final report by the Steering Committee, those should be known and addressed prior to the Ad Hoc meeting rather than during the meeting. This reduces the potential for misunderstandings, surprises or unnecessary discord. We are specifically referencing issues that would be identified by the full Steering Committee. Individual agency questions, concerns, or issues would still be raised by the Ad Hoc member from that agency. The Ad Hoc could then take whatever action it determined appropriate based on all the available information.

ATTACHMENT 3

Citrus Heights Water District Comments on
Draft Activity #3 Report

CITRUS HEIGHTS WATER DISTRICT

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Accounting Manager/ Assessor/Collector
Alberto Preciado

Mr. Seth Garrison, Senior Manager
Raftelis
227 W. Trade Street, Suite 1400
Charlotte, NC 28202

March 29, 2021

Re: Sacramento Regional Water Utility Collaboration Study Activity 3 Report

Dear Mr. Garrison:

Thank you for the opportunity to provide comments on the draft "Activity 3 Report – Business Case Evaluations," the third report being prepared in support of the seven-agency collaboration group.

OVERVIEW

Citrus Heights Water District (CHWD) appreciates the efforts of the group and the consulting team to date on this important work. One clear positive aspect of the report is that it highlights that collaboration can be undertaken for many potential programs through relatively straightforward (even if legally involved) mechanisms. We believe, however, the series of studies, and Activity Report No. 3 in particular, continues to have significant shortcomings that diminish its value for policy makers and agency staff, and its acceptance by the public. Before potentially expending a significant amount of ratepayer dollars on collaboration programs or considering changes in governance structures, we must be confident in the report and its analyses. While the public is not directly involved in the preparation of the report, each agency has a fiduciary duty to assure that the conclusions leading to expenses the public will be compelled to bear are correct.

If anyone asks for evidence and data underlying the report's conclusions, we should all be prepared to provide that proof. Any suggestion that the group and its participants must simply trust that the consultant did a thorough job are unlikely to be accepted by someone who disagrees with the conclusions. If a person can disprove just one statement not backed up with documentation, it can cast the entire report into doubt. Without validation, the report is simply conjecture. This matter is complicated further by the fact that each agency may have different policy objectives related to the outcomes of this report. This circumstance does not affect the fact that the participating committee members need to be confident in the Study's analyses and results to assure our individual Boards/Councils that the final report is accurate and factual. If the Boards/Councils do not have full confidence in the final report, not many of its

recommendations are likely to be implemented and the efficacy of the $200,000 expended will be suspect.

At the same time, one glaring flaw is the report's three-page "Reorganization" section. This section contains unsubstantiated, even sensationalized conclusions and is entirely devoid of any meaningful fiscal, administrative, policy-level or other analysis even remotely relevant to the potential issues underlying potential reorganization. Indeed, the section cites only a single study in a footnote. To be frank, the description in the report almost makes a mockery of the dozens of critical financial, policy, customer, and other issues attendant to any true reorganization study. To even mention the word "reorganization" (analysis of which is mistakenly interchanged with "consolidation" and is not part of the consultant's contracted services) in this manner simply begs for unwanted public and Board/Council scrutiny. CHWD strongly recommends that the reorganization discussion be deleted in whole.

The reports offer opinions regarding reorganization as it relates to the collaboration not reorganization. The full assessment of reorganization has not been done. The reorganization-related conclusions included in the Activity Report #3 cannot be legitimately surmised until that work is completed. Not one of the 80+ collaboration programs identified in the three reports requires reorganization to occur. Reorganization under California law is about forming, expanding or combining government entities. This report fails to assess core issues such as local control, customer responsiveness, accountability, debt and capitalization and added layers of administration personnel and expenses that often accompany larger organizations. Reorganization is not about assuring service delivery as the same services will be provided by the existing agencies hopefully enhanced through collaborative programs. Rather than having expended resources on a decidedly superficial reorganization assessment void of a wide range of issues, it would have been more helpful to include an analysis about regional opportunities, with agencies like RWA/SGA, to help agencies execute these collaborative programs. As was expressed in a recent letter from SJWD President Ted Costa to the FOWD President Gary Page, "SJWD is not currently pursuing a merger with the Sacramento Suburban Water District (SSWD). That effort was suspended in 2015, and since that time, the two Districts convened a 2x2 committee which met four times in 2018 and 2019, to discuss mechanisms to collaborate." Consistent with President Costa's statement, this Study has shown us that most, if not all, of the programs identified in this Study could occur through collaboration and do not require reorganization.

As noted during the formation of this agreement a full assessment of reorganization would be a separate study if the parties choose to proceed. This was to help avoid clouding this collaboration study and the fact some agencies did not want to pay for any aspect of the reorganization assessment. The terms and costs of a reorganization report are yet to be negotiated. It is unclear why this superficial assessment is included and unsubstantiated conclusions incorporated. Who made the decision to include this unnecessary and unsubstantiated reorganization guesswork and expend the funds to pay for it in a tight budget? This Report should not stray into a reorganization analysis and should not be confused with the governance of executing the collaborative programs. The opinion that bigger is always better and cheaper is not inherently true. If that was the case, the Federal government would be the most

efficient organization on the planet. Size has diminishing return as it becomes less efficient from bureaucracy, duplication of efforts and oversight processes.

Even if the final report can be improved to address the concerns described in this letter to provide more robust support for collaboration, CHWD is (after reviewing the draft report) even more resolute in its opinion that many, if not all, of the proposed collaborative efforts would be best implemented on a region-wide basis, whether by the Regional Water Authority (RWA) or otherwise. Indeed, some of the programs, such as water efficiency programs/services and regional water supply planning (e.g., water banking), are already being implemented or evaluated by the RWA.

CHWD is concerned that we only learn from Raftelis that there is a significant budget problem at this last billing with no prior notice. We are very concerned with the lack of detail in the Activity 3 Report to accommodate in the actual implementation of any of the seven programs. We are further concerned that with this budget depletion a decision was made to include the very skimpy and incomplete reorganization assessment taking funds from the primary Report. Now the remainder of the report will be completed by the consultant as a direct billing loss to the consultant. This raises serious concerns regarding the quality and accuracy of the Final Report in its entirety. This very concern was raised prior to execution of the Agreement. It is deeply troubling that this situation has evolved and that the Report presented represents more than $200,000 in billing with the first two Reports being basic data and the third Report substantially boiler plate. Rather than any of the participating agencies paying for this seriously inadequate section, we recommend that it be deleted from the Report and removed from Raftelis' bill. Under the terms of the Agreement, the consultant has the lawful duty to complete the work at no additional charge above the original contract amount.

SPECIFIC AREAS OF CONCERN

As described below, CHWD believes the draft report suffers from a variety of deficiencies. These shortcomings must be addressed if the final report is to be accepted by the agencies and serve as a meaningful platform for further collaborative work among the agencies directly involved, as well as others across the Sacramento region. Given the amount of funding provided to support the report preparation and the efforts of all study participants, we had hoped for a much more robust work product.

CHWD's concerns with draft Activity Report No. 3 include the following:

- The report is more conclusory than fact-driven.
    - Many of the conclusions reached and the "factual statements" in the report are not supported by adequate documentation or evidence.
        - The draft reports states: "For example, if the participating agencies all chose to deliver similar high-level activities at the scale of the most efficient utilities in the group, it could lead to regional savings of approximately 40% per year based on reported costs per mile of pipe." (Draft report, p. 6.) Little evidence is provided to support this conclusion.

Commented [U1]: Citations are to original, printed version of draft report

- To date, very little, if any, supporting documentation or raw data has been provided to the study participants--outside of the Activity 1, 2 and 3 reports themselves and the web portal.
    - Even where data has been cited in the report, much of it comes from national (rather than California) sources, thus not recognizing that costs, standards, laws and practices in California are much different than elsewhere in the nation.
- In many of the figures and related references, it remains unclear whether apples-to-apples comparisons are being presented. Use of the term "normalize" in several locations, without sufficient explanation, creates further confusion in this regard. (Draft report, pp. 24, 35, 38)
    - E.g., Figures 1, 3; Tables 4-7, 15-16
- Some of the data stated or referenced in Tables in the report and elsewhere regarding CHWD continues to be incorrect despite CHWD's multiple requests to correct the data. Table 12; CHWD requested that Raftelis correct the Water Efficiency chart in Activity Report #2 to include a number of programs and services that were previously not listed as available by CHWD. With the corrected information, we offered around 30 programs/services. Activity Report #3 lists us as having 18 services, which negatively skews our data in comparison to other agencies, especially as each agency's number of services/programs is listed in the same sentence of the report.
- It is unclear why details about particular agencies' activities, but not those of other participants appear in the draft report (e.g., Joint Contract External re SSWD and SJWD) (pp. 24-25). The consultant could and should have included information pertaining to all participants.
- Many of the conclusions offered regarding potential programs claim greater efficiency through collaboration, but do not adequately analyze and, indeed, seem to discount the potential shifting of burdens that could lead to higher costs in other areas.
    - For example, joint contracting for certain programs may indeed save time for field staff, but may also create greater burden on administrative and contracting staff. (Draft report, pp. 9-13). Yet, the study does not examine the expected volume or costs of these offsets. It is also unclear whether higher levels of service will be achieved for all programs. The report should attempt to examine these issues not only qualitatively, but also quantitatively, to provide the most complete information to policy makers.
    - Joint "internal contracting" issues – sharing lessons learned doesn't require consolidation. Also, how do you judge which processes are the best that need to be taught to others? How would decision-making occur,

especially re: changes in service levels or methods of delivery. Decision-making could take much longer, impeding the ability to pivot.

        - Sharing of data among agencies on a regular basis, while potentially beneficial, may also lead to diverting individual agency staff from primary tasks and/or the need for new hires (pp. 17-18), thus potentially defeating the savings.

- CHWD was expecting significantly more detail regarding the implementation processes for the seven potential collaboration areas. Instead, the draft report is primarily a boiler plate assessment that would be applicable to any collaborative project.

    - Without additional detail on the seven potential collaboration programs, there is no foundation to establish program agreements that could be implemented by agency staff. The "detail" provided in the draft report does little to educate the agencies on what needs to be considered as they may decide to move forward. Thus, the report leaves a great deal more costly work to be undertaken by some or all of seven agencies to determine if and how to move forward.

- The report lacks meaningful fiscal or financial analysis in support of the potential collaboration areas identified. In essence, it appears the consultant team did not fully utilize the financial expertise at its disposal, particularly in regards to its analysis of the full costs of the seven areas of potential collaboration. Notably, the draft report itself recognizes it could benefit from "bottom-up cost analysis" in some aspects. (Draft report, p. 17)

    - Levels of participation by Study participants needs to be included so that transition/year one costs can be fleshed out by program area. Given the size of the project budget and undertaking, it should be the expectation of the participating agencies to see such level of detail in the Activity #3 Report.

    - The lack of financial analysis is particularly acute in the draft report's discussion of water issues.

        - For example, while the report understandably identifies the protection of local water assets as an important goal, nowhere does it describe the financial underpinnings of the issue, such as which agencies have invested (and regularly reinvested) to maintain necessary infrastructure and other capital assets, e.g., water treatment plants, pipelines, wells, et al., and how to ensure those investments by specific agencies and their customers are recognized and protected in case of water transfers or sales, with the goal that cross-subsidization does not occur. The report should include robust analysis of the attendant cost issues, both qualitatively and quantitatively, so that agency policymakers can make truly informed decisions.

        - The report contains only meager reference to the fiscal impacts related to one of its stated goals of "creating revenue streams" through the lease or

transfer of water. The draft report fails to address even basic issues such as:

- What are the *net* revenues associated with historical out of region water transfers by the participating agencies? How have the resulting net revenues been allocated or applied to benefit local agencies? What structures can be put in place to ensure future transfers provide net benefit to the participating agencies?
    - Simply providing a few references to the gross value of water (see draft Report No. 3 at p. 50) does not answer the question of net benefits received from *actual* transactions.
    - Elaboration of and supporting documentation for the purported $4.5 million in *net* revenue generated by regional purveyors in 2020 (p. 51) and how the collected funds were utilized to benefit the region and customers is also needed.
- Also, what are the *net* revenues associated with local (e.g., surplus) water sales, both historically and anticipated in the future? How can regional transfers be structured to assure benefits for all participants?

- As a result of the above shortcomings, the draft report suffers from lack of robust cost-benefit analyses that can be used by the individual participants and the group to meaningfully assess the relative merits of the options presented and the conclusions reached. Simply outlining a menu of potential legal options that may be pursued to move water among agencies and beyond the Sacramento area is far less than half the story; the most important aspect of the analysis is ensuring financial benefit to the ratepayers of all participating agencies. And, the second most important aspect—at least to CHWD—is ensuring surface water supply reliability, particularly in dry years. Such analyses do not appear to have been conducted.

- With respect to potential collaboration on water supply, the draft report also inadequately addresses a number of other legal and policy issues, including:
    - The entitlements, contractual and otherwise, of individual agencies and how regional or more distant water transfers (presented as options/recommendations in the report) may affect or impair those rights, including the right to receive surface water in dry years.
        - For example, CHWD has frequently expressed its hesitancy to make available for transfer in dry years any of its historic access and utilization to pre-1914 water in order to preserve water supply reliability for its customers. SJWD and its Directors have consistently made commitments in open, public meetings to CHWD and other SJWD Family Members that those supplies will be retained, as requested by the retailers, for local use

during dry years or, at a minimum, that the financial advantage to the SJWD family retail agencies of access to the more affordable pre-1914 water will be respected and be the primary factor when setting rates for the SJWD family of agencies. In October 2018, the SJWD Board Meeting Minutes include the following excerpt: "Director Costa commented that he wants to make sure that it is known that the pre-1914 water rights are owned by the people of the San Juan Water District, which boundaries include the Citrus Heights and Fair Oaks Water districts." Yet, the draft report recommends CHWD and Fair Oaks Water District regularly use groundwater supplies in lieu of surface supplies (apparently in all year types), to maximize "water asset monetization" (p. 55), without analysis of and respecting the underlying contractual and financial issues.

- As another example, if a regional or out-of-area transfer simply results in SJWD family members like CHWD paying higher wholesale water rates due to receiving a larger mix of CVP or other surface water supplies (and less pre-1914 water), then that may well not be a transfer worth pursuing. In a similar vein, if engaging in groundwater substitution transfers fails to offset wholesale fixed charges to the retail agency, then that also may be a transfer to be avoided.

- CHWD hoped that the above financial issues would have been robustly analyzed in the report so that informed decisions could be made by its policymakers with respect to the options recommended. As written, the draft report will not assist CHWD's elected officials in making those determinations.

- The draft report also fails to provide an adequate assessment of many of the legal, contractual, liability and other hurdles associated with implementing several of the potential areas of collaboration.

  - Each of the programs identified have particular issues of potential liability. All potential joint collaboration efforts, especially human resources (HR), in CHWD's view, are particularly susceptible to such issues. Joint contracting might be very cumbersome for the agency that volunteers to do this for the rest of the agencies. The Study should provide more clarification of what those issues are. For example, there are a number of issues related to CalPERS/pension plans, standards, etc. that apply to each of the programs.

  - More broadly, the report does not adequately describe how basic administrative and liability issues would or should be addressed for any joint program. For example:

    - How do we avoid joint employer liability issues, including potential CalPERS issues of use of employees across agency boundaries, particularly for a non-mutual aid activity?

- How is liability resolved for work performed by the agency providing services and the agency receiving services? If a sexual harassment or EEO claim occurs, who is liable? Did both agencies handle the matter properly? What if one agency does not respond properly, does that shift the liability? What process is established for resolving the issue?
- Does a non-union agency have to comply with all the rules of a union contract for the work done by a union shop? Would this impact the form and practice rules of the agency receiving the services and extending those rights to all of their employees?
- When multiple agencies contract for services jointly and the work requires different staging operations, how are the priorities/order of work determined?
- If a problem occurs in bid specifications issued, do all agencies bear liability or just the agency preparing the bid specifications?
- If an employee of the agency providing the services is driving a vehicle doing multiple projects, only one of which is the for the agency receiving the service, and has an auto accident that is their fault, are both agencies responsible for the liability and workers compensation, or does the contracting agency assume liability for its employee?
- Are costs of service to be based on averaging costs or marginal costs or a combination, and under what circumstances?
- Which agency gets to make field decisions that affect price, the provider or the receiver of the service?
- Who bears the costs of change orders if the project is not designed or managed properly?
- How are conflicts resolved in the scope of work or the standards applied to the execution of the work if the agencies have different adopted standards?
- How are legislative policy conflicts between Boards/Councils that affect cost or performance resolved?
- What are the management or governance processes to be used to administer the agreements?

- Common contractual and other issues like those discussed above should be addressed to the extent possible now so agencies can proceed to develop and implement collaborative programs and avoid unnecessary problems. It would also be useful for the consultant to provide template agreements as examples for agencies to familiarize themselves with. Big or small, all agencies should be working from the same knowledge base, so no one has an intended or unintended advantage in establishing an agreement.

- Template agreements could be structured in a menu of service-level options, rather than one standard applied universally. Agencies are at different levels of resources and infrastructure development, and getting to a "Best Practices," which often is the top level of service, may never be agreeable to all agencies or may require a number of years to achieve to avoid significant rate increases. Not including the concept of a service level menu may lead to less willingness by some agencies to participate and lost opportunity for everyone.

- Nor does the report discuss the influence of policy decisions made by the Boards of Directors/City Councils for each agency as to preferred levels of service for each program. It also does not discuss the influence of the Boards/Councils in making decisions related to collaboration structures.

- The draft report seems to discount that large contractors are not always the most affordable; sometimes small businesses can be more competitive because they are not burdened with the overhead of operating a large company. The way contracts are constructed can be vital to protect the best options and outcomes.

- In a number of places, the draft report explicitly states or implicitly suggests that some current practices of some of the participating agencies are inconsistent with current regulations. However, no actual proof of any purported violation is provided, hence the statements should be deleted or at least modified to reflect as an unverified possibility, not a fact.

  - For example, in the Human Resources section of the report, it is stated that, "Human resources (HR) functions were prioritized because several of the participating agencies noted gaps in their respective HR capacity to cover the full range of activities demanded." If there are "gaps" to cover the full range of activities, that would appear to be a major issue in regards to regulatory compliance.

CONCLUSION

This report fails to provide sufficient detail in a document that the agencies can use to determine if they want to engage in the Phase 4 work of the Agreement or actually start implementing collaborative efforts. In addition, the conclusions in this report, even if true, are not substantiated by adequate documentation.

Sincerely,

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ATTACHMENT 4

Sacramento Region Water Utility Collaboration/
Integration Study Final Report

Sacramento Regional Water Utility Collaboration Study

Activity 3 Report -

Business Case Evaluations

May 2021 - FINAL

RAFTELIS

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Summary

The Sacramento Regional Water Utility Collaboration Study (Study) is a joint study among Carmichael Water District (CWD), Citrus Heights Water District (CHWD), the City of Folsom Environmental & Water Resources Department (Folsom), Del Paso Manor Water District (DPMWD), Rio Linda/Elverta Community Water District (RLECWD), Sacramento Suburban Water District (SSWD), and San Juan Water District (SJWD) (together the "participating agencies") to identify opportunities for increased collaboration with the goal of creating additional operational and financial efficiency, and improving service provision to customers.

This document is the third of three project deliverables. It encompasses the activities for Study Activity 3 – Business Case Evaluations (BCE). In this document, Raftelis assesses a range of delivery options for seven prioritized collaboration opportunities, jointly identified by the participating agencies for study and analyzed using a BCE approach. The range of delivery options considered encompasses the current or status quo approach, which consists of each of the participating entities delivering the service independently or making their own arrangements for outside contract support, through the full spectrum of collaborative delivery options such as joint contracting, resource sharing, and consolidated delivery. The BCE approach provides an overview of the advantages and disadvantages of the delivery alternatives for each priority opportunity.

The analyses are based on data and information obtained from the participating agencies through virtual interviews with senior representatives of each participating agency, project Steering Committee sessions, and submitted documents. Where possible, the estimated financial impacts of alternatives are also evaluated.

The Activity 2 findings noted that the participating agencies take an array of approaches and deliver different levels of service for the prioritized services, resulting in significant differences in the cost of providing those services. For example, several of the participating agencies have well-developed water conservation programs, while others have no formal program. Even with the significantly different approaches and levels of services, there are commonalities. These commonalities are opportunities to study the feasibility of collaboration. Raftelis identifies and analyzes several alternative models that may provide participating agencies an opportunity to reduce costs and/or improve levels of service through collaboration.

There are major differences in the amount and types of **Distribution System Preventative Maintenance (PM)** being performed by the participating agencies. Some agencies have robust programs, while others are focused primarily on reactive maintenance. Meaningful success toward collaborative Distribution System PM activities is dependent on aligning standards of practice, methods, specifications, and training, while building trust across the participating agencies and identifying contractors that deliver high levels of service at scale. Distribution System PM cost differences are significant among the participating agencies, because of the variable delivery standards and approaches. Uniform high levels of service, compatible with industry best practices, can be achieved through scale. For example, if the participating agencies all chose to deliver similar high-level activities at the scale of the most efficient utilities in the group, it could lead to regional savings of approximately 40% per year based on reported costs per mile of pipe.

There is a collective regional **Human Resources (HR)** staffing need of at least 0.5 full-time equivalents (FTEs), above and beyond current HR staffing of 5.4 FTEs across all study participants. Agencies have specific requests for support with recruiting and training coordination, in addition to other needs. This is an opportunity to elevate service levels in a function where many are stretched thin.

Leak Detection activities fell into different cost and level of service tiers. If the region chose to focus on higher performance levels, it would lead to an increase in direct expenses of about $114,369. These expenditures would presumably be offset through savings in pumping, treatment, water distribution, and other costs. In this scenario, there is an assumed joint contract rate savings estimated at 10%. If the region chose to focus on lower performance levels and lower costs, a total annual decrease in direct costs for the region of $145,226 could be achieved assuming 10% savings from joint contracting. Of course, the lower service levels could ultimately mean higher pumping, treatment, and water distribution costs, because of excess water loss. Note that new remote leak detection technologies may further drive down costs over time and are now coming to market.

A joint **Paving** contract at the most favorable observed pricing could save the region up to $110,000 a year or about 15% off current costs. Sacramento County has also offered support on paving for some agencies, which has come with a range of benefits including reduced inspection costs and less administrative effort in addition to being cost competitive.

Stand-by / Emergency Operations activities are a greater burden for staff at some agencies relative to others. While cost reporting may require refinement, opportunities for agencies with more staff to support those with less, particularly if combined with investments in answering service technologies appears to be a sensible way to improve the management of overtime deployment regionally.

Water Conservation programming investments are highly dependent on the level of service and goals that each agency seeks. This is an activity where the priorities of each agency impact the collaborative approach. If all the participating agencies invested in water conservation activities at the same cost per capita as the City of Folsom, for example, regional costs would increase by nearly $1.2 million per year. Presumably, this would produce proportional benefits with some adjustments to water rate structures and water supply practices.

A future **Water Supply** surplus of 212,720 acre feet per year (AFY) is estimated. A range of opportunities exist to optimize surface and ground water supplies and to monetize this surplus. Most of these opportunities can be achieved via collaborative agreements. Maximizing the value of this surplus and realizing associated benefits is quite complex, and requires negotiating the intricacies of California water laws, rules, and practices.

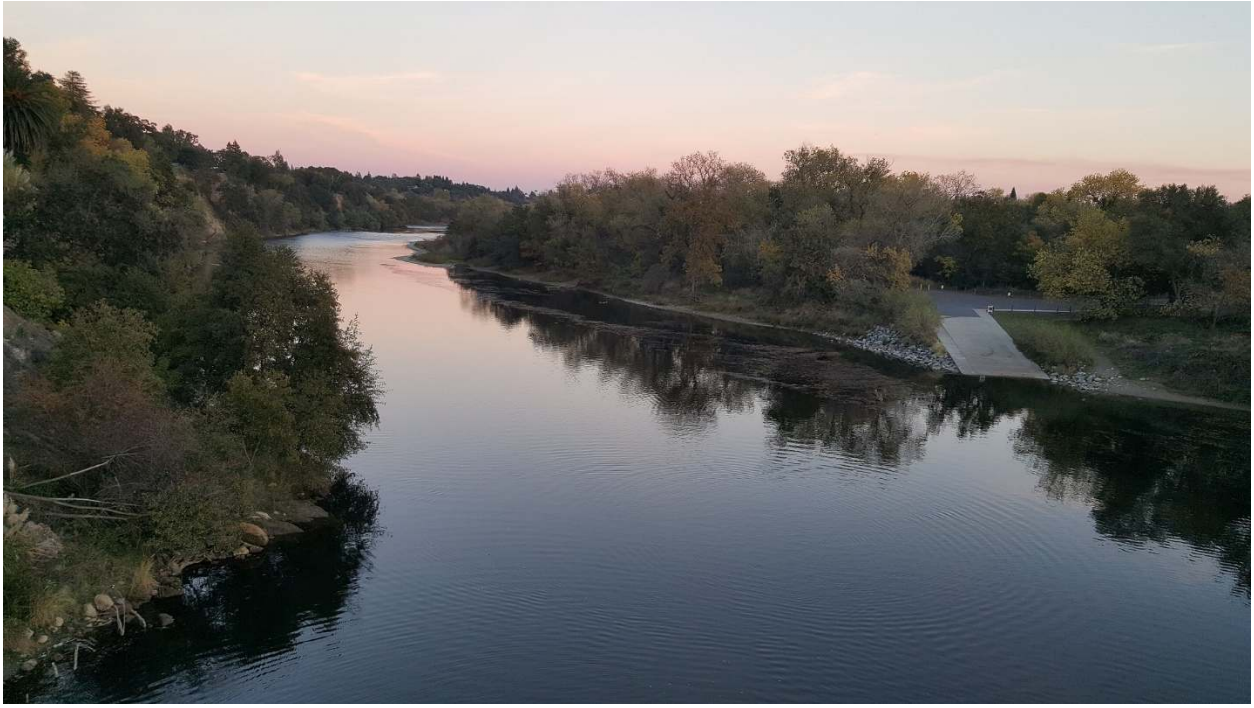
Information developed through the analysis of prioritized opportunities and the other study activities allowed Raftelis to consider the advantages and disadvantages of all types of collaboration, including reorganization; that is, two or more of the participating agencies consolidating into a single agency. It is believed that reorganization can offer significant financial and service level benefits to the region, but it must be acknowledged that it also can lead to less local autonomy and self-determination. The path to the broadest and most broadly accepted reorganization opportunities begin with realizing incremental success such as aligning practices and collaborative contracting for services. Moving down the collaborative path does not inherently commit any of the participating agencies to full reorganization, but it does allow time for agencies to align practices, acclimatize stakeholders, and put in place agreements necessary for additional collaborative activities.

Introduction

The Sacramento Regional Water Utility Collaboration Study (Study) is a collaboration among CWD, CHWD, Folsom, DPMWD, RLECWD, SSWD, and SJWD (together the "participating agencies") to identify opportunities for increased collaboration. The goals of this Study are to identify opportunities for additional efficiency and to improve service provision to customers. Increasing costs of living, evolving regulations, and additional competition for scarce water resources across California mean that agencies may have opportunities to work together, more seamlessly and regionally, to provide reliable and affordable services.

Activity 2 findings (see Appendix B) noted that an array of approaches and levels of service are pursued by the participating agencies for the prioritized services, resulting in different costs of service. Even with the differing approaches and levels of services provided by the participating agencies, there are commonalities. These commonalities are opportunities for collaboration. In this Activity 3 report we will identify and analyze several alternative models that can allow the participating agencies to achieve savings through collaboration.

Studying every aspect of each participating agency's operation is infeasible, so Raftelis worked with the participating agencies to focus on a list of common areas that presented viable opportunities for potential collaboration. The group reviewed and narrowed a list of over 80 potential opportunities for further study. The participating agencies prioritized seven of those opportunities for investigation during a workshop on September 24, 2020. Note that while the full list of opportunities may be explored at any time by any collection of agencies, the seven priority opportunities are the focus of Activity 3 – Business Case Evaluations.



Business Case Evaluations of Selected Opportunities

Members of Steering Committee representing each of the participating agencies selected seven opportunity areas for further study. The areas selected include:

- Distribution System Preventative Maintenance
- Human Resources
- Leak Detection
- Paving
- Stand-by / Emergency Operations
- Water Conservation Programs
- Water Supply

Raftelis assessed a range of delivery options for each opportunity using a Business Case Evaluations (BCE) approach. The range of delivery options considered encompassed the current or status quo approach, which consists of each of the participating entities delivering the service independently or making their own arrangement for outside contract support, through the full spectrum of collaborative delivery options such as joint contracting and resource sharing. Consolidated delivery of the function was included in the options.

Delivery Option Assessments

Prior to the BCEs it is worth considering the delivery options attributes that can be somewhat consistent across the opportunities. The delivery options assessed include:

- Status Quo
- Joint Contract – External
- Joint Contract – Internal
- Consolidated Provision
- Outside Organization Support

The tables below compare the delivery options across four attributes. Specifically, the following attributes are evaluated at a high level for each delivery option regardless of which opportunity they are applied to:

- Advantages
- Disadvantages
- Risks
- Stakeholder impacts

Advantages

Delivery Option	Advantages
Status Quo	• Agencies continue to perform activities independently from other participating agencies with or without assistance from an outside contractor. • Costs and levels of service remain the same. • Greater autonomy and individual control over activities.
Joint Contract - External	• Agencies likely achieve higher level of service at the same or lower cost as Status Quo by joint contracting with another participating agency. • Agencies execute a joint contract with an external resource, such as a contract to conduct valve exercising at multiple agencies. This approach allows for economies of scale and higher levels of service. • Frees up resources at all agencies.
Joint Contract - Internal	• Agencies with underutilized resources use their internal resources to provide services to other agencies for an appropriate fee. • Agencies may find that enhanced service levels are more attainable compared with pursuing them alone. • Potential to free up multi-tasking staff for other needs, reducing contractor support needs or enhancing service levels. • Sharing of lessons learned and best practices among the agencies will increase efficiency and reduce redundancy in effort.
Consolidated Provision	• Opportunity to unify standards and approaches to achieve higher levels of service in some services, increase efficiency, and achieve greater economies of scale. • More consistent service delivery throughout the region. • Leverage additional resources though the consolidated entities.
Outside Organization Support	• If other existing local partner organizations have the capacity, scale, and experience to complete work it may be cheaper than contracting. • May create synergies by reducing idle time of local resources that are already deployed and increasing the density and scale of their work or materials purchasing. • May already be familiar with some local requirements and standards. • Reduces inspection costs and accelerates timelines. • Reduces liability. • Positive public relations element • Creates an opportunity for development of shared incentives and objectives. • Regional continuity of messaging. • Increases program service levels equitably. • Improves and expands reach of an existing resource rather than starting from scratch.

Disadvantages

Delivery Option	Disadvantages
Status Quo	• The agencies do not benefit from savings where there is overlap in delivery. • Economies of scale are not maximized. • Activities can only be expanded by dedicating additional resources to them. • Practices diverge and fewer opportunities for shared savings emerge. • Less consistent service delivery throughout the region.
Joint Contract - External	• Agencies may need to decide on common activities and practices to achieve best contract pricing. • May introduce additional complexity. • Administrative time required to manage multi-agency contract(s). • May be concerns about equity and value; each agency must get their proportional share of resources. • Less program autonomy and customization. • Resources required to manage an external contractor. • Outside contractors may not be as familiar with the quirks of each agency.
Joint Contract - Internal	• Agencies may need to decide on common activities and practices to achieve the highest value. • May introduce additional complexity. • Administrative time required to manage multi-agency participation. • May be concerns about equity and value; each agency must get their proportional share of resources. • Less program autonomy and customization. • Potential liability issues. • Other agencies' staff may not be as familiar with the quirks of each agency's operation and assets.
Consolidated Provision	• Less program autonomy and customization. • May introduce additional complexity, even more than Joint contracting models. • Requires agreements and in some cases charter/legislative changes. • Concerns about lack of control.
Outside Organization Support	• May be challenging to administer across municipal boundaries. • Limited to the areas outside organizations can provide support, which might not meet all the desired service levels of some of the agencies. • Agencies may need to decide on joint messaging and common activities. • Less program autonomy and customization. • May be concerns about equity and value; each agency must get their proportional share of resources.

Risks

Delivery Option	Risks
Status Quo	• Collaborative momentum may be lost if opportunities are not adopted. • Opportunity to improve service levels or achieve savings may be missed. • Not all staff have equal training, and local practices may continue to diverge, making future collaborative efforts work less efficiently. • Activities may not consistently be performed per industry best practices due to varying resource availability or other inconsistencies in service delivery.
Joint Contract - External	• The contractor provides a level of service that doesn't align with needs. • Cost-sharing agreements, and program standards may be difficult to unify. • Contractors may not perform as well as promised. • Contract disputes may occur. • Some traditional vendors may not qualify for larger joint contracts. • Concerns about lost autonomy by stakeholders.
Joint Contract - Internal	• Level of service provided is above or below what a given community desires. • Cost-sharing agreements and program standards may be difficult to agree to. • Agencies working outside their systems may not provide their full effort and focus. • Potential liability issues. • Resource availability may be challenging to coordinate. • Concerns about equity and lost autonomy from stakeholders.
Consolidated Provision	• Similar to other joint efforts. • Additional concerns about equity and lost autonomy from stakeholders.
Outside Organization Support	• Availability of outside organization resources may be constrained by other existing priorities. • Outside organizations may not be able to meet the needs of all desired program elements or might become overwhelmed by demand for support in new areas. • Costs of participation with outside organizations may go up. • Programmatic investments with the outside organization may not achieve desired results due to poor execution, resource limitations, lack of training, more diffused accountability, or other factors.

Stakeholder Impacts

Delivery Option	Stakeholder Impacts
Status Quo	• This option is the status quo so there is no change in stakeholder impact.
Joint Contract - External	• Potential higher service levels achieved or lower costs, increasing stakeholder satisfaction. • There could be positive feedback associated with the cost savings and service level improvements that joint contracts could offer. • More uniform costs and service experiences across the region • Stakeholders may be suspicious of contract terms or expenditures and have varied perceptions of equity • Staff may resist changes or reductions in procedural flexibility that come with jointly bid contracts.
Joint Contract - Internal	• Potential higher service levels achieved or lower costs, increasing stakeholder satisfaction. • There could be positive feedback associated with the cost savings and service level improvements that sharing resources could offer. • More uniform costs and service experiences across the region • Stakeholders may be suspicious of or scrutinize investments in central shared resources. • Staff may resist changes or reductions in procedural flexibility that come with centralization of these functions.
Consolidated Provision	• Potential higher service levels achieved or lower costs, increasing stakeholder satisfaction. • There could be positive feedback associated with the cost savings and service level improvement. • More uniform costs and service experiences across the region • Stakeholders may be suspicious of consolidation terms and equity - perception of loss of local control • Stakeholders may resist changes. • Staffing impacts.
Outside Organization Support	• Could create political challenges if constituents feel it has negative employment impacts. • RWA may require additional staff or financial resources to achieve regional desires and would have to be willing to take this on. • There could be positive feedback associated with the cost savings and service level improvements that sharing resources could offer.

The sections that follow cover each opportunity and are arranged in alphabetical order as there is no preference given to the opportunity priorities until the participating agencies decide on immediate next steps following this Study.

Distribution System Preventative Maintenance

Distribution system preventative maintenance (PM) is the collection of planned and scheduled activities employed to maintain a water system's distribution network with the goal of increasing its longevity, lowering lifecycle operating costs, and providing service to customers. Activities such as proactive valve exercising, regular hydrant maintenance, and periodic water main flushing are considered typical distribution system PM activities. Note that capital replacement and repair, customer leak response, and other reactive efforts were not the focus of this review, because they are not considered PM activities. Robust PM programs have dedicated staff employing industry best practices to achieve outcomes measured by metrics and aligned with service level targets.

Differing resource levels, priorities, and attitudes are primary drivers of varying distribution system PM activity levels among the participating agencies. Similar to broader asset management programs that may include capital investment and repairs, PM practices often correlate with the number of assets and their location, age, condition, and criticality. Historical practices strongly influence chosen PM activities.

PM is often neglected because of competing priorities and because its benefits are often less apparent in the short term. You might say this is where the "rubber *does not* hit the road" for the "out of sight, out of mind" conundrum that is buried infrastructure. The participating agencies have identified the possibility of collaborative action as a way to overcome the varied stresses placed on achieving desired PM levels.

There are many collaborative opportunities for PM ranging from equipment and staff sharing to communicating lessons learned. For example, to facilitate future opportunities for more comprehensive or indeed collaborative PM programs, DPMWD may gain insights from SSWD's efforts to relocate assets from backyards to streets or to improve access for those assets that remain outside of the public right of way. Some participating agencies have recently begun to engage in contracting to meet PM objectives, while others might not yet have seriously considered such an approach. There are opportunities to do more through a collaborative scale contract with attractive rates per mile of pipe or per asset compared to what might be offered otherwise.

Delivery Options

Participating agencies have four options to provide distribution system PM, as follows:

1. Status Quo (Plus)
2. Joint Contract - External
3. Joint Contract - Internal
4. Consolidated Provision

These four options are described further in the sections that follow.

Status Quo Plus

All the participating agencies report active PM programs with varied levels of activity. Interviews and reporting noted areas of focus on PM covered eight key activities:

- Infrastructure PM / inspection (general PM / other)

- Dead-end or distribution system flushing in areas supplied with groundwater when quality issues arise
- Hydrant maintenance / painting / flushing / greasing / inspecting
- System-wide flushing
- Valve exercising (mainline, blow off, hydrant valve, air release valve (ARV) / combination air valve (CAV), etc.)
- Tank / storage reservoir inspections
- Large meter testing
- Cathodic protection program

PM work is now accomplished through a range of approaches that include dedicated staff time and contract support. In particular, SJWD employs contractor support for hydrant maintenance and valve exercising. However, even if the status quo is largely maintained in terms of staffing or contracting, there are opportunities for collaborative engagement to share lessons learned that will be detailed in this section, which is why it is referred to as "Status Quo Plus".

The activities and frequency for PM work currently vary by participating agency as detailed in Table 1. The larger agencies report covering more PM activities, with SSWD having reported the most comprehensive program. Taken together the participating agencies spend about $2.84 million on PM activities annually.

Table 1: Current Distribution System Preventative Maintenance Activities and Frequency[1]

Activities	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Infrastructure preventative maintenance / inspection (general PM / other)	X	X	X	X	X	X	X
Dead-end or distribution system flushing in areas supplied by groundwater area when quality issue	X	X	X			X	X
Hydrant maintenance / painting / flushing / greasing / inspecting[1]	X (N/A)	X (7.2)	X (5)	X (1)	X (3)	X (5)	X (5)
System-wide flushing			X		X		
Valve exercising (mainline, blow off, hydrant valve, ARV/CAV)[1]	X (N/A)	X (11.9)	X (5)	(N/A)	X (3)	X (5)	X (5)

[1]The frequency interval in years for system-wide coverage for a given PM activity is shown in Table 1 in parentheses for each participating agency.

Activities	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Tank / storage reservoir inspections			X			X	
Large meter testing			X			X	X
Cathodic protection program						X	X

While the number of assets in larger systems may make PM frequency intervals longer for activities like hydrant maintenance or valve exercising without additional resources, other considerations such as access issues, such as is the case with DPMWD, constrains the regular systematic completion of some activities entirely. However, the challenge of buried infrastructure on private property in the DPMWD system presents an opportunity, as some communities have worked through these same challenges. Specifically, CHWD and SSWD indicated that they have moved linear infrastructure from backyards into the public right-of-way, which allows for regular PM work. DPMWD can reach out to CHWD or SSWD to learn from their experiences as they seek to navigate the political and infrastructure challenges of relocating water assets that are currently less accessible.

Another opportunity for some collaboration under the status quo exists around flushing activities. CWD is developing a system-wide flushing plan. That process presents an opportunity to learn what others are doing and to share plans to ensure best practices and lessons learned are communicated.

While the Status Quo represents no change from current practices, the sharing of lessons learned and best practices as discussed here, can actually be employed with relatively little effort under any collaborative model alternative and for any of the priority opportunities discussed in this report. Achieving Status Quo (Plus) level collaboration requires ongoing regional communication and represents the best of what the region already does to achieve collective continuous improvement, whether through the Regional Water Authority (RWA) or proactive engagement by the participating agencies and the broader region. Facilitative tools such as an online library, email list, or regular meetings can help "grease-the-wheels" of collaboration under what would otherwise be Status Quo operational models.

Joint Contract - External

PM activities can be contracted to an external party to accelerate system-wide PM frequencies, expand reach where staff resources are constrained, leverage the efficiency of firms with specialized expertise or equipment, or save money on activities where full-time year-round staffing is not cost justified. While none of these benefits are guaranteed, they represent possible outcomes that are worth exploring should agencies seek to ramp up their PM activity from current levels or potentially save money through economies of scale. It is important to note that several agencies indicated that many PM activities are dependent upon the expertise and asset familiarity of in-house staff and therefore PM may not be an area where joint contracting is preferable (whether with a third party or another agency).

An Information Clearinghouse is a tool to increase data sharing among the participating agencies. We discuss it further after briefly presenting each option. It may enable more opportunities for joint contracting by allowing agencies to begin sharing upcoming contract procurements with each other more actively.

Joint Contract - Internal

An internal joint contract, where one or more agencies perform PM activities for other agencies, could take a range of forms. Under this opportunity we are referring to any agreement beyond existing Mutual Aid and joint purchasing that would allow for arrangements such as equipment sharing and cost recovery, joint equipment purchasing and sharing, joint materials and supplies purchasing, shared staff resources, or services provided by one agency for another on a contract basis.

Mutual Aid Assistance agreements that currently exist between the participating agencies provide the opportunity to tap into potential services including sharing of equipment with operator, sharing of materials, and use of facilities and personnel as needed to maintain the required services of each agency. However, more intensive, or extended arrangements outside of emergency situations have generally been handled through separate agreements outside of Mutual Aid, such as the recent support of DPMWD by SSWD, which included broad field operations responsibilities due to staff turnover at DPMWD.

The participating agencies indicated that differences in standard operating practices (SOPs), installed asset types, associated materials and supplies, and equipment requirements can make collaborative PM opportunities challenging. Working to these differences across agencies is one way to facilitate collaborative action moving forward. If the participating agencies identify, agree to, and pursue PM best practices, as well as align activity frequency intervals in a coordinated fashion, and simultaneously identify preferred materials as a group, there may be significant opportunities to reduce costs. Such alignment of SOPs, assets, and materials, when coupled with joint training (to be discussed in the Human Resources section), could help to alleviate anxieties about more intensive staff sharing.

Consolidated Provision

A consolidated approach would likely look very similar to an intense Joint Contract – Internal approach where one or more agencies is responsible for PM across multiple participating agencies in one or more areas such as treatment or distribution system operations and maintenance. A consolidated approach would require alignment of SOPs, policies, and standards in the chosen areas. It would also encourage a more rapid move toward standardization of assets. Ownership of the assets could stay with each participating agency or could be leased or sold to another entity. There are many examples in the utility industry where one utility operates and maintains the assets of another utility under some type of agreement.

A consolidated approach requires complex planning and legal considerations; therefore, it may not be the best first step toward collaboration. Rather, building on relationships and practices developed through a joint contracting approach seems to be a better starting point for collaboration.

An assessment of the range of inter-agency opportunities for collaboration on PM would ideally include a bottom-up cost analysis at an operating expense budget line-item level. Below we present range of service level options for each element of PM collaboration and rough costs where applicable and where data was available.

Formally sharing SOPSs, supplies, materials, and equipment inventory, as well as activity schedules through an Information Clearinghouse:

Setting up an Information Clearinghouse can be accomplished without significant additional costs using widely available technologies. Microsoft Office 365 includes cloud-based tools called SharePoint and OneDrive that can be setup to allow file sharing through folders accessible by permitted users from outside organizations using the same Microsoft login that grants access to each person's work computer. Other free or low-cost tools depending on the amount of storage and features needed include Dropbox, Google Drive, and Box.

Equipment sharing, purchasing, and cost recovery:

Equipment idle time is an opportunity cost that can be monetized. The challenges of equipment sharing include concerns about availability, asset longevity, wear and tear, and liability, and yet agencies around the country and in the Sacramento Region already occasionally share equipment, suggesting that these challenges can be overcome. Given this, it may be worth considering whether there are opportunities to formalize and expand the opportunities to share equipment among the participating agencies, or even purchase new equipment that might not be cost justified individually but would be if pursued together.

Table 2 provides example charge out rates for certain equipment provided by select participating agencies. These rates may be negotiable depending on the terms and duration of use.

Table 2: Examples of PM Equipment Charge Out Costs

Agency	PM Equipment
CWD	Vehicle charge out rate is $55 per hour plus 15% administrative fee
CHWD	Equipment is charged out at $156 per hour.[2]
Folsom	Not captured or not applicable
DPMWD	Not captured or not applicable
RLECWD	Not captured or not applicable
SSWD	Not captured or not applicable[3]
SJWD	Not captured or not applicable

Joint materials and supplies purchasing:

While data specific to PM materials and supplies is challenging to isolate, there may be a range of these expenses that could be shared for PM activities. The success of the joint chemical purchasing program that some participating agencies are involved with was highlighted as a cost saver and a model that could be expanded. PM related materials and supplies may include PPE, IT hardware,

[2] For the purposes of the PM analysis total equipment charge out was estimated at 20 hours per week for the entire year (52 weeks), or $162,240 per year. CHWD did not provide a description of what this equipment is but noted a $156/hour charge out rate for equipment used in PM.

[3] SSWD noted 1 Distribution PM Truck #64 with an average annual cost since 2014 of $9,035, and a valve exerciser with an average annual cost since 2009 of $8,440. Charge out costs per hour were not provided.

tools, paint, testing supplies, safety cones, and any other field staff sundries that can be inventoried, warehoused, and purchased jointly to achieve savings.

Services provided by one agency for another on a contract basis or investments in shared staff:

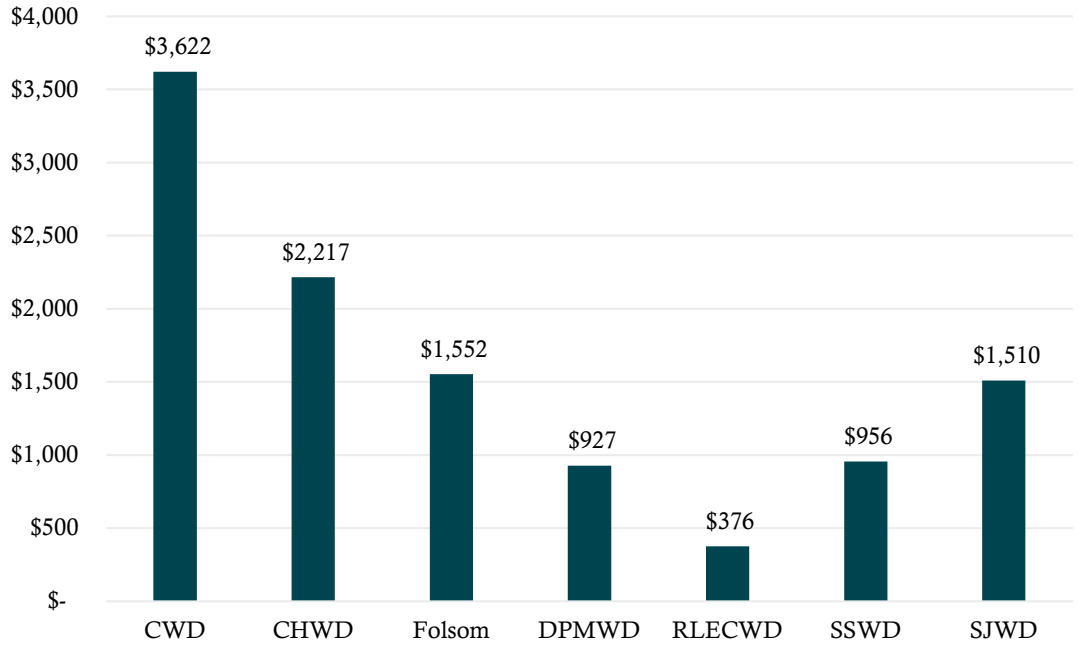
Should agencies with stretched resources fall behind on PM goals, utilities with additional resources may be able to offer contract PM (or other services) support in an arrangement similar to the recent one between SSWD and DPMWD for operational support during a period of high staff turnover. This alternative presents a revenue opportunity for the providing agency, while potentially reducing full time and longer term staffing cost commitments for the contracting agency. As with several collaborative models, hesitance about having outside staff work across systems may be overcome by aligning SOPs, materials, and training and by working to maximize service provider accountability through sound agreements that ensure the scope of the activities is completed to expectations.

If existing staff levels are insufficient to allow for inter-agency PM staffing, a cost sharing arrangement could be developed for new regionally resourced staff positions. Creating such a position would likely not be an immediate first step but perhaps a future option as SOPs and cross-training expands and agreements subsequently developed. The need for shared resource might be considered if agencies seek to expand their PM service levels or as staffing changes create gaps in available resources across agencies.

Program Costs

Among the three agencies that indicated they are doing the most comprehensive PM activities, the one with the lowest cost on a per mile of pipe basis is SSWD per Figure 1.

Figure 1: Annual Preventative Maintenance Expenditure per Mile of Pipe



While some agencies have noted that costs in less densely populated communities may be inherently higher because more infrastructure is required per unit of area and population served, a basic correlation analysis does not clearly bear this out. Figure 2 reveals that annual preventative maintenance expenditure per mile of pipe and population per square mile have an R^2 coefficient of determination of just 0.23, suggesting little correlation between these two statistics among the participating agencies.

Therefore, it is worth looking at the potential for PM savings that could be achieved by servicing all participants at the cost and activity level of SSWD, which is the agency providing the greatest coverage at the lowest cost, or $956 per mile of pipe. This would translate to an estimated cost of about $1.7 million per year or a savings of over $1 million, a more than 38% cost reduction. While there may be a desire to scrutinize and refine included costs in future study of this opportunity to ensure alignment, the analysis suggests significant savings can be achieved through PM collaboration.

Figure 2: Annual Preventative Maintenance Expenditure per Mile of Pipe vs. Population per Square Mile

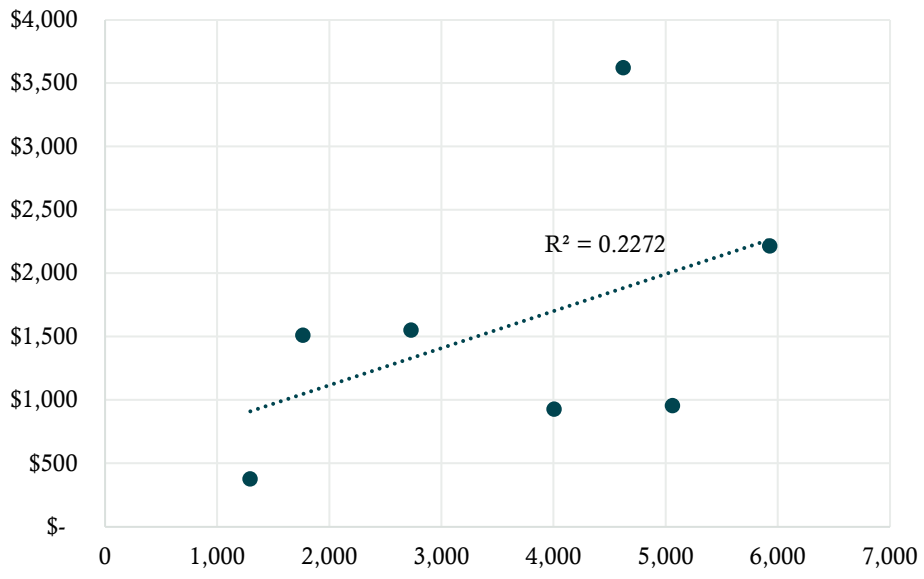


Table 3: PM Cost - Status Quo vs. Lowest Cost Comprehensive Program

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Total Estimated Annual PM Cost	$579,528	$553,280	$569,565	$19,463	$23,542	$667,475	$335,219
High level of service - Total PM programming cost at $956 per mile of pipe	$153,003	$238,684	$350,950	$20,082	$59,920	$667,475	$212,291
Difference in programming cost	*$(426,525)*	*$(314,596)*	*$(218,614)*	*$619*	*$36,378*	*$-*	*$(122,928)*

Table 4: Current PM Program Costs - Detailed

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
PM FTE*	8.63	3.00	4.50	0.02	0.31	5.00	2.20
Total FTE Costs	$579,528	$391,040	$569,565	$19,463	$23,542	$650,000	$249,327
Equipment Costs**	Unknown	$162,240	Unknown	Unknown	Unknown	$17,475	Unknown
Contract Costs	None	None	$0	None	None	None	$85,893
Materials, Supplies, and Other Costs	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

*Includes administrative support allocation to PM FTE where information was provided.

**It is expected that there may be additional reporting needs here in future efforts to account for vehicles if not other relevant equipment as well as discrepancies in the manner of reporting for the two equipment costs that were provided or able to be estimated

The available information suggests that agencies seeking to leverage contractors to expand the reach of their PM activities have found that up to 26% (SJWD) of this work can be contracted out. If all agencies contracted at this level and we assume a 10% savings can be achieved through a joint contract, the 10-year savings achieved through joint contracting would be about $714,4798. While this may represent a small financial savings, it could come with other benefits such as improved service reliability, longer asset life, fewer asset failures, or even perhaps staff reductions that could be achieved through attrition.

Recommendations

In order to achieve potentially higher and more uniform levels of service, as well as optimize PM services and resourcing for all of the participating agencies, a phased approach to collaborative action is recommended as follows:

1. Keep data on costs and service provision to support analysis of the pros and cons of collaborative service delivery approaches. Discuss this information with stakeholders to raise awareness.

2. Develop an Information Clearinghouse to share SOPs, materials and supplies inventories, specialized equipment inventories, contract procurements, and best practices.

3. Move toward aligned SOPs, assets, practices, policies, etc.

4. For agencies seeking to increase PM activity levels now, discuss SJWD's contractor experiences to learn what their experience has been. Ultimately a joint bid may become more appealing to those currently hesitant to allowing outsiders to work on their assets.

5. As SOPs, best practices, materials and supplies, and asset types converge over time, consider inter-agency resource contracting, or shared regional resources and associated agreements.

6. If inter-agency resource contracting or provision through shared regional resources is efficient, beneficial, and equitable to all parties, consider consolidated service provision of activity.

Human Resources

Human resources (HR) functions were prioritized because several of the participating agencies noted gaps in their respective HR capacity to cover the full range of activities demanded. Larger agencies with dedicated staff find that their greater headcounts demand one or more dedicated HR positions. Smaller agencies do not have dedicated HR staff, thereby requiring managers or other staff to shoulder this burden along with other job duties. Given the broad array of activities that HR covers, the participating agencies identified HR collaboration as an opportunity. All agencies have some internal capabilities, and a few agencies hire external contractors to fill in the gaps in services provided.

Delivery Options

Participating agencies have four options to provide HR functions, as follows:

1. Status Quo
2. Joint Contract External
3. Joint Contract - Internal
4. Consolidated Provision

These four options are described further in the sections that follow.

Status Quo

Table 5 provides a summary of the status quo for HR services across the participating agencies. Under the status quo, HR service levels vary less by preference than by resource availability. Some agencies do not have any full time HR staff. Despite the divergence in resourcing there is quite a bit of alignment on a set of gaps and opportunities identified by the participating agencies that could potentially be filled through collaboration. Common gaps include a desire to increase training coordination, share team building best practices, identify shared resources to support recruitment activities, and update policies and procedures to ensure compliance with legal obligations and best practices. Contract support is employed by some agencies to fill these gaps.

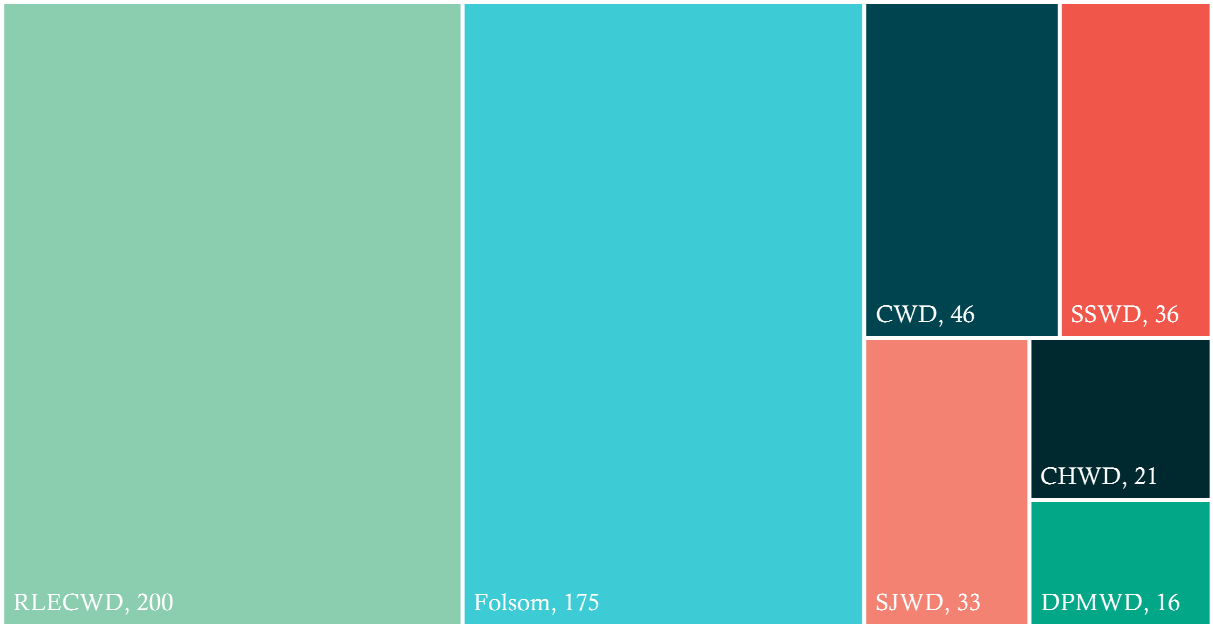
Table 5: HR Services Overview

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Total Employees	32	36	34	4	10	71	48
HR FTE	0.7	1.75	0.2	0.25	0.05	2	1.45
HR Services Offered	Comprehensive (less gaps)	Comprehensive (less gaps)	Comprehensive	Comprehensive (less gaps)	Comprehensive (less gaps)	Comprehensive (less gaps) also have training facility	Comprehensive (less gaps)
Reported HR Service Gaps or Opportunities	Staff morale building, training coordination	Training coordination	None Reported	None Reported	GM provides the HR services	Training and recruitment, updating policies/ procedures and Employee Handbooks	Recruitment and selection, non-technical staff development, training and team building, performance management and employee coaching/discipline, culture building, keeping abreast of labor laws.
Contract Services	None	None	None	None	None	Employee Benefits Insurance Brokerage and Consulting Firm (EPIC)[4], Bryce Consulting	Bryce Consulting, Meyers Fozi, LLP

[4] Though EPIC doesn't assist with staffing per se, they do provide a research and data analysis service that HR staff would otherwise need to undertake OR engage another consultant. Management Partners is another contractor that was used for HR support but is not listed as that was a one-time service.

To normalize the number of HR related FTEs at each of the agencies, the number of utility FTE served by one HR FTE was calculated and shown in Figure 3. RLECWD and Folsom stand out among the participating agencies because the General Manager provides HR services as a portion of his duties at RLECWD and Folsom is supported by the efficiencies of broader City functions. In the case of RLECWD, the agency has 10 FTEs but the time spent on HR is the equivalent of one full-time HR employee supporting 200 full-time employees. It is important to note that because Folsom is supported by the shared HR department in the City; this agency is unlikely to support the other agencies with HR resource sharing.

Figure 3: Utility FTE Served per HR FTE



Joint Contract - External

SSWD contracts HR service support (as needed) to supplement the work of two HR FTEs who support 71 FTEs in the agency. The supplemental work includes the following providers with some of the associated services:

- Bryce Consulting:
  - Classification analysis and job description development/revision
  - Recruitment support (review of job applications, development of oral interview questions, facilitation of oral interview, reference checks)
  - General HR support (development/revision of personnel policies, audit of personnel practices, advising managers on performance management issues)
- Employee Benefits Insurance Brokerage and Consulting Firm (EPIC)
  - Benefit renewal analysis for benefits
  - Assist with contract negotiations and renewals

SJWD contracts legal labor assistance with Meyers Fozi, LLP, and HR service support with Bryce Consulting. The support provided by Bryce Consulting includes:

- Development of job announcements
- Placement of ads
- Receipt and screening of applicants
- Development of selection materials
- Scheduling and facilitating interviews
- Maintaining contact with candidates
- Making offer to selected candidate
- Conducting reference checks

Joint Contract - Internal

An alternative to a joint external HR support, internal joint contracts might offer a shared regional resource or partial dedicated FTE with designated responsibility for filling HR service gaps across the participating agencies. Cost sharing for shared HR staff could be established through an interagency agreement with negotiated terms to ensure equitable availability (based on the terms of the agreement) and support based on each participating agencies' size and HR support needs.

In addition to filling the identified HR functional gaps, the regional HR resource could also manage an Information Clearinghouse that would facilitate other collaborative actions including but not limited to archiving training materials, scheduling collaborative team building work sessions, and a range of other knowledge sharing and data coordination activities discussed in each opportunity section of this document.

Consolidated Provision

A consolidated approach would likely look very similar to an intense Joint Contract – Internal approach where one or more agencies is responsible for select HR activities across multiple participating agencies. A consolidated approach would encourage a more rapid move toward standardization of policies, pay, job descriptions, benefits, etc. While it may be somewhat cumbersome, HR specialists could still maintain distinct attributes across multiple participating agencies. For example, each agency could still have separate job descriptions and pay scales for staff.

A consolidated approach requires complex planning and legal considerations; therefore, it may not be the best first step toward collaboration. Rather, building on relationships and practices developed through a joint contracting approach seems to be a better starting point for collaboration.

Outside Organization Support

ACWA JPIA[5] and California JPIA[6] both have online resources available that can continue to enhance staff training particularly during periods of remote work, especially regarding HR-related issues. These resources, available at no additional cost for members, can be further optimized and promoted through collaboration by sharing experiences on the most useful tools or any that are required, and in this way cooperating to improve the visibility of the best training resources and maintain staff compliance. Several participating agencies are already members of these organizations.[7] Further, joint communications to these organizations may achieve greater voice through collaborative engagement

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[5] https://www.acwa.com/resources/

[6] https://cjpia.org/training/e-learning/

[7] Information on specifically who is a member of ACWA JPIA and JPIA was not provided by the participating agencies.

at scale to further optimize training opportunities and content to ensure its value meets needs in the Sacramento Region.

Program Costs

Total annual HR cost per utility employee is shown in Figure 4, which highlights that for agencies providing the most comprehensive services, costs appear to go down when the scale of the utility increases. This is demonstrated by SSWD, which has the lowest cost at $3,288 of HR work per employee served among those agencies with dedicated HR staff. Note that Folsom's HR cost per FTE served is approximately lower than SSWD but that Folsom is served by the City's HR department, which works across all City departments. Given the benefits that Folsom enjoys through this municipal HR support, it is expected that Folsom's role in some elements of HR collaboration may be more limited.

Figure 4: Annual HR Cost per Utility FTE Served

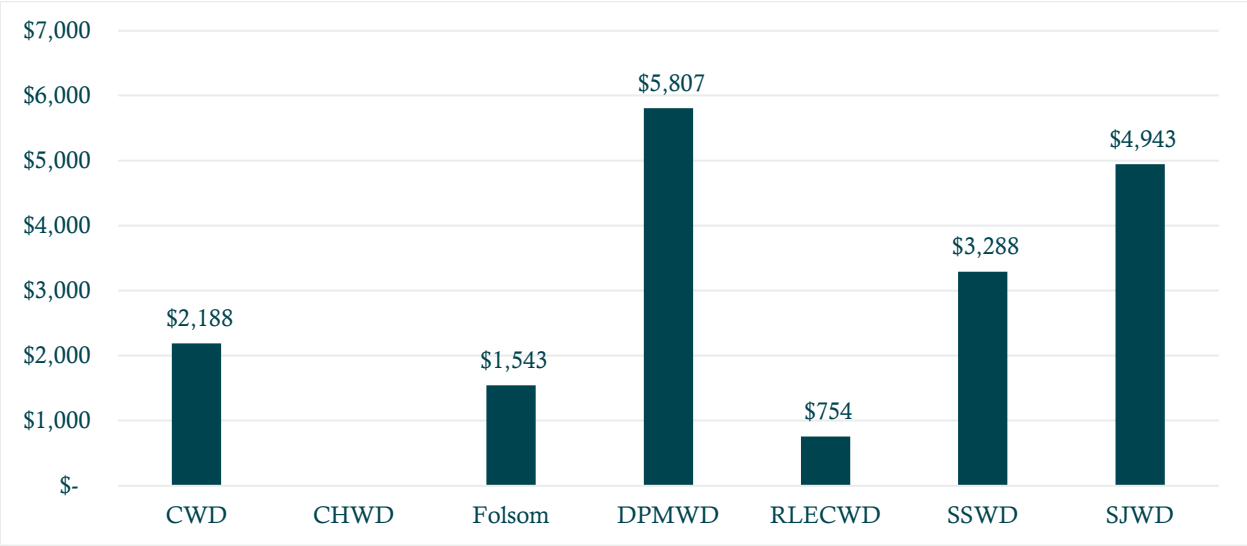


Table 6: Collaborative HR Cost Analysis

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Total HR Cost	$70,000	Unknown	$53,865	$23,228	$7,540	$233,453	$237,263
High level of service - Total HR programming cost at $3,288 per FTE served	$105,218	$118,371	$114,754	$13,152	$32,881	$233,453	$157,827
Difference in programming cost (line 2 minus line 1)	*$35,218*	*Unknown*	*$60,888*	*$(10,075)*	*$25,341*	*$-*	*$(79,435)*

Given that SSWD can provide a comprehensive set of HR support services at relatively low costs even while deploying contractor support to augment staff capacity, it is possible that some combination of

joint contracting (whether internal or external) might be able to expand the HR service levels of the other participating agencies. If all the agencies achieved the comprehensiveness of SSWD based on SSWD costs the group would spend an additional $137,155 per year in HR costs (the sum of the last line in Table 6).

This possibility becomes even more enticing given that both SJWD and SSWD utilize some of the same contractors to support HR services. A joint contract with more scale or perhaps a multi-year commitment might entice a firm like Bryce Consulting to provide discounted rates for services such as recruitment, HR policy development, or general HR support. Currently, contracted HR services are 3-4% of costs for agencies that contract out a portion of services. While savings at this level of contracting might be somewhat limited even if jointly bid, the participating agencies generally reflected that their needs on HR were more about getting the necessary work of this function done than they were focused on expectations of costs savings.

Raftelis estimates that the additional HR needs of the participating agencies represents about 0.5 FTE in aggregate across all the agencies. This is based on the kinds of related services contracted out by some of the larger agencies and the estimated total annual staffing needs based on noted activity gaps and current staffing levels. A fully loaded FTE (salaries and benefits) is estimated to cost about $150,000, which means that for a total regional cost of about $75,000, or less than $11,000 per year per agency a joint HR support position could be established. These costs could be distributed in to-be-negotiated weights based on the support needs of each agency and would then be billed back to each agency based on the time keeping of the joint employee. As a practical matter, this resource would likely be housed within one of the participating agencies to avoid the need to create a new entity to house the resource.

Recommendations

To accomplish the broad suite of services that comprise the HR function, the participating agencies should look at collaborative solutions. Having General Managers shoulder the myriad range of HR issues that can emerge, even for the smallest utilities, is an unsustainable practice. There is a significant risk that critical HR activities will be missed or performed inadequately. While this might not present a problem in the short-term, it is likely to present one over the longer term especially as competing demands for time and resources occur. Further, relying on the same contractors to augment services for larger utilities is less sensible than a regional, jointly bid contract that could achieve some savings, no matter how small, while also elevating the service levels of multiple agencies. What appears to make the most sense given the overlap in gaps and opportunities identified is to hire a shared regional HR resource, perhaps on a part-time basis to begin. This individual could likely add even more value to each of the participating agencies by coordinating training programs that also leverage content from outside organizations such as ACWA JPIA and California JPIA and SSWD's training facility.

Each agency should keep data on costs and service provision to support analysis of the pros and cons of collaborative service delivery approaches for HR. They should discuss this information with stakeholders to raise awareness.

Leak Detection

Leak detection, whether conducted on an ad-hoc, systematic, or reactive basis in response to leaks presents an efficiency and service-level enhancing opportunity. Whether through joint contracting or sharing equipment and staff there is a sense from the participating agencies that this area may be rife for increased collaboration. While the age, size, and even characteristics of a given service area can change the perspective of a utility with respect to the need for leak detection, when engaged in a more proactive manner it can lead to water loss reductions that can yield a range of benefits. This can be critical in periods of drought or simply to reduce wasted water, along with the associated expense.

Delivery Options

Participating agencies have four options to provide leak detection, as follows:

1. Status Quo
2. Joint Contract External
3. Joint Contract - Internal
4. Consolidated Provision

These four options are described further in the sections that follow.

Status Quo

Under the status quo, the participating agencies maintain each of their pipe networks, which total 1,780 miles. Table 7 lists the total miles of pipe, and leaks and breaks relating to service lines and mains for each agency. For further comparison, AWWA utility benchmarking provides a median of 9.2 for leaks and breaks per 100 miles of mains. CHWD, DPMWD, and RLECWD do not have system-wide leak detection programs and instead perform ad hoc leak detection only. DPMWD does not perform any regular leak detection on their 21-mile system because the pipes are in backyards. For the other agencies, the frequency of each system-wide leak detection cycle ranges from 4 to 6.4 years.

Table 7: Leaks and Breaks

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD	AWWA Median
Total system miles of pipe reported[8]	160	249.6	367	21	62.66	698	222	-
Leaks and breaks per 100 total system miles of pipe reported (service line breaks)	59.1	35.3	31.4	53.5	121.9	10.9	36.8	-

[8] Unable to split miles between service lines and mains

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD	AWWA Median
Leaks and breaks per 100 total system miles of pipe reported (main breaks)	27.9	4.5	0.4	11.1	4.8	7.4	1.9	9.2
Frequency of a single system-wide leak detection cycle	6.4[9]	N/A	4[10]	N/A	N/A	5	5	

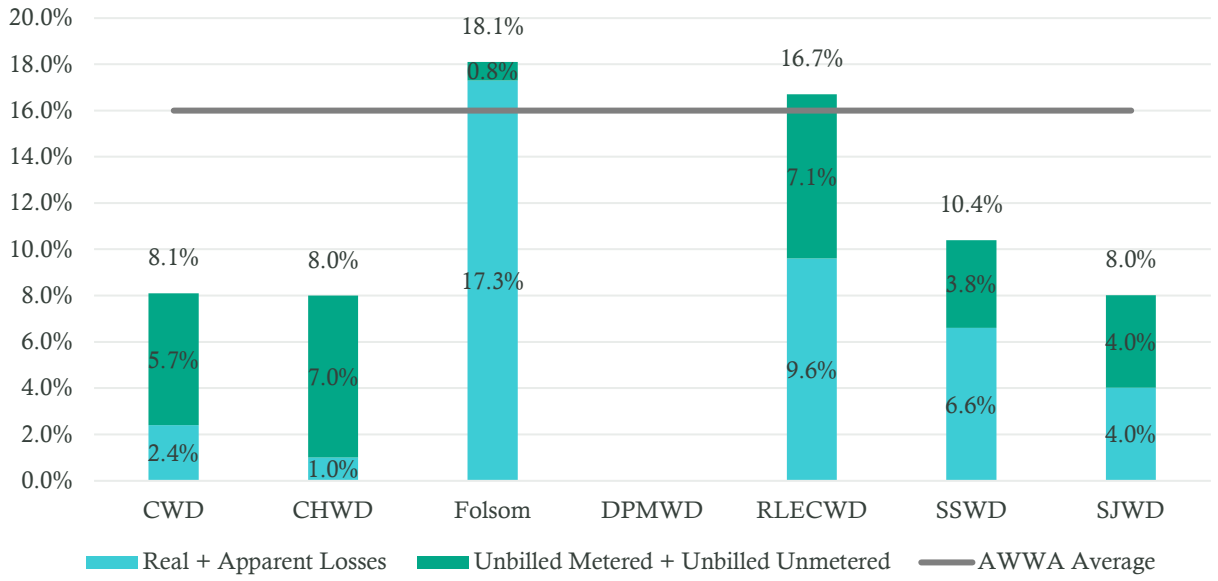
Utilities incur Real Water Losses from pipeline leakage and Apparent Water Losses when customer water consumption is not properly measured or billed.[11] This is considered a portion of the Non-Revenue Water at a utility. Also subsumed in Non-Revenue Water is unbilled metered usage and unbilled unmetered usage. Except for DPMWD, which solely provides unmetered service to residential customers (metered to commercial, industrial, and institutional customers), the participating agencies provided data about Non-Revenue Water. This includes the breakdown of real and apparent water losses and unbilled metered and unbilled unmetered water. Total non-revenue water losses as a percentage of total water produced is also shown in Figure 5 for the participating agencies above each stacked bar.

[9] Goal is 3

[10] Goal is 3; reality has been 3-5 based on most recent 3 rounds

[11] Real Water Losses and Apparent Water Losses are formally defined by AWWA in its manual M36 Water Audits and Loss Control Programs, Fourth Edition (2016).

Figure 5: Reported Non-Revenue Water Percentages



Joint Contract - External

A significant financial incentive for exploring joint third-party contract collaboration on systematic system-wide leak detection services is the ability to share in the mobilization charges that contractors charge. Joint contracts can present savings, particularly as technology advances such as airplane or satellite radar leak detection services emerge.[12] A shared contract presents opportunities for reducing labor hours, mobilization, and fuel costs, and producing scale efficiencies.

Several agencies already employ the same contractor (Utility Service Associates) to support either system-wide or ad-hoc leak detection services, thereby presenting a ready-made joint bid opportunity. In some regions and for some utilities, leak detection work may cluster during certain times of the year (often spring and fall), which can present capacity challenges for contractors. Larger contracts covering more miles of pipe may draw more competition from larger firms with the scale to meet the needs of all interested agencies in a timely fashion and at lower costs.

Joint Contract - Internal

Some agencies have more equipment or available trained staff and may therefore do more leak detection work in-house than others. However, due to the seasonality of leak detection work it may make less sense to try to provide this service collaboratively as an expansion in hired staff that might be needed. Leak detection is more often contracted out than not around the country given the evolving technology and expertise that typically specialized contractors have more experience with. To be sure, field staff are invaluable partners in this work, particularly where asset locations and GIS data are lacking. The local field staff of each agency will be most familiar with their own systems and certainly in the near term is preferable to staff from other agencies for this work. While over time intensive

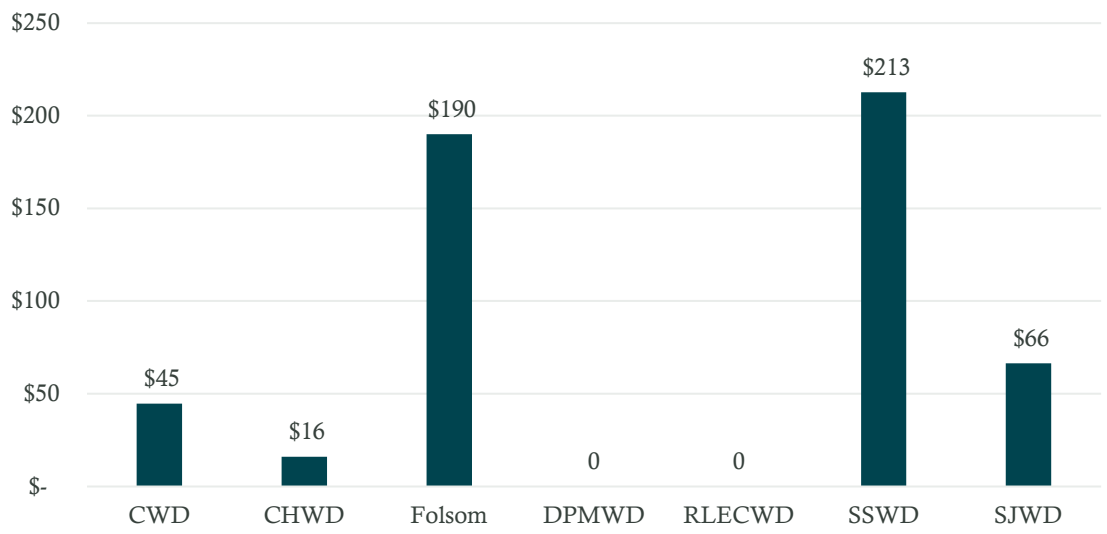
[12] https://utiliscorp.com/, https://www.leakdetectionservice.com/utilis

investments in equipment, cross-training, and broader geographic and asset familiarity could present the opportunity to scale up a regionally shared team of field leak detection staff for deployment to each agency, the pace of technological change in the leak detection space is currently hard to stay ahead of. It is possible that shared resources focused on pipe locates, or GIS technology and best management practices could make more sense than regular system-wide leak detection delivered collaboratively. While ad-hoc leak detection support could present a shared opportunity, this overlaps in part with the section focusing on after-hours emergency support collaboration.

Program Costs

The leak detection costs per total miles of system pipe reported are shown in Figure 6. CHWD, which does not have a system-wide leak detection program, has an expected lower cost per mile compared to the other agencies and indicated that most leaks come to the surface and do not require detection. DPMWD does not have any costs because they do not have regular access to lines located in backyards. RLECWD indicated that a hard pan layer typically brings leaks directly to the surface and so they almost never need to use leak detection services. Folsom and SSWD spend the most on leak detection services. CWD spends the least among agencies that conduct regular system-wide assessments.

Figure 6: Leak Detection Costs per Mile of Pipe[13]



[13] Includes contractor costs as well as water loss audit costs, which are considered as relevant to the leak detection activity throughout the section. The audit is reflective of a higher level of service.

While some agencies that perform regular system-wide leak detection work are spending less than SSWD, SSWD was the only utility that noted that their contracted work includes pipe condition assessments and water loss audit costs. Folsom also has robust contracting and a regular commitment of in-house staff time and equipment supporting an elevated level of service for leak detection activities. CWD and SJWD, do regularly contract for leak detection work with in-house support, but appear to have more pared down services and costs. Table 8 reviews the two tiers of costs based on the average cost for the SSWD/Folsom higher level of service and the average cost for the CWD/SJWD lean approach to demonstrate the range of spending should the region expand to let joint contracts or share in-house resources. A move to the higher level of service would lead to the greatest increase for CHWD, and total annual increase in costs for the region of $114,369. If we assume that a 10% savings can be achieved through a joint contract, the total annual savings for the region under a high level of service contract would be about $36,000 per year. A move to the lean level of service would lead to the greatest savings for SSWD, and a total annual decrease in costs for the region of $145,226. If we assume that a 10% savings can be achieved through a joint contract, the total annual savings for the region under a lean level of service contract would be about $10,000 per year.

Table 8: Leak Detection Cost Analysis

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Leak detection costs per mile of pipe	$45	$16	$190	N/A	N/A	$213	$66
High level of service - Total leak detection programming cost at $201 per mile of pipe	$34,013	$53,060	$78,017	$4,464	$13,320	$148,382	$47,193
Difference in programming cost for high level of service	$26,875	$49,060	$8,294	$4,464	$13,320	$-	$32,471
Lean level of service – Total leak detection programming cost at $55 per mile of pipe	$8,874	$13,844	$20,355	$1,165	$3,475	$38,713	$12,313
Difference in programming cost for lean level of service	$1,736	$9,844	$(49,368)	$1,165	$3,475	$(109,669)	$(2,409)

Recommendations

Two service level tiers emerged upon data review for leak detection with SJWD and CWD spending less and SSWD and Folsom spending more for systematic system-wide leak detection efforts. Despite this, a joint leak detection contract is recommended to achieve savings on activation costs and allow contractors to compete for a large bid with regional pipe miles. Under this joint contract it is possible that agencies could choose either a lean or high level of service if the bidders were asked to quote both models. In order to determine the appropriate next steps on leak detection several outstanding questions must be answered:

1. Among the agencies spending less on system-wide leak detection services (CWD and SJWD), are there elements of the higher cost programs (Folsom/SSWD) that would be attractive to them if collaborative savings were available through joint contracting?

2. Among the agencies that spend more on system-wide leak detection services (Folsom/SSWD), do they feel they are getting value for the significantly higher expenditure they commit to leak detection or are they keen to learn why others (CWD/SJWD) are able to spend so much less?

3. Among the agencies that do not currently perform system-wide leak detection, is there a desire and pathway to pursue a higher level of service through joint contracting, equipment sharing, or perhaps shared resources in support of line locates or contractor management?

4. Might new satellite/radar technology be a pathway to collaborative savings? Note that this technology could render the access issues in DPMWD largely irrelevant due to its remote nature.

To answer these questions the aforementioned Information Clearinghouse could be a useful tool to capture contract specifications and other leak detection documentation such as training materials and equipment inventories for programmatic comparisons that would clarify differences in current levels of service. This would provide a better sense of the reason for the observed cost differences and fodder for additional collaborative engagement prior to future opportunities for joint procurements.

In addition to joint contracting and increased information sharing, in-house staff and equipment sharing may be an option depending on the availability of each. However, during the Study we did not get a clear impression that any agency necessarily has surplus in-house availability to support others on leak detection.

In addition to contract cost reductions, overtime collaborative leak detection activities provide the potential to reduce water losses and sometimes water line failures, which translates to improvements in customer levels of service and reductions in costs.

Paving

All the participating agencies outsource their separate paving activities that follow in-street and facility repairs, replacement, new asset construction, and other pavement disturbances. Major capital projects completed by larger contractors in some cases include paving as part of the cost, or in other cases municipal partners that work on roads complete this work. Several contractors compete for the separately contracted paving work, which is our focus for this collaborative opportunity.

Delivery Options

Participating agencies have three options to provide paving activities, as follows:

1. Status Quo
2. Joint Contract - External
3. Outside Organization Support

These three options are described further in the sections that follow.

Status Quo

The participating agencies report variable per area costs and contract structures across the participating agencies. Opportunities such as joint bidding may therefore be worth exploring.

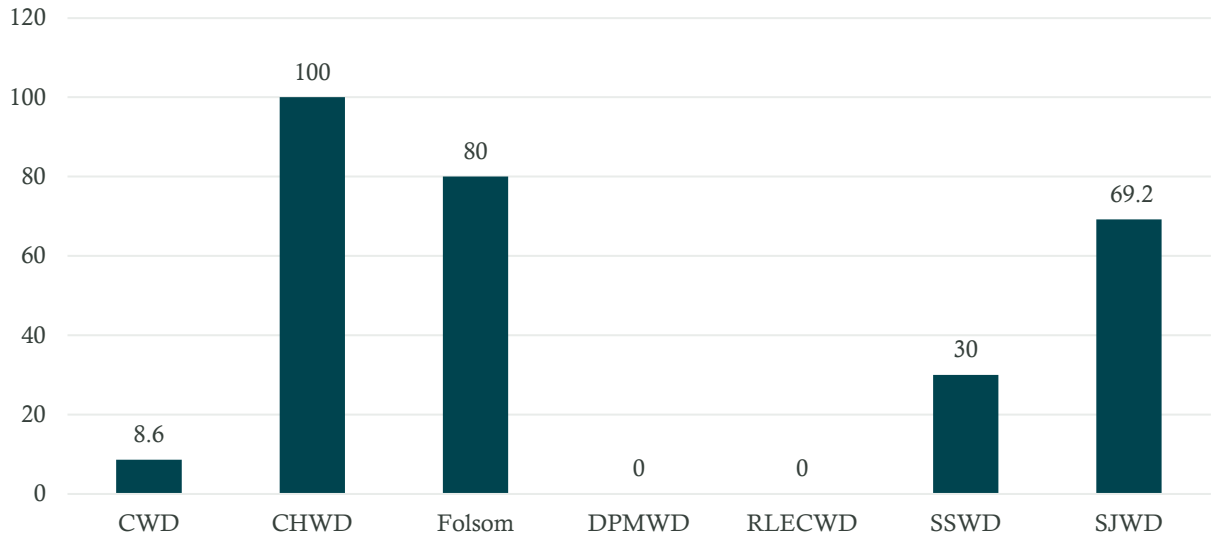
If scale capacities, contracting limitations, or desires to support local firms are not restrictive, cost savings could be obtained, particularly where larger minimum area or multiple year contract commitments are deemed acceptable. While paving requirements (thickness, material, etc.) may vary by participating agency, this would not be prohibitive to contractors since most roads share similar paving requirements. Some participants have cited the success of chemical consortia programs in achieving savings, despite varied requirements, as a template or reason for optimism in exploration of a successful paving collaboration.

Shown in Table 9 are the annual volumes of paving for each of the participating agencies. DPMWD primarily has pipes located in backyards, so they typically have little to no paving. When possible, both the number of paving work orders and the square feet of paved area were collected to gauge volume and size of projects. Figure 7 shows the number of annual paving work orders. The number of work orders do not always equate to a larger size of square feet paved, as can be seen comparing CHWD and SJWD reported annual square feet paved to the number of work orders. Note that Central Valley Engineering and Asphalt has the Folsom contract and bid on SSWD, suggesting that there are regional contractors with scale and appetite for broader coverage.

Table 9: Annual Paving Volume and Cost

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Number of paving work orders (annual)	8.6	100	80	0	N/A	30	69.2
Square feet paved (annual)	N/A	11,000	N/A	0	N/A	8,300	9,000
Contractor	Planet Paving and Grading	N/A	Central Valley Engineering and Asphalt	N/A	N/A	Flowline Contractors, GM Construction & Developer, and others	Sierra National Asphalt

Figure 7: Number of Annual Paving Work Orders



Joint Contract - External

While no contractor is currently contracting with multiple participating agencies for paving work, one firm, Central Valley Engineering & Asphalt[14] is contracted with Folsom and bid on SSWD[15] suggesting it may have the scale, capacity, and appetite required for a large amount of work. Despite the varying paving SOPs among the participating agencies, this should not necessarily be viewed as a barrier to a joint contract. The ability of a joint contract to meet the varying needs of multiple agencies is limited only by the capacity and responsiveness of the firm. It starts with a collaborative procurement that produces a well-crafted engagement agreement. Further, while some agencies have reflected that they prefer to work with smaller hyper-local firms, there may be opportunities for those seeking savings to achieve them through collaboration on a joint contract.

Outside Organization Support

SSWD noted that the Sacramento County Department of Transportation has supported them on paving efforts related to main replacement projects in the past and is believed to offer nominal cost savings vs. contractors. While these efforts generally took place on larger projects where more sizeable street work was done, perhaps the County might be interested in expanding their support to the kinds of paving efforts that the participating agencies contract out typically on a per square foot basis. This may present a new revenue opportunity for the County and savings for water agencies. Working with the County instead of a contractor can reduce inspection effort, ensure standards are met, and reduce administrative effort generally.

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[14] https://cenvalley.com/

[15] SSWD is also contracted with Central Valley as part of our annual Water Services Agreement.

Program Costs

Figure 8 shows a comparison of paving costs per square foot. All the agencies with paving work are spending an average of $13.65 per square foot paved. The annual cost of paving has been normalized per square foot of paved area to better compare the paving costs.

Figure 8: Cost per Square Foot Paved

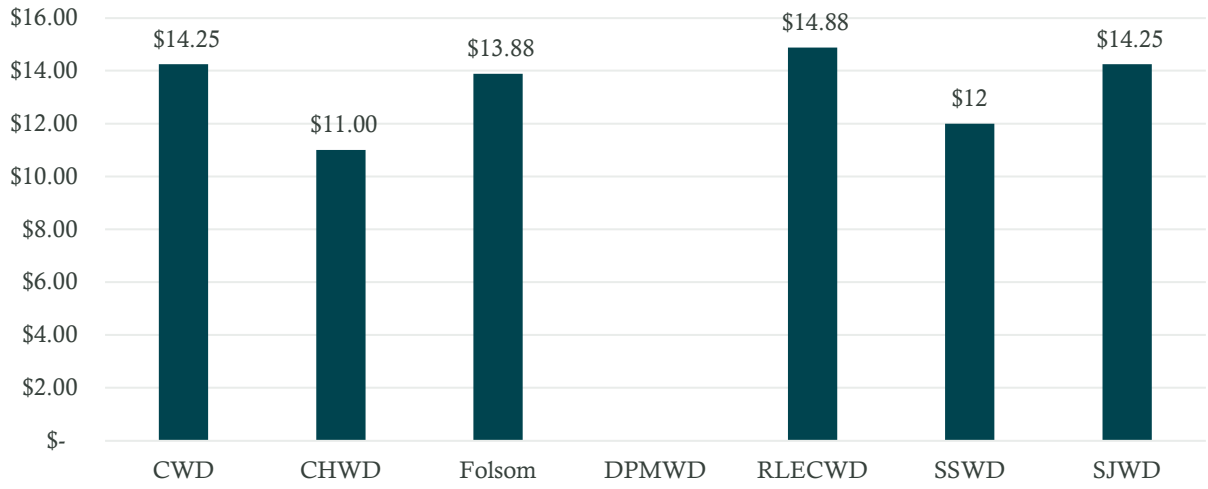


Table 10 suggests that the participating agencies might be able collectively save nearly $110,000 or about 15% of costs if they jointly contracted at the best observed price based on submitted cost data.

Table 10: Paving Cost Analysis

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Total spend (annual)	$172,747	$109,000	$90,161	$0	$25,000	$183,188	$128,250
Total paving cost at $11 per sq ft	$133,348	$109,000	$71,436	N/A	$18,481	$167,923	$99,000
Difference in paving cost for best contract price per sq ft	$(39,398)	$-	$(18,725)	N/A	$(6,519)	$(15,266)	$(29,250)

Recommendations

A joint paving contract appears to be an opportunity for a quick win for interested study participants. While the dollars spent on this activity are not massive, and therefore the savings not all that substantial, this opportunity may be a good place to build momentum out of this Study. It will be

important to identify successful and achievable outcomes, such as this one, to ensure that over time more and more of the 80+ opportunities identified during the work bear fruit for the participating agencies. Still, the opportunity to achieve even deeper savings by working through Sacramento County on this effort should not be ignored. While collaboration with the County is less certain than contracting given that the County typically is involved only in larger projects rather than patch paving, it is worth asking them if they might be interested in smaller scale paving revenue opportunities before potentially pivoting to a joint contractor procurement.

Stand-by / Emergency Operations

Stand-by / emergency operations occur after normal business hours to address a concern or a system issue such as a leak or service failure. Discussions pertaining to the stand-by / emergency operations opportunities focused on after-hours on-call staffing costs and resource availability. Most participating agencies provide rotating staff with stipends or additional pay for weekly on-call duty with overtime pay for callouts. Other costs include dedicated vehicles, as well as answering service and other supporting technology costs (e.g. dedicated iPads, SCADA alarm systems).

Delivery Options

Participating agencies have four options to provide stand-by / emergency operations, as follows:

1. Status Quo
2. Joint Contract - External
3. Joint Contract – Internal
4. Consolidated Provision

These four options are described further in the sections that follow.

Status Quo

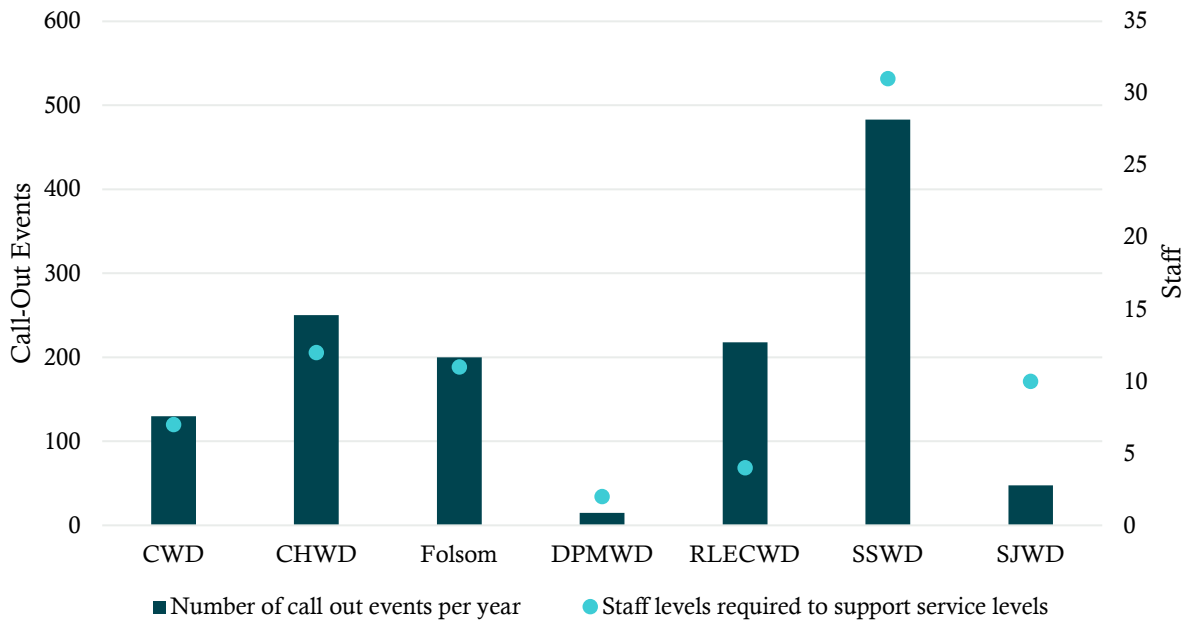
The number of emergency call-out events each agency responds to annually is shown in Table 11. The number of call out events refer to any instance where either the designated individual that is staffed on-call during after-hours times is dispatched with or without a support team. This table also shows the staff levels that are required to support the service levels currently provided. Staff levels reflect the number of people rotating through the on-call role, which typically rotates each week to provide equal opportunity for overtime pay and to divide workload equitably.

Table 11: Annual Call Out Events

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Number of call out events per year	130	250	200	15	218	483	47.5
Staff levels required to support service levels	7	12	11	2	4	31	10

Comparing the number of call out events per year across the agencies as well as the staff levels required, Table 11 shows that some agencies are staffed at a similar level to each other while the call out event volume is significantly different. In other cases, such as when comparing Folsom to RLECWD, the call out event volume is similar, but the staff level is quite different. Figure 9 presents the information from Table 11 in graphical form.

Figure 9: Call Out Events per Year and Staff Levels Required



Joint Contract - External

For joint contracts in this area the most likely opportunity is for a joint answering service to reduce cost redundancy in that area. The answering service could be an automated system that would route calls to each participating agency's dispatcher on an only-as-needed basis for events that are appropriately handled by the utility staff during after-hours periods. It is possible that this service would help reduce the call volume required to be handled by overtime staff. Some have indicated that certain calls, such as wastewater related issues, need to be forwarded elsewhere. CWD spends nearly $36,000 on answering services, while SSWD spends only $6,100 per year, CHWD $4,000 per year, and DPMWD just $2,000[16] per year. It may be worthwhile for the other agencies to get a better understanding of what each technology can offer to see how it might be deployed regionally at the lowest possible cost.

Joint Contract - Internal

Some agencies have expressed reservations about having staff from other departments handle stand-by or emergency after-hours staffing due to lack of system familiarity or other unknown concerns. However, for those that are interested, and particularly over time if SOPs, asset types, materials and

[16] This was noted to be an estimate that includes the answering service as well as other technologies.

supplies, and emergency response protocols are aligned, it may be possible for the larger agencies to support the smaller agencies with stand-by emergency response. Some larger agencies in the region may have sufficiently infrequent rotation intervals that there is the possibility that staff would have an appetite for more overtime opportunities in support of smaller agencies where staff may be overburdened given the many hats they wear during normal operations and the additional burden of overtime needs. SSWD indicated such an arrangement may be possible. For some more routine after-hours calls the smaller agencies might not need to deploy any local staff in response, while local staff with key expertise could still be deployed as needed for more serious or unique circumstances. Other possible models might allow for more than just dispatcher support to avoid contractor costs during emergencies where some agencies don't have sufficient staff, equipment, or expertise to handle a given job alone.

Consolidated Provision

There are options for consolidated provision, but these are applicable down the road after demonstration of successful joint contracted approaches. Opportunities exist for a joint after-hours dispatch center, instead of a contract operated center. Depending on the training provided to the dispatch center workforce, there are opportunities for enhanced customer service with this approach. These include improved information and diagnostics for callers and limited account access services (bill information). A joint interactive voice response (IVR) system could complement these efforts or could be an alternative. There are also possibilities for a joint (pooled) after-hours workforce. Again, these should be considered after successful demonstration of joint contracted approaches and additional alignment of SOPs, policies, practices, etc.

Program Costs

The annual costs of labor and equipment for call out events have been normalized per call out event for comparison between agencies, as seen in Figure 10. These costs exclude answering service costs which are shown in Table 12. Note that SJWD spends far more than others on a per event basis as they reported by far the fewest events for a larger agency, while RLECWD spends far less than others per event as they had a relatively high number of events for the size of the district.

Figure 10: Labor and Equipment Costs Per Call Out Event

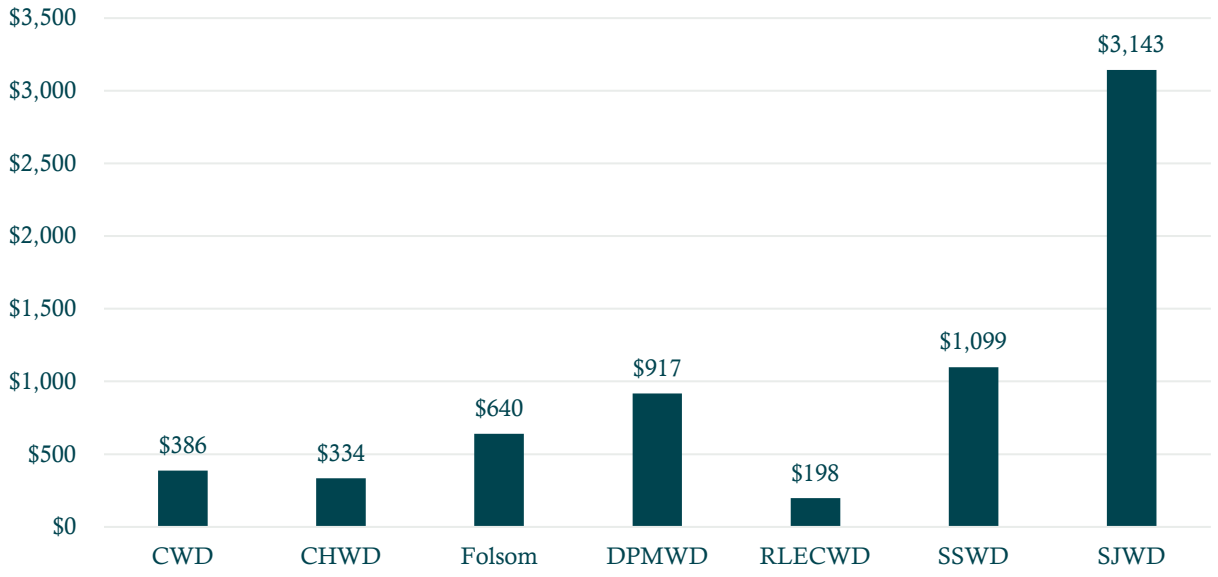


Figure 11 shows the number of weeks per year divided by the available staff for each agency and therefore gives an indication of the number of weeks of stand-by duty required of staff per year. Also shown is the number of weeks of stand-by duty required by staff if all participating agency staff were shared, therefore normalizing the weeks per year per agency, which would be about 4.7 weeks per year. Folsom, CHWD, and SJWD staff stand-by requirements are about average for the region, while CWD, RLECWD, and DPMWD are required to be on stand-by more often, and SSWD staff less often. To equalize the burden on staff at CWD, RLECWD and DPMWD, SSWD would need to provide service 36% of the time for CWD, 82% of the time for DPMWD, and 64% of the time for RLECWD.

Figure 11: Staff Stand-by Weeks Per Year

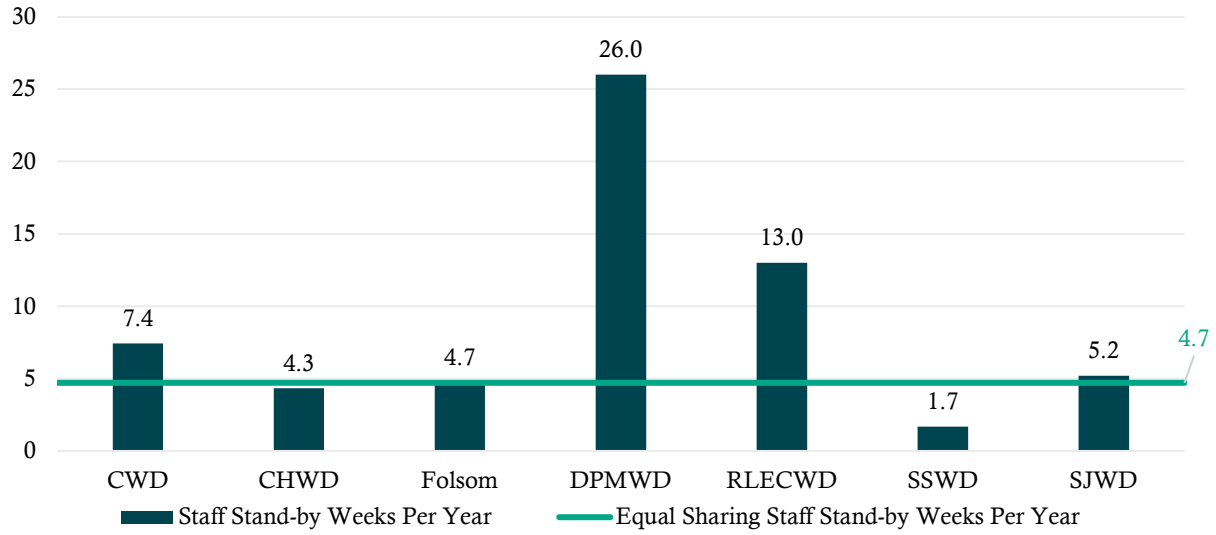


Table 12 breaks down costs for stand-by/emergency operations staffing and dispatch, excluding contracted support for emergencies requiring that a team be dispatched. The most likely participants in a shared service for staffing, dispatch duties, and callouts are SSWD and those smaller utilities that are near SSWD, namely CWD, DPMWD, and RLECWD. Costs for a scenario in which SSWD takes on stand-by duties for these agencies at the SSWD per call-out labor and equipment cost for a one FTE on-call level of service (which divides the SSWD rate by 3 as they staff 3 at a time) are reflected in Table 12. In this scenario SSWD service reduces the weeks of stand-by duty per staff per year to a smoothed regional level of about 4.7 weeks per year per staff for the agencies it supports, while also increasing the service levels to those agencies.

Also in Table 12 a shared answering service with additional capabilities to service the region has been estimated as the average of the costs provided by all participants less a 25% discount given technology efficiencies. The higher estimate of a 25% savings for the answering service (relative to the more conservative 10% assumption applied to several other collaborative contract opportunities detailed in this report) reflects the economic reality that technology investments scale more efficiently than other expenditures because common technologies spread over more users do not require incremental units of capital and labor all while technology development costs are spread over a larger user base. Still, where select study participants have zero or less advanced answering service capabilities, the increase in cost for some would need to be justified by the technologies ability to reduce after-hours call and dispatch requirements.

The most significant financial impacts of this scenario include an increased cost per year of about $32,147 for RLECWD, and reduced cost for CWD of about $28,099. This impact results from the relatively high call volumes at RLECWD with 64% of weeks now supported by SSWD at the SSWD rate, which is nearly 2X the reported RLECWD rate even when cut to one third for reduced after-hours staffing. Overall, the shared after hours service and enhanced answering service is estimated to cost the region just $30,334 more than current spend levels in aggregate. In addition, resources that are constantly working after hours in smaller communities would be less stretched and idle resources at SSWD would have the opportunity for more overtime work.

Given that RLECWD's cost per event is significantly below all others, it may be worth revisiting the reported data to understand the differences. If costs to have SSWD support after hours requirements at a smoothed level are indeed cost prohibitive then this concept may not be attractive to RLECWD but perhaps a scaled down version might be attractive. The goal of this concept is to leverage the larger staff at SSWD to support burdened smaller staff at neighboring utilities by offsetting call outs in excess of regional average staff stand-by utilization of about 4.7 weeks per year per staff. The scenario would be executed using a schedule and service agreement. It is expected that this scenario could be complemented by reduced staffing needs through leveraging the best available answering service technologies under a joint contract. It is difficult to precisely estimate the reduction in staffed calls that the answering service could handle.

Table 12: Stand-By / Emergency Operations Cost Analysis

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD[17]
Labor	$45,700	$83,565	$127,990	$12,758	$43,184	$373,282	$160,772
Answering Service	$35,990	$4,000	$0	$1,000	$0	$6,100	$0
Other - IT / Equipment / Vehicles	$4,500	$0	$0	$1,000	$0	$11,479	$11,479
Total costs per year	$86,190	$87,565	$127,990	$14,758	$43,184	$536,881	$149,293
Shared level of service labor and equipment costs (assumes SSWD per event costs for some calls for CWD, DPMWD, and RLECWD)	$49,262	$83,565	$127,990	$6,997	$66,502	$530,781	$149,293
Shared answering service	$8,829	$8,829	$8,829	$8,829	$8,829	$8,829	$8,829
Total cost with SSWD support for some and answering service for all	$58,091	$92,394	$136,820	$24,818	$176,928	$539,610	$158,122
Difference in cost	($28,099)	$4,829	$8,829	$1,068	$32,147	$2,729	$8,829

Recommendations

A jointly contracted answering service or a joint IVR may be appealing. A well-designed service can reduce demands on staff time after hours. Coupled with afterhours support for smaller agencies by larger agencies, these collaborative changes could help to ensure that regional staffing is deployed after-hours more efficiently to respond to events. If some agencies are stretched thin and exhausted from after-hours duties and another would like more overtime opportunities for staff, then regional deployments during after-hours would appear to make sense for all. If the participating agencies do not wish to work towards collaboration on regular afterhours staffing, then support in lieu of contractors during select emergencies only may be another model for shared staffing. Next steps include:

[17] While these costs may appear low for SJWD they are accurate based on the very few reported call-out events, which are the basis for the cost calculations.

1. A review of the coverage already offered by Mutual Aid Agreements for typical after-hours emergency support and any needed changes to accommodate more regional shared services after hours.

2. Confirmation of the availability of SSWD staff for after-hours support in neighboring communities that are stretched.

3. A review of the capabilities of the varying answering services used in the region and how the technologies differ.

4. A discussion with the answering service provider about the possibility of a regional system or deployment of IVR technologies.

Water Conservation Programs

Water conservation programs promote the efficient use of water resources by customers through education and awareness. The participating agencies operate in a Mediterranean, but drought susceptible climate in the northern half of California's Central Valley. They share limited and variable surface and groundwater supplies, which are coveted by other area users and those in the southern parts of the state. The water conservation program opportunity represents a chance to reduce water usage collectively and individually by encouraging efficient water use among customers. While reduced water usage can initially seem counter intuitive to a water utility because it presents the risk of revenue reductions (reduced volume consumed), well-designed practices can help to ensure water rates fully recover revenue requirements even on reduced consumption units. At the same time, regardless of the delivery option for messaging, programming, and incentives it can be difficult to directly measure the impacts of any one intervention or change in practice.

A component of a water conservation program is education detailing water usage trends and resulting impacts on rates. As such, and as reflected in the collective appetites for pursuing this opportunity, the participating agencies should consider enhanced water conservation through collaborative action to be both financially viable and practically important to pursue. Indeed, it is both the last drought, and the next, that should motivate such action.

The water conservation program opportunity was framed as an area where collaboration could occur to augment existing efforts by each participating agency to provide customer service programming and materials coordination. The goal is to foster joint efforts to enhance the communications channels that agencies utilize to increase awareness and participation in conservation activities.

As the participating agencies consider their relative spend overall and per capita relative to peers, as well as the programmatic detail in the Study's Activity 2 Report Appendix covering normal operations and drought only initiatives, each may find opportunities for enhancement through the various collaborative models to be explored in the following sections.

Delivery Options

Participating agencies have five options to provide water conservation programs, as follows:

1. Status Quo
2. Joint Contract - External

3. Joint Contract - Internal
4. Outside Organization Support
5. Consolidated Provision

These five options are described further in the sections that follow.

Status Quo

All the participating agencies except for DPMWD have dedicated water conservation programs in place. A table detailing the many varied channels, enforcement mechanisms, events, incentives, management tools, and other programming and messaging activities that each participating agency engages in is detailed in Appendix B of Activity 2. The participating agencies with water conservation programs use both internal staff resources as well as outside resources to provide the materials, incentives, and activities.

Water conservation programs may include the following:

- Educational materials and communication
- Outreach events and educational opportunities
- Incentivized or free water saving devices and equipment
- Water efficiency evaluations
- Water usage management tools
- Water conservation enforcement

Of the 71 unique water conservation initiatives identified by the participating agencies during Activity 2, SSWD is engaged in the most comprehensive program, covering 65 of those initiatives. Folsom has the second most comprehensive program with 43 initiatives, followed by CWD with 38, SJWD with 24, CHWD with 29 RLECWD with 7, and DPMWD with 0. Some of the smaller agencies reflected that community constituents might be opposed to water conservation initiatives because they feel that if water is not used, then it is at risk of being taken away by the State. This is highly speculative and may cause the utility to spend unnecessarily on pumping, treating, and distributing excess water. This does not benefit customers. Other participating agencies with relatively less extensive programs, may include stakeholders, whether on staff of the agency, on their Boards, or among customers, that feel water supplies are sufficient such that water conservation activities are a lower priority than other areas of focus. Further, some may fear that overly aggressive water conservation programming might threaten revenues. Despite these sentiments, there are current initiatives that many agencies feel they could save money on through collaboration and others where they would like to add or augment service levels through collaboration.

While the Status Quo approach maintains local control, it may not represent the approach offering the most value for customers of agencies seeking to find savings or enhance service levels. It also does not project a unified message about water conservation. A joint contract or other outside support, whether through an internal or external contract, or RWA, allows for specialization and the advantages of specialization as well as scale efficiency. If engaged for message and material development, for example, resources with expertise on content creation and knowledge of overlapping regional needs may be able to free up multi-tasking resources currently providing redundant services as each individual agency. Joint efforts might also reduce printing costs as scale increases. However,

the three modes of collaboration may diverge in their advantages, for example, an external contract frees up staff resources at all agencies, while an internal contract might benefit from lessons learned at agencies with already higher service levels, while finally, expanding the reach of existing RWA mechanisms might benefit from meetings, processes, and regional knowledge of needs that are largely already in play.

While the status quo only more narrowly achieves collaborative benefits in areas where it already occurs, such as joint coordinated communication efforts during droughts or through RWA, there are potential disadvantages to more collaborative models that must be considered as well. Fundamentally any new joint initiative, whether internal, external, or through RWA will require some administrative effort to setup and manage. Further, joint efforts may raise concerns about equity and value that must be addressed in program design to ensure participants get their fair share of benefits. The procurement process itself is a disadvantage of the external contractor approach due to the administrative effort and time it demands. Outside organizations may only be able to service isolated elements of areas of water conservation program collaboration interest. Finally, internal contracting may heighten equitability concerns if resources from one agency are deployed to perform the service or if larger entities are perceived to have excess influence on resource deployment.

Joint Contract - External

The participating agencies have varied goals and services levels, and associated relative expenditures, relating to contractors/consultants providing water conservation services, water efficiency supplies or incentives, and outreach materials. Potential areas for joint external contracting may be identified from existing contracts for material development and printing, and there may be other new opportunities for agencies to explore as well to augment service levels as desired in a cost-effective manner. In the realm of opportunities that are new interests for some but existing contracts for others, RLECWD indicated that they are looking at a pilot opportunity for customer portal software that allows users to track usage and potentially modify behavior to reduce bills accordingly. Two participating agencies have similar technology, suggesting a joint contract in this area could benefit the region where standards align.

SJWD has a consultant to design information material for the water conservation program. Other participating agencies may wish to have information materials designed by a consultant as well. This could lead to a joint contract to design shared educational materials. SSWD has an annual contract for public relations services, which includes the water conservation program as well as other public relations needs of the agency. A joint external contract for public relations services relating to water conservation may allow agencies with multi-tasking staff, such as in CWD, CHWD, and RLECWD, to free staff time up to spend on other function needs. Other options include coordinating joint newspaper print ads to reduce individual ad expenditures and increase ad reach and bulk purchasing of water efficiency materials at reduced pricing.

Joint Contract - Internal

Sharing services and collaborating with internal resources has the potential to provide high levels of service with somewhat lower total expenditures. These shared services could include running joint outreach campaigns and joint rebate programs that are managed by the participating agencies, contracting with an agency with more staff resources to develop the materials. Other options may include outreach campaigns like the ones the agencies currently partner on, such as the student art contest. Schools are presented a different water awareness theme each year and students create drawings based on the theme. This is a great example of a shared resource that will have a lower expenditure if more agencies are involved. During droughts, all agencies noted that water conservation activities are increased and, in some cases, additional staff and resources are allocated. An internal contract that is used to provide additional support during a drought, such as staff time or joint mailers, would allow the participating agencies to ramp up communications to customers during these periods of need.

Other identified options include joint workshops or collaborative landscape irrigation reviews. SJWD holds six on-site workshops each year that are focused on water conservation conservation-related topics. Typically, these include landscape design, irrigation management, tree pruning/tree care, right plant/right place, irrigation system repair/maintenance, smart controllers, and native planting to attract wildlife. CHWD conducts multiple in in-person WaterSmart classes which cover topics such as reducing landscape water usage and lowering costs. These classes were offered online this year by CHWD. The participating agencies could develop a joint internal contract to share educational materials and partner on workshops. Perhaps the agencies could provide joint workshops/classes for the region and even increase the number of offerings. SJWD staff provide landscape irrigation reviews by appointment. These reviews help identify potential water leaks, misguided sprinklers, and excessive irrigation run times. Providing this service through an internal contract with the participating agencies would be another way to leverage the enhanced programs of some agencies.

Outside Organization Support

The Regional Water Authority (RWA) offers programming to support regional collaborative success. The participating agencies identified an appetite for more regional collaboration offerings during the opportunity prioritization process. This suggests that RWA and other activities could be expanded.

RWA's Regional Water Efficiency Program (RWEP) provides a regional toolbox for water conservation education. In 2019, RWEP partnered with five of the program participants, including SSWD and Folsom, to promote water conservation activities and RWA covered costs for graphic design and half of the direct costs for advertising for running co-branded ads.[18] SJWD hosted RWEP's Mulch Mayhem event which provides free mulch to customers; mulch preserves the water in the soil and prevents weed growth. The participating agencies could expand their participation with RWEP and explore opportunities, such as joint advertising, educational webinars for customers, and joint Water-Wise House Calls contract to reduce expenditures while increasing services. Further, RWA's Check and Save campaign messaging and outreach tools can be used by all members. Some

[18] Regional Water Authority, The Regional Water Efficiency Program 2019 Year in Review, https://rwah2o.org/wp-content/uploads/2020/06/RWEP_2019AnnualRecap_5.pdf

communities do not participate in RWA, or even if members may not fully utilize what is provided by the RWA program; however, it is also possible that the regional toolbox could deliver even more.

Another element within this area of opportunity is a concept of involving Non-Government Organizations (NGOs) such as community non-profit groups to provide installation or cost assistance to low-income households to improve their indoor or outdoor water efficiency.

Consolidated Provision

If initial collaborative efforts on water conservation programs take root, then additional unification of programs is a possibility. This would allow the region to set more uniform conservation goals and offer coordinated programs. This would prevent a person in one neighborhood from receiving different messaging than a person in another neighborhood, simply because they have different utility providers. Even though each of the participating agencies have unique water rights, they all operate under the same general hydrologic conditions. This means that their conservation programs should have a high level of alignment.

In the future, a consolidated water conservation program model is possible. This is an evolution of the joint contracting and Outside Organization Support options.

Program Costs

The water conservation program costs are related to the specific employees dedicated to water conservation and the additional external costs, such as consultants developing outreach materials, printing outreach materials, fees towards RWA's efficiency program, and water efficiency evaluations costs. Figure 12 shows the annual costs of water conservation programs at each participating agency. The three largest agencies (Folsom, SSWD, and SJWD) have the highest total costs. However, as shown in Figure 13, CWD, and Folsom have higher spending in terms of conservation program spending per capita.

Figure 12: Costs of Water Conservation Programs

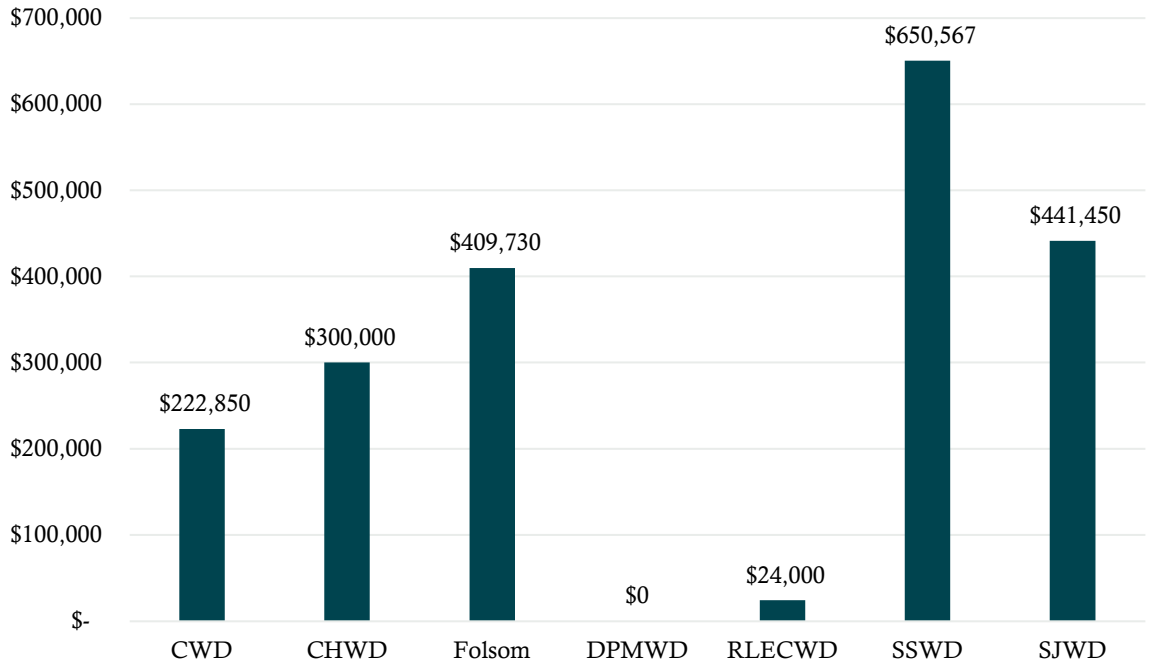
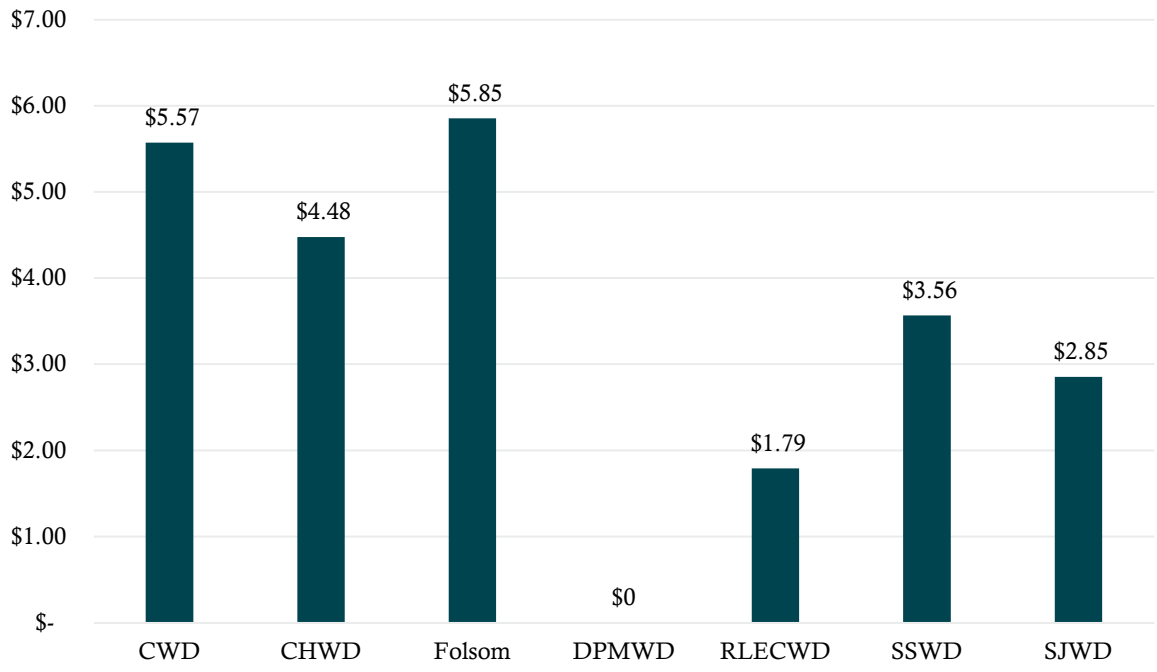


Figure 13: Costs of Water Conservation Programming Per Capita



The water conservation programs of each agency provide varying levels of service (see Appendix B for programmatic detail). Comparing the potential costs relating to the options to develop a joint external contract or joint internal contract, and further leverage other organization support really depends on the extent to which these options are employed. Consider that Folsom currently has the

highest water conservation program cost at $5.85 per capita. If all the other agencies spend at an equivalent level, the cost of the program and the difference in cost is shown in Table 13.

Table 13: Water Conservation Program Cost - Status Quo

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Status Quo – total programming cost	$222,850	$300,000	$409,730	$0	$24,000	$650,567	$441,450
High level of service - Total programming cost at $5.85 per capita (Folsom level)	$234,131	$392,170	$409,730	$29,073	$78,434	$1,068,225	$905,977
Difference in programming cost (line 2 minus line 1)	*$11,281*	*$92,170*	*$0*	*$29,073*	*$54,434*	*$417,658*	*$464,527*

While the comparison in Table 13 provides a general idea of the cost difference in ramping up levels of service across the different agencies, the cost of the options presented in this report is more complex and how they are implemented will impact spending at each agency. Costs provided by the participating agencies were sometimes specific enough to allow for assumptions about costs relating to the options to develop a joint external contract, joint internal contract, and expand other organization support. Table 14 highlights the specific areas in which the costs may be impacted: the water conservation program staff costs, the print media consultant costs, and the RWA Regional Water Efficiency Program related costs. Table 14 also provides some cost information about water efficiency supplies or incentives, but the information was not provided separately by all agencies.

Table 14: Current Water Conservation Program Costs - Detailed

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Dedicated Water Conservation FTE	1.83	1.5	3	0	0.33	2	3
Total FTE Costs	$198,050	$89,440	$400,730	$0	$24,000	329,373	$441,450
Consultant, Print Media, & Miscellaneous Costs	$1,500	$47,000	$9,000	$0	$0	$225,824	$98,080
Water efficiency supplies/incentives (if broken out of cost)	$8,000	$9,275				$56,000	
RWA Regional Water Efficiency Program related costs	$15,300					$39,370	

For the joint contract - external option, the potential to share consultant costs to design information material was considered. SJWD currently has an annual contract with a consultant to design information material totaling $98,080 across both retail and wholesale customers. For this calculation, the contract is assumed to include printing costs as well. This breaks down to $0.63 per capita. If a joint contract is assumed to result in a 10% discount, the per capita cost would be $0.57. The cost for each agency to pay for the consultant based on the population they serve is shown in Table 15. The total related programming cost as well as the difference from the total programming cost at status quo is also shown. Aggregate 10-year savings of $776,335 are estimated via this approach (this is the sum of the last line of Table 15 multiplied by 10 years). This joint contract option may also likely reduce employee time spent on certain related tasks, which could free up multi-tasking staff for other functional needs, potentially reducing contractor support needs in other areas or enhancing service levels.

Table 15: Water Conservation Program Cost Estimate - Joint Contract - External

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Joint Contract - External – Consultant Cost Based on $0.57 per capita (SJWD contract costs with 10% savings)	$22,812	$38,210	$39,921	$2,833	$7,642	$104,080	$88,272
Joint Contract - External – Total Programming Cost replacing current contract costs with line above	$244,162	$291,210	$440,651	$2,833	$31,642	$528,823	$431,642
Difference between Status Quo and Joint Contract – External Total	*$21,312*	*($8,790)*	*$30,921*	*$2,833*	*$7,642*	*($121,744)*	*($9,808)*

A joint internal contract would likely consider the areas of program administration and outreach and education that could be shared across agencies. The cost sharing here would be very specific to the agencies that are sharing services and the amount of time agreed upon. For example, CHWD has the lowest water conservation FTE costs at $59,627 per staff, while DPMWD and RLECWD have the fewest water conservation resources at just 0 and 0.33 FTE respectively. If these three agencies developed a joint contract for CHWD to provide 0.5 of their current FTE total as support for the two other agencies (DPMWD and RLECWD would each pay for 0.25 FTE), CHWD could recover additional revenue should their staff have capacity to provide this support. In this scenario, DPMWD could increase service levels for the lowest possible cost, and RLECWD could expand service levels at a savings as compared with their own per FTE costs. This example is detailed in Table 16.

Table 16: Water Conservation Program Cost Example - Joint Contract - Internal

	CHWD	DPMWD	RLECWD
Cost per Water Conservation FTE	$59,627	N/A	$72,727
Current Total Water Conservation Costs (Status Quo)	$300,000	$0	$24,000
Joint Contract – Internal – Total Programming Cost CHWD assists DPMWD and RLECWD	$270,187	$14,907	$38,907
Difference between Status Quo and Joint Contract – Internal Total	*($29,813)*	*$14,907*	*$14,907*

CWD and SSWD currently budget $15,000 and $39,370 annually for costs related to the RWA Regional Water Efficiency Program respectively. CWD notes this is related to regional outreach and communication materials whereas SSWD notes this is budgeted for Water-Wise house calls from the program. The other participating agencies did not provide specific budgets relating to RWA.

It appears that the RWA Regional Water Efficiency Program provides an existing toolbox for regional outreach and communication, which can be potentially enhanced. Because the capabilities of RWA are shared across agencies beyond the Study participants it would be hard to estimate cost impacts of greater levels of service from RWA – even if 1 FTE were added; however, the cost impacts to each participant would likely not be substantial other than for those that are not currently RWA members should they decide to join.

Recommendations

Using water resources wisely should be the goal of all the participating agencies. An effective conservation program is necessary to meet this goal. Even agencies with seemingly adequate water resources and more pressing needs for funding will realize benefits from using water resources wisely, among them are lower capital and operations costs associated with pumping and distributing less water per capita. While there may be some short-term challenges associated with rate design and funding conservation programs, the value should more than offset any drawbacks.

The core utility messaging to consumers about water conservation should be very similar across organizations to eliminate stakeholder confusion. By leveraging the similarities, the participating agencies can use common communications tools and leverage many similar program elements. This provides opportunities to achieve efficiencies. This means that the participating agencies and their customers benefit by taking a more regional approach to water conservation. This doesn't mean that all the participating agencies need to invest the same amount in conservation programs, nor do they even need to offer the exact same programs. They simply need to collaborate on the universal elements to achieve benefits.

The analysis performed highlights advantages of Joint Contracting, both internal and external, while taking advantage of Outside Organization Support largely coming from organizations like RWA. It shows that there is potential for cost savings through agencies working together, given similar program elements. Quantification of the exact savings levels expected is difficult to determine since each agency currently provides a different level of service to customers.

Water Supply

The Sacramento Region's water suppliers have opportunities to preserve and leverage their water assets through collaboration. Table 17 shows the participating agencies' water supplies and water demands. Availability of dry-year supplies depends on regulatory conditions and past water use. This section provides the rationale for engaging in collaborative water supply management, assesses collaboration opportunities, and identifies opportunities where collaboration can provide short-term and long-term benefits. The section also describes mechanisms to engage the identified collaboration opportunities.

Table 17: Participating Agencies Water Demands and Supplies (AFY)

	1	2	3	4	5	6
Agency*	Current Demand (Annual)	Future Demand	Own Surface Supply	Contract Surface Supply	Own Reasonable GW Capacity**	Future Surplus / Deficit w/ GW = (3+4+5)-2
SJWD	12,000	13,000			0	
CHWD	12,400	13,100			5,000	
FOWD	8,800	9,600	33,000	49,200	8,343	55,343
OVWC	3,500	3,900			500	
Ashland	1,100	1,100			0	
San Juan Family Totals	**37,800**	**40,700**	**33,000**	**49,200**	**13,843**	**55,343**
DPMWD	1,700	1,700	0	0	2,460	760
CWD	10,000	10,000	32,627	0	2,200	24,827
SSWD	29,000	39,567	0	55,064	135493	150,990
Folsom	19,000	28,200	34,000	0	0	5,800
RLECWD***	2,500	17,000	0	0	15767	-1,233
Other Agency Totals	**62,200**	**96,467**	**66,627**	**55,064**	**155,920**	**181,144**
All Agency Totals	**100,000**	**137,167**	**99,627**	**104,264**	**169,763**	**236,487**

*Agencies include portions of service areas and retail entities
**Capacity determined from recent published planning documents
***Future contract supplies that have not been secured, such as those noted in other reporting in support of the RLECWD future demand in excess of current supplies, are not included in the table

Rationale for Water Supply Collaboration

The participating agencies may have numerous reasons to engage in water supply collaboration activities. Regional water supply collaboration can: a) help improve water supply reliability, b) help preserve each entity's water assets, and c) potentially create revenue streams. The intersection of all three items should be considered in the context of developing regional collaborative water asset management opportunities.

Preservation of water assets should be a primary driver for the participating agencies. Regulatory and climatological factors continue to lessen the availability of water supplies that were once considered firm. For example, the State Water Resources Control Board (SWRCB) curtailed all of CWD's surface water supplies in 2015, including its 1915 License and other pre-1914 appropriative water rights on

the Sacramento and San Joaquin River systems with priority dates as old as 1903.[19] The frequency of curtailments, like this one, may become more common in the future as the regulatory conditions tighten and climatological conditions change. The Bay-Delta Water Quality Control Plan (BDCP) may permanently change water rights in the Sacramento River watershed. In 2018, SWRCB adopted BDCP amendments on the San Joaquin River system that require increased "unimpaired flows" in the tributaries of the San Joaquin River.[20] Implementation of the new San Joaquin River standards will occur through "water right actions or water quality actions."[21] The American River watershed purveyors will likely experience a similar future and have already taken some actions to counter the potential water rights changes.[22] In addition, California's climate change predictions indicate reduced snowpack (reduced water storage) and climatological extremes that may impact long-term water supply availability trends.[23] Given the past actions and possible future developments, regional purveyors are wise to protect their water assets to maintain reliable water supply deliveries to their customers.

Preservation of water assets has a financial component. Water assets have a monetary value that will likely increase over time as water scarcity, specifically surface water scarcity, becomes more acute. As noted in the Activity 2 report, the current water asset value of *surplus water* in the region approximates $250 million (see Activity 2 Report) and the future value will likely be much higher. Accordingly, the actual value of the regional water supplies necessitates collaborative actions to preserve purveyors' primary capital asset – water.

The participating agencies and their ratepayers should protect water assets that they have expended time and money to develop. As noted elsewhere in this report, the regional purveyors have significantly invested in water conservation messaging, irrigation efficiency programs, and regionally sponsored lawn replacement and water-fixture replacement programs. In addition, the participating agencies' ratepayers have spent money to replace aging water fixtures, improve landscape water efficiency, and improve conservation *at the personal level* – completely outside of any regionally-sponsored programs. These financial investments have created real water conservation savings that should be protected and preserved under applicable laws. Others may seek to reap the benefits of the region's expenditures to conserve and more efficiently use water.[24] All of the other collaborating

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[19] https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/pre14curtailmentjun2015.pdf

[20] https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2018_sed/docs/appx_k_revised_w_adopted_changes.pdf

[21] *Id.*

[22] Regional purveyors engaged in extensive negotiations with regulatory agencies on Flow Standard settlement options but, to date, have not successfully concluded those negotiations.

[23] https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Change-and-Water

[24] Water Code section 1011(a) states in relevant part: "When any person entitled to the use of water under an appropriative right fails to use all or any part of the water because of water conservation efforts, any cessation or reduction in the use of the appropriated water shall be deemed equivalent to a reasonable beneficial use of water to the extent of the cessation or reduction in use."

agencies have conserved assets with quantifiable values. In short, collaboration can help protect the participating agencies and their ratepayers' water conservation investments.

Collaboration can result in improved regional dry-year reliability. There are differing rules and policies that relate to the availability and management of each regional water asset. Closely examining these rules and policies – and even challenging or changing them where necessary – may enhance the regional dry-year water supply reliability. For example, a Central Valley Project (CVP) contract water entitlement must be used in a 100% CVP allocation year for any amount of that entitlement to be available for use in dry years. The Central Valley Project Municipal and Industrial Shortage Policy (M&I Shortage Policy)[25] adjusts water allocations in dry conditions based upon historical use derived from 100% allocation conditions. Thus, from a fundamental perspective, using CVP supplies in 100% allocation years – generally the years when those supplies are least needed – makes CVP supplies available in dry years. In addition, provisions within the M&I Shortage Policy may allow accounting for use of other, non-CVP water supplies, to determine availability of CVP water supplies in shortage conditions.[26] Expanding opportunities to use CVP Project Supply in dry years improves the regional reliability for entities that may not have access to that specific water source. Furthermore, there may be opportunities where reorganization improves supply reliability by expanding opportunities to use of one or more water assets beyond the assets' existing places of use. Collaboratively managing water assets while addressing regulatory and policy issues, like the M&I Shortage Policy, would likely provide lasting benefits for future regional water supply reliability.

Collaboration can result in monetizing surplus water assets. Since 2009, several regional water purveyors have generated revenue through groundwater substitution transfers. In 2020, the regional purveyors netted approximately $4.33 million through a regional collaboration that leveraged surface water and groundwater assets.[27] These *ad hoc* short-term annual transfers could be deliberately organized through pre-determined planned activities that maximize transferable assets and better protect regional supplies. For example, the planned activities could include deliberate use of water assets in a prescribed manner to improve opportunities for groundwater substitution that maximize transferable water assets. Revenues generated from these actions may be specifically earmarked for identified collaborative actions – like infrastructure improvements, investments in water conservation and efficiency, enhanced supply management activities, and customer rebates.[28] In addition, future collaborative actions related to groundwater banking and re-timing surface water supply deliveries may provide additional opportunities to monetize water assets. All of these activities should be further explored in order to leverage the financial benefits of short-term and long-term transfer opportunities.

Water Supply Collaboration Opportunities

The regional water purveyors have numerous opportunities to collaborate on water supply management activities to preserve water assets, improve water supply reliability, and generate revenue. The regional purveyors have engaged in numerous planning activities that identify general

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[25] https://cawaterlibrary.net/wp-content/uploads/2017/10/miwsp-guidelines.pdf

[26] Id.

[27] "Purchase Agreement For Water Transfer Between Sellers And Buyers" June 24, 2020.

[28] One regional entity plans to use its 2020 groundwater substitution revenues for direct customer rebates.

collaboration actions. For instance, the 2019 Regional Water Reliability Plan provided recommendations for actions to support the proposed regional water bank. "Recommendation 2.1" was titled "Take early actions to expand conjunctive use operations and prove concepts of storage (bank deposits) and recovery (bank withdrawals)" and then discussed the 2018 regional groundwater substitution transfer as "types of pilot actions… to further increase operational intelligence."[29] The collaboration opportunities described in this section are actions, like the 2018 and 2020 groundwater substitution transfers and the recent water conservation transfer, that support regional water supply objectives. Table 18 at the end of this section summarizes the collaboration opportunities, potential benefits, and collaboration methodologies.

Water Code Section 1011 Water Conservation

The paramount opportunity to preserve regional water assets is to collaborate on quantifying conserved water. Water Code section 1011 states in relevant part: "When any person entitled to the use of water under an appropriative right fails to use all or any part of the water because of water conservation efforts, any cessation or reduction in the use of the appropriated water shall be deemed equivalent to a reasonable beneficial use of water to the extent of the cessation or reduction in use." Thus, this section equates the quantified conservation savings to "beneficial use" so as to preserve the water asset under California's general "use it or lose it" appropriative water right principle.[30]

Appropriately protecting conserved water supplies requires a coordinated approach to assessing the quantification methodology and conservation reporting for the water assets. Specifically, appropriate baselines and savings calculation methodologies for indoor, outdoor, and system loss quantification must be appropriately coordinated for both the legal interpretations, needed to ground identified conservation savings, and the calculation methodologies used to support the legal interpretations. Accurately calculating and quantifying conserved water assets among the participating agencies is the first step in securing those water assets for current and future water uses. Importantly, this calculation methodology may be distinct from the methodology used to calculate conserved water that is available for transfer. In addition, consistently reporting the conservation savings in Statements of Diversion and Use, Reports of Licensee, Permit Progress Reports, Annual Reclamation Reports, and other broader reporting documents – like Urban Water Management Plans and Water Master Plans – will be important for preserving water assets.[31]

Water Code Section 1011.5 Groundwater Use

Another important action to preserve regional water assets is to quantify surface water assets that could have been used in lieu of groundwater supplies in consideration of conjunctive use opportunities. Water Code section 1011.5(b) states in relevant part: "When any holder of an appropriative right fails to use all or any part of the water as a result of conjunctive use of surface water and groundwater involving the substitution of an alternate supply for the unused portion of the surface

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[29] Regional Water Reliability Plan, Stantec, May 2019 at 4-3 (developed for RWA).

[30] All water assets, surface and groundwater, used by the collaborating agencies are derived from appropriative water rights that apply the "beneficial use" principle derived from Article X, Section 2 of the California Constitution.

[31] The 2021 water reporting documents have new reporting requirements related to conserved water and other water management items.

water, any cessation of, or reduction in, the use of the appropriated water shall be deemed equivalent to a reasonable and beneficial use of water to the extent of the cessation of, or reduction in, use, and to the same extent as the appropriated water was put to reasonable and beneficial use by that person." Thus, quantifying water assets preserved under this portion of California law will require assessing the opportunities among the collaborating agencies where groundwater was used in lieu of available surface water supplies. Some of these opportunities may be less obvious such as FOWD's use of SJWD's surface water assets in FOWD's service area.

The regional purveyors should collaborate – especially among wholesale and retail agencies – to fully assess the opportunities where surface water and groundwater were conjunctively used to identify and preserve the surface water supplies for current and future uses under Water Code section 1011.5. This investigation requires data sharing among the participating agencies and other potential regional collaborators with thoughtful dialogue about conjunctive use opportunities. Moreover, this collaboration must align data gathering and sorting efforts as well as numerical representations in the numerous reporting documents like Supplemental Statements of Diversion and Use, License and Permit reports, and Reclamation reporting documents. Importantly, this collaborative conjunctive use quantification effort will further support related water management activities that are described elsewhere in this section – like short-term and long-term water transfers, Reclamation's M&I Shortage Policy implementation, and legislative and regulatory advocacy.

Water Code Section 1010 Polluted Water Use

Like section 1011 and 1011.5 above, another opportunity to preserve water assets is tied to Water Code section 1010(a)(1) where substituted use of polluted water in lieu of potable water counts toward potable water beneficial use. The code states: "The cessation of, or reduction in, the use of water under any existing right regardless of the basis of right, as the result of the use of recycled water, desalinated water, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses, is deemed equivalent to, and for purposes of maintaining any right shall be construed to constitute a reasonable beneficial use of water to the extent and in the amount that the recycled, desalinated, or polluted water is being used not exceeding, however, the amount of such reduction." Thus, where collaborating agencies use polluted supplies in lieu of other supplies, the agencies may apply the non-potable use to their other water supplies. CWD has used Aerojet Groundwater Extraction and Treatment (GET) supplies for its supply during curtailment and to irrigate a golf course, Golden State Water Company (GSWC) and Sacramento County Water Agency (SCWA), use GET water in lieu of surface and groundwater, and other opportunities where GET water could be used should be explored. Collaboratively organizing characterization, use, and reporting of non-potable supplies would support long-term water supply preservation objectives.

Engage in Water Supply Deliveries Permitted Under Rights and Contracts (not transfers)

The participating agencies have opportunities to better use regional water assets to preserve those assets for current and future uses as well as develop more robust opportunities for asset monetization. Specifically, the rationale for delivering water assets to alternative users will allow more water to be claimed "as beneficially used" and improve opportunities to increase the volumes of supply available in dry years. Importantly, flexibly managing water asset portfolios does not jeopardize the availability

of unused assets nor jeopardize the water rights themselves.[32] Thus, finding ways to beneficially use water assets more effectively among the regional agencies improves the long-term viability of the entire region's water asset portfolio.

The water asset inventory conducted in Activities 1 and 2 and shown in its final form in Table 17 show opportunities for additional delivery actions that would help demonstrate beneficial use and support water asset preservation objectives. The following provides a listing of the most prominent examples:

- SJWD deliver pre-1914 water to CWD and use CVP Project Supply[33] in normal years to support water supply reliability. CWD is in the place of use of SJWD's pre-1914 water supply and has historically used SJWD's supply in CWD's service area.[34]
- SJWD uses PCWA surface supply contract and delivers pre-1914 supplies to other collaborating agencies. The substitute supply would support deliveries and transfers.
- CWD uses City of Sacramento water supplies contracted and wheeled through SSWD's water system in the portion of CWD's service area contained in "Area D."[35] SSWD uses either groundwater or PCWA surface supply contract.
- City of Folsom delivers pre-1914 water to Golden State Water Company and uses CVP Project Supplies in normal years to improve water supply reliability in dry years.[36]
- SJWD uses PCWA surface supply contract and delivers pre-1914 supplies to other collaborating agencies. The substitute supply would support deliveries and transfers.
- CHWD, FOWD, RLEWCD, SSWD, and CWD deliver groundwater supplies – either banked supplies or pumped supplies – to a neighboring water agency (SSWD and FOWD have delivered groundwater assets to neighboring agencies in the past) to demonstrate possession and collaborative flexible management of the groundwater supplies.

There are additional water supply and delivery actions that could be examined as part of a regional collaboration. For example, there are unused Aerojet Groundwater Extraction and Treatment (GET) water supplies that are pumped and discharged into the American River that could be captured and used by participating agencies. CWD has captured and used these supplies in the past.[37] The available GET supplies exceed the supplies delivered under contracts to Golden State Water Company and

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[32] This important concept is beyond the scope of this report but the rules of abandonment or forfeiture would not impact these management actions.

[33] There are additional opportunities for managing SJWD's CVP Project Supply under its WIIN Act Contract related to "carryover" and "preuse" of CVP Project Supply but those concepts require further investigation.

[34] CWD conducted an historical assessment related to the use of SJWD's water assets demonstrating an expanded place of use that includes some of CWD's service area.

[35] Area D refers to the place of use of the City of Sacramento's water rights and contracts that are beyond the City's boundaries. SSWD has a contract to use and deliver City of Sacramento water assets to Area D. Concurrence by the City may be required.

[36] Folsom and GSWC hold "joint tenancy" to the pre-1914 appropriative water right from the American River derived from Natoma Water Company.

[37] CWD entered contracts to divert and use surplus GET water in 2014 and 2015 as part of its drought mitigation strategy.

Sacramento County Water Agency.[38] In addition, under surplus American River flow conditions, the SWRCB has issued accelerated permitting processes for agencies to capture those supplies for use. SSWD has initiated investigations into these accelerated permit supplies to expand conjunctive use options.[39] These additional water asset opportunities should be coordinated and pursued among the collaborating agencies to improve and enhance regional water supply preservation and reliability.

Water Transfers for Water Supply Reliability and Water Asset Monetization

Water transfers provide an important mechanism to improve regional water supply reliability as well as preserve water assets for current and future uses. As a starting point, Water Code section 1745.07 states in relevant part: "A transfer that is approved pursuant to this article or any other provision of law is deemed to be a beneficial use by the transferor under this code." Accordingly, transferring water – whether for local purposes or export purposes – is a beneficial use of water that helps preserve the water asset for the transferor's current and future uses.

Water transfers could be used to better support regional water supply reliability. Specifically, water transfers allow purveyors with underutilized water supplies to deliver those supplies to neighboring agencies in times of water shortage. There are three important regional transfer opportunities available to the participating agencies: (1) water conservation transfers, (2) groundwater substitution transfers, and (3) multi-party water exchanges.[40] In other words, water transfers can occur through direct delivery of surplus supplies, through conjunctive use actions, or in a coordinated exchange where alternative water supplies replace supplies that "would have otherwise been used" by the transferring agency. These types of actions require well-planned and coordinated thought before the water need arises. As noted in the previous section, successful water transfers that improve regional water supply reliability may *require* use of certain water supplies in years where those supplies may not otherwise be needed. Furthermore, all water transfers can be structured as short-term transfers or long-term transfers – each type with a different set of rules that impact transfer viability while preserving the reliability of the transferred water. The following examples of actionable collaborative water transfers would provide additional regional supply reliability:

- SJWD delivers conserved surface water supplies to SSWD (SJWD and SSWD executed this conserved water transfer in 2020).
- CWD delivers conserved surface water supplies to SSWD. CWD would prepare a SWRCB temporary change petition to execute this transfer.
- SSWD delivers City of Sacramento contract water supplies to CWD and uses groundwater or SSWD contract in lieu of the City of Sacramento supply. A portion of CWD lies within Area D.

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[38] Aerojet GET discharged supplies are derived from continuous pumping at GET facilities.

[39] SSWD explored the options to divert and deliver surplus American River water under Governor Brown's 2019 Executive Order

[40] The regional agencies could also engage in reservoir re-operation transfers with regional agencies that are not participating in this project (PCWA, the City of Roseville, and El Dorado Irrigation District).

- SJWD and Folsom maximize CVP Project Supply use in normal years to preserve CVP Project Supply for their use in critically dry years and/or their ability to deliver pre-1914 water rights water to other collaborating agencies (an exchange).
- CHWD and FOWD use groundwater supplies in lieu of surface water deliveries from SJWD to free SJWD pre-1914 water rights water for delivery to other agencies.
- SJWD uses PCWA surface water supply contract water in dry years to deliver SJWD pre-1914 surface supplies to other agencies in dry years – like CWD. The transferee would pay the difference in water supply delivery costs to SJWD.[41]
- SJWD and Folsom engage in the Bureau of Reclamation's "Accelerated Transfer Program" as authorized by the Central Valley Project Improvement Act (CVPIA) that allows delivery of the entire contracted CVP Project Supply to another CVP contractor without a consumptive use analysis.[42]

Water transfers out of the region also provide opportunities to monetize water assets while simultaneously preserving regional water supplies for current and future uses under Water Code 1745.07. The water transfer methodology used by the collaborating agencies has historically been groundwater substitution transfers (like those in 2018 and 2020) and many regional agencies are investigating opportunities for water conservation transfers. The most important consideration in groundwater substitution transfers, and one that has been substantially vetted and monitored by the Sacramento Groundwater Authority, California Department of Water Resources, the State Water Resources Control Board (SWRCB), and United States Bureau of Reclamation, is the preservation of regional groundwater supplies before, during, and after the groundwater substitution transfers. Specifically, groundwater modeling and monitoring plans are a pre-requisite for developing and implementing regional groundwater substitution transfers.

Groundwater substitution transfers require an agency to forego using surface water supplies so that those supplies may be transferred and use groundwater supplies instead – whether pumped in their own system or delivered from an outside agency. There are details associated with these types of transfers relating to historical groundwater use and annual anticipated groundwater use that should be further assessed among the collaborating agencies to improve the supplies that could be made available for transfer. Improving the volume of supplies available for transfers improves the revenue generated from the water transfer. Maximizing a regional water transfer for participating agencies would have the following components (portions of these components have already been exercised for smaller regional water transfers):

- Utilize as much groundwater as practicable in SJWD, CHWD, OVWC, FOWD, and Folsom (if possible) customers in lieu of delivering surface water supplies. SJWD would then make surface water supplies available for transfer and share revenue with the participating agencies.

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[41] SJWD and CWD have initiated discussions on this potential exchange opportunity.

[42] There is an open question about the dry year CVP Project Supply availability under the M&I Shortage policy after an accelerated transfer that deserves further investigation.

- Provide as much groundwater as practicable to CWD – potentially through deliveries from SSWD, CHWD and FOWD – to free CWD surface water supplies for transfer. CWD would share revenue with participating agencies.
- Coordinate City of Folsom and GSWC pre-1914 water right deliveries so that GSWC could maximize groundwater substitution in its service area and free GSWC's and Folsom's joint pre-1914 water supply for transfer. Folsom could also maximize CVP Project Supply use. GSWC and Folsom would share revenue derived from the transfer.
- SSWD would coordinate with City of Sacramento surface water deliveries to use SSWD groundwater in lieu of Sacramento's surface water supplies. The City and SSWD would share revenues.

Groundwater substitution transfers, like those noted in this section, can be maximized with significant advanced planning. Normally, these transfers have manifested "in the year of the transfer" and agencies have spent time and resources rapidly compiling data and information to help the transfer succeed. Examining groundwater substitution transfer opportunities – and tiering these opportunities from investigations and reporting under Water Code 1011.5 – would allow the region to maximize opportunities as they arise. And, importantly, urban water purveyors have significantly more flexibility in developing and executing groundwater substitution transfers because, unlike agricultural water users, urban purveyors use water supplies all year – which makes the water assets more attractive for conveyance in periods outside the irrigation season.

As noted previously, regional revenue from the 2020 groundwater substitution transfer grossed approximately $4.5 million. Improving collaboration among agencies could significantly increase the revenue numbers by including additional transferable surface water supplies like SJWD's pre-1914, License and CVP Project supplies, Aerojet GET supplies, and Folsom pre-1914 and CVP Project supplies. [43] Incorporating these supplies could increase transferable water by 10,000 acre-feet if not more.

Urban water conservation transfers are a relatively new form of transfer and are being vetted with regulatory agencies and stakeholders. As noted in a previous section, water conservation manifests through quantifying actual reductions in indoor and outdoor uses as well as actual reductions in overall system losses (non-revenue water). Water Code section 1011(b) specifically states: "Water, or the right to the use of water, the use of which has ceased or been reduced as the result of water conservation efforts … may be sold, leased, exchanged, or otherwise transferred pursuant to any provision of law relating to the transfer of water or water rights…." Although the total volumes of water that could be transferred under Water Code section 1011 because of ongoing water conservation activities is currently debated, there is real and quantifiable conservation savings in all three areas that could be made available for transfer for water supply reliability and water supply monetization opportunities. Moreover, the dual opportunity to both *preserve* and *transfer* conserved water supplies under Water Code section 1011 should be leveraged. As such, developing conserved water transfers requires a coordinated water conservation quantification (as noted above) and then developing the

[43] All of these identified assets have been successfully transferred in other situations.

transferrable conserved water assets – water rights and water contracts – that require regulatory concurrence.

Expand Place of Use of Water Assets

The participating agencies may also seek opportunities to expand the place of use of identified water assets. The important consideration in this effort is the legal basis of the water asset that would require the expanded place of use. For instance, CWD's surface water rights that are regulated by the SWRCB would require a formal petition process with SWRCB and California Environmental Quality Act (CEQA) compliance. Thus, if CWD and SSWD wanted to permanently include a portion of SSWD's service area in CWD's place of use, the SWRCB would need to fully support the effort and environmental impacts would require mitigation. PCWA and SSWD engaged in this process in the 1990's to include portions of SSWD in PCWA's water rights place of use – at a cost of several million dollars.[44] Alternatively, if Folsom sought to expand the place of use of its pre-1914 appropriative water right, it would need federal approval as well as CEQA and National Environmental Quality Act (NEPA) compliance analyses because that state water right is imbedded in a federal Central Valley Project (CVP) contract. Thus, expanding the place of use under existing water assets would require significant regulatory compliance.

Reorganization, however, may provide other expansion opportunities that could be expedited. For instance, even though SJWD's CVP Contract limits the place of use of SJWD's CVP Project Supply to "the Contractor's Service Area", the map in SJWD's CVP Contract may be modified with Reclamation's consent – a streamlined regulatory process – in support of a reorganization activity.[45] Similarly, CWD's place of use in its water rights is characterized as the "service area of Carmichael Water District" – which has expanded over time – that may have reorganizational opportunities that could be more easily addressed through a reorganization process. Nevertheless, the participating agencies could find opportunities to expand the place of use of available water assets through regulatory, contracting, and reorganizational efforts.

Engage in Specific Regulatory Processes

The regional water agencies have opportunities to collaborate in specific regulatory venues to further regional objectives. Specific regional objectives that have been discussed at various times include: improving regional water supply reliability, developing a drought water bank, and facilitating water transfer opportunities. The items listed below are specific actions that the participating agencies may consider to further longer-term water management objectives.

Legislative and regulatory actions that have been contemplated in the past include developing legislation that facilitates conservation-based water transfers; modifying rules to allow groundwater banking to be deemed a beneficial use of water (regardless of who extracts the water for use); and creating special area of origin rules for American River watershed water purveyors that promote collaborative water asset sharing and management. These sorts of actions may provide needed benefits

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[44] Communication with Dan York in November 2020.

[45] Contract Between the United States and San Juan Water District Providing for Project Water Service and Facilities Replacement, 6-07-20-W1373-LTR1-P at Article 1(c).

to the region that would further support the asset preservation, water supply reliability, and asset monetization objectives among the participating agencies.

Additional opportunities for collaboration may extend beyond the legislative realm and be better addressed at the policy level. Specifically, ongoing actions that deserve attention include: (1) implementation of Reclamation's Municipal & Industrial Shortage Policy; and (2) management and implementation of groundwater substitution and water conservation transfers (specifically addressing the "Water Transfer Whitepaper" and related regulations and policies).

Reclamation's M&I Shortage Policy implementation lacks cohesive implementation. The participating agencies should work with the Bureau of Reclamation to address the water substitution component that is listed in the M&I Shortage Policy. The relevant language under "Historical Use Adjustments" is as follows: "At a Contractor's request, Reclamation will consult with the Contractor to consider an adjustment to their Historical Use. Historical Use adjustments are based on the following criteria: a) Population growth; b) extraordinary water conservation measures; c) Use of Non-CVP water; d) Other Unique or Unusual Circumstances." All of these potential adjustments related to the characterization of historical use should be fully vetted with the Bureau of Reclamation so that more beneficial use of CVP Project Supply water can be claimed in any given year which would result in increased water supplies in dry years and improved regional water supply reliability.

Water transfer activities also deserve attention among the participating agencies. Current regulatory actions at the staff level have created policies that impede the efficient implementation of groundwater substitution transfers and have stonewalled implementation of urban water conservation transfers. For example, the express provisions of Water Code section 1011 related to the transferability of conserved water have been resisted by state and federal staff based on unattainable technical reasons. Continued actions of regional purveyors to improve the opportunities for these transfers would support regional water supply reliability and improve opportunities for asset monetization.

Summary

The specific actionable opportunities described in this section would preserve water assets, improve regional water supply reliability, and generate revenue. The actionable opportunities would require additional technical analysis for purposes of implementation. Table 18 at the end of this section summarizes the collaboration opportunities, potential benefits, and collaboration methodologies.

Collaboration Methodologies

The water supply opportunities identified in this section could be implemented through a variety of collaborative mechanisms that have differing levels of sophistication. The purpose of this section is to describe each mechanism and to align the opportunities with the available mechanisms in Table 18.

Contract

There are many mechanisms to collaborate on water supply opportunities through contract. In fact, it is more likely that initial considerations related to many identified collaboration opportunities would evolve through some form of contract before alternative collaboration methodologies would be considered. Contracts have many levels of complexity from formal agreements that address specific detailed management activities to Memoranda of Understanding or Cost Sharing Agreements that allow flexibility in addressing the agencies' identified issues. The participating agencies may enter formal or informal agreements to support all opportunities listed in this section. Numerous forms of these agreements have been already executed among participating agencies. For example, CHWD,

FOWD, OVWC and Folsom have formal water supply agreements with SJWD that governs the rights and obligations of each party related to SJWD's water assets. Alternatively, CWD, FOWD and SSWD were part of a less-formal regional cost and revenue sharing agreement to develop and implement the 2020 groundwater substitution transfer. All these contracting mechanisms may be developed among the collaborating parties to meet the parties' objectives.

Option Contract

An alternative form of contract is an option contract – that allows an entity to essentially hold an opportunity to initiate action under the contract. Option contracts are more common for water supply reliability agreements where an entity will choose to initiate the contract to receive a water supply in a dry year but will forego initiating the contract where water supplies are otherwise plentiful. Option contracts would likely apply to a limited set of collaborative opportunities listed in this section.

Leverage Regional Venues like RWA, SGA, and the Water Forum

The participating agencies are involved in numerous venues that can be leveraged to engage collaborative opportunities. These venues have significant collaborative potential where participating members concurrently agree on a course of action. The Regional Water Authority (RWA), Sacramento Groundwater Authority (SGA), and the Water Forum are all established entities that facilitate regional coordination. For example, RWA occasionally engages in lobbying activities related to legislative or regulatory matters. RWA spreads costs among its member agencies to equitably distribute costs associated with the identified regional benefit in lobbying activities, water efficiency programs, grant applications and many other mutually beneficial endeavors. Similar activities may be available for opportunities considered in this section like modifying law, engaging on federal or state policy issues, or sharing costs for political activities with regional benefits. In addition, coordinated activities related to quantifying water conservation (Water Code Section 1011), assessing conjunctive use actions (Water Code Section 1011.5), and addressing wastewater use (Water Code Section 1010) may be supported through the regional venues. Accordingly, numerous collaborative opportunities identified in this section could be executed through one of the regional organizational entities.

Regulatory and Legal Action

The participating agencies may seek specific regulatory and legal actions to implement some of the identified opportunities. For example, if there were interest in CWD expanding its appropriative water rights place of use to serve water to other entities, the participating agencies could jointly participate in the SWRCB regulatory process and environmental compliance process to further the collaborative objective and share costs. Similarly, if the participating agencies sought to legally challenge a regulatory body's policy – like the M&I Shortage Policy or the short-term water transfer rules – then the agencies may join together to assert their concerns in the appropriate legal venue. This collaborative activity may also include additional contracting actions as noted previously.

Reorganization

Reorganization may also provide a mechanism to advance the water supply opportunities listed in this section. Reorganization would involve fully integrating the water assets shared between consolidating agencies to maximize benefits. The most recent reorganization example occurred in the formation of SSWD where Arcade Water District and Northridge Water District were combined. Administrative reorganization among two or more agencies should be distinguished from water supply coordination – where supplies belonging to a participating agency may be expanded for use only after regulatory and legal compliance. For example, combining CWD and SSWD does not necessarily mean that

CWD's surface water appropriative rights could be used in SSWD's service area. Although this changed use remains a possibility under CWD's water assets as noted previously, the two agencies would likely need to engage the SWRCB to expand the place of use of CWD's water assets. However, in other instances, reorganization may provide a facilitated mechanism to combine utility of water assets. As noted previously, combining SJWD and CWD might allow SJWD's CVP Project Supply to be used in CWD's service area after altering the use map per Article 1(c) and would certainly facilitate CWD's ability to use SJWD's pre-1914 supply. Accordingly, from a water supply perspective, careful consideration of the supply integration opportunities should occur before discussion of reorganization is considered.

Table 18: Summary Assessment of Options, Benefits, and Reorganization Methods

Collaboration Opportunity	Potential Benefits						Collaboration Methodology				
	Consistent Methodology	Coordinated Data Summary	Consistent Reporting	Asset Preservation	Regional Water Supply Reliability	Revenue Generation	Contract or MOU	Option Contract	Regional Venue	Regulatory or Legal Action	Reorganization
Water Conservation Quantification (WC 1011)	X	X	X	X	X		X		X		X
In Lieu Groundwater Use Quantification (WC 1011.5)	X	X	X	X	X		X		X		X
Polluted Water Use Quantification (WC 1010)	X	X	X	X	X		X		X		X
SJWD Water Delivery to CWD				X	X		X	X			X
SSWD Water Delivery to CWD				X	X		X	X			X
Folsom Water Delivery to GSWC and CVP Supply				X	X	X	X	X			
Groundwater Deliveries Among Agencies	X	X	X	X	X		X	X			X
Aerojet GET Diversions	X			X	X	X	X	X	X	X	X
Accelerated Permit Supply Acquisition	X		X	X	X		X	X	X	X	X
SJWD Conserved Transfer to SSWD	X	X	X	X	X		X	X		X	X
CWD Conserved Transfer to SSWD	X	X	X	X	X		X	X		X	X
SSWD Groundwater Substitution Transfer to CWD	X	X	X	X	X		X	X		X	X
Acquire and Use Aerojet and Temp Permit Supplies				X	X	X	X	X	X	X	X
SJWD and Folsom Maximize CVP Supply		X	X	X	X					X	
CHWD, FOWD, SJWD Groundwater Substitution Transfer	X	X	X	X	X		X			X	X
SJWD Use PCWA and Exchange pre-1914 Appropriative	X			X	X		X	X			X
SJWD and Folsom Use CVP Accelerated Transfer (CVPIA)	X			X	X					X	
Export Groundwater Substitution Transfer (1011.5)	X	X	X	X	X	X	X	X	X	X	X
Export Water Conservation Transfer (1011(b))	X	X	X	X	X	X	X	X	X	X	X
Expand Place of Use of Water Assets				X	X					X	X

Collaboration Opportunity	Potential Benefits						Collaboration Methodology				
	Consistent Methodology	Coordinated Data Summary	Consistent Reporting	Asset Preservation	Regional Water Supply Reliability	Revenue Generation	Contract or MOU	Option Contract	Regional Venue	Regulatory or Legal Action	Reorganization
Engage Legislative Advocacy				X	X		X		X	X	X
Engage Reclamation M&I Shortage Policy				X	X		X		X	X	X
Engage Regulatory Agencies' Transfer Criteria	X	X	X	X	X	X	X		X	X	X

Reorganization

This document explores options for further collaborations among the participating agencies in seven selected areas. In some cases, savings in the range of 5-15% are assumed when the participating agencies engaged in joint activities in a selected service area, as compared with status quo approaches, and assuming the same levels of service provision. In other cases, service level improvements rather than financial savings are possible. Calculating absolute savings is difficult given that each of the participating agencies has different levels of service. For example, some of the participating agencies have robust water conservation programs while other have minimal or no formal programing. This means that pursuing a collaborative venture could involve increasing or decreasing the current costs experienced by a given utility, depending on the level of service provided by each of the involved agencies. Using the example of water conservation again, DPMWD or RLECWD may end up paying more for water conservation programming if they were to enter a collaboration with SSWD or SJWD, because they would be elevating their current levels of service provided. They would be paying more but getting more than they could pursuing the service on their own. Because of these differences in service levels, the easiest collaborative opportunities to explore may be the ones between agencies that currently have common service levels. The majority of these service area savings can be realized without having to reorganize utility governance and combine utility organizations.

Even though most savings and service level improvement can be realized without having to reorganize and combine utility organizations, there are unique positives associated with reorganization. Progress on a broad range of service level enhancements across at least 80 areas of operational opportunity, as identified in the Activity 1 Report, could proceed with less negotiation and effort under a reorganized model. Savings estimated at conservatively between 5 and 15% might be achieved through larger contracts and scale benefits pursuing these 80 operational opportunities.

A reorganized approach could also reduce administrative and management overhead. These saving go beyond the estimated 5% to 15% achieved through larger contracts and scale benefits. For example, if the General Manager/Executive Director positions at each agency are consolidated, the fully loaded salaries plus benefits are reduced from 6 to 1. This alone could lead to a savings approaching one million dollars per year. It is estimated that on the over $90 million spent on O&M every year across the participating agencies, reorganization might result in annual savings of between 8% and 20% if broadly pursued, or between about $7 million and $18 million dollars per year on the operating side alone.[46]

There are additional benefits to reorganization. A larger ratepayer base can reduce credit risk and lead to more favorable borrowing and cash funding opportunities, particularly when combined with greater monetization of water supply assets. Decision making around regional management of water supplies could be made with less friction, allowing for maximal monetization and sustainability benefits. Greater scale could lead to greater influence in state level decision making with a unified rather than

[46] https://www.infrastructureusa.org/strengthening-utilities-through-consolidation-the-financial-impact/

fragmented voice. However, some may argue that a coalition of agencies speaking with a singular voice would achieve more impact.

There are potential negatives of reorganization. A loss of local control, and the dominance of voices from the largest population centers or loudest constituencies, could disenfranchise some people or groups or at least make them feel less represented. For those that choose different service levels, costs may increase and align less with their values and priorities. Pursuing reorganization also means spending time and money on the diligence needed to achieve the transition to reorganization, and potentially investments in infrastructure, equipment, materials, and standards alignment. There are also many challenges dealing with existing debt. Of course, there are the obvious political risks and chances for infighting during negotiations.

Regardless of the near- or long-term goals of the participating agencies, the path forward should include more collaboration to opportunistically align service levels, achieve cost avoidance, and optimize water supplies through scale benefits. If reorganization is pursued in the future among some agencies, then collaboration can build a bridge to success. Even if the participating agencies remain independent, more collaboration is a sensible goal with a range of opportunities. For the benefits of collaboration to scale, a spirit of engagement, trust, and cooperation must build beyond the bounds of this Study.

APPENDIX A:

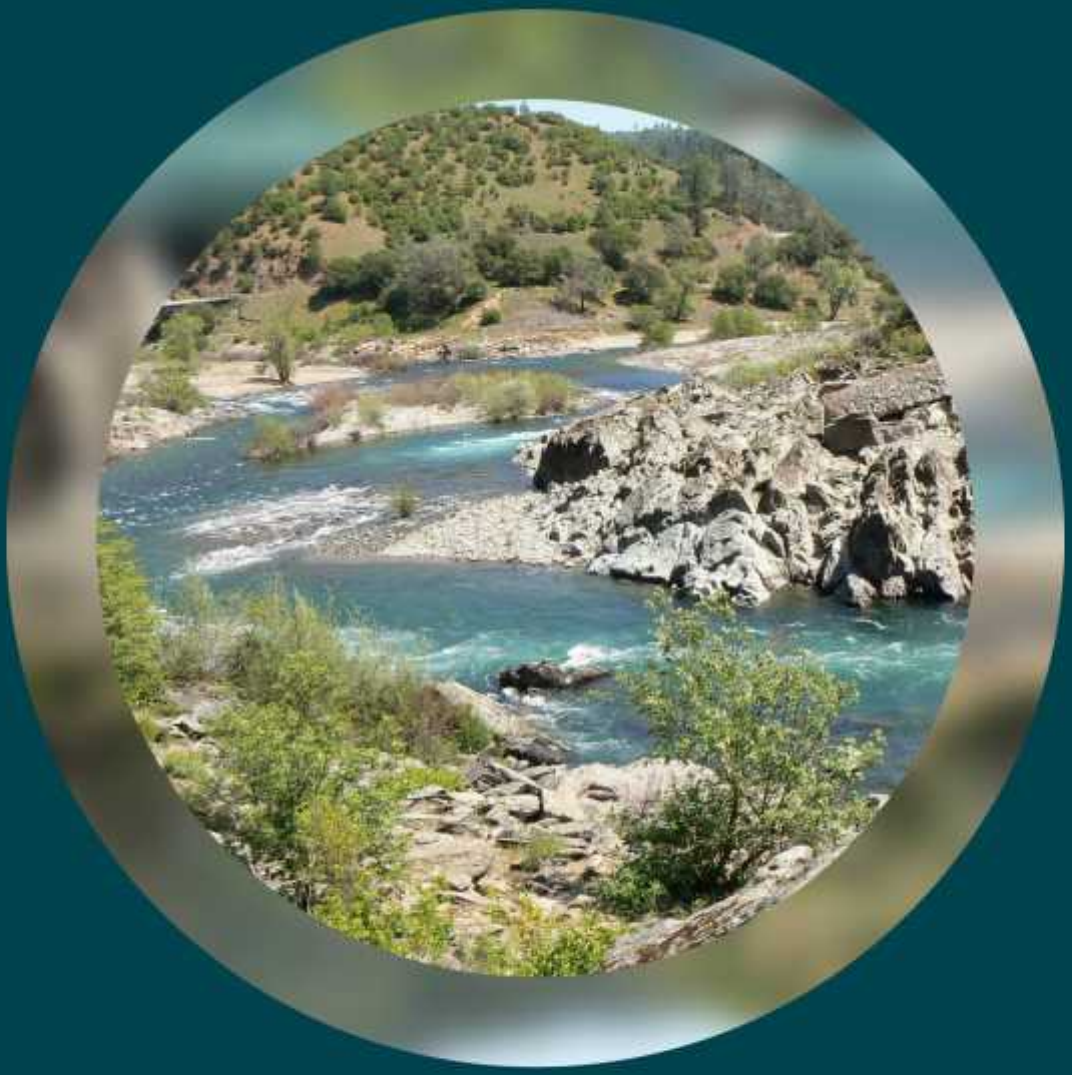
Activity 1 Final Report

Sacramento Regional Water Utility Collaboration Study

Activity 1 Report

Description of the Current Environment

September 2020 - FINAL



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Summary

The Sacramento Regional Water Utility Collaboration Study (Study) is a collaboration among Carmichael Water District (CWD), Citrus Heights Water District (CHWD), the City of Folsom Environmental & Water Resources Department (City), Del Paso Manor Water District (DPMWD), Rio Linda/Elverta Community Water District (RLECWD), Sacramento Suburban Water District (SSWD), and San Juan Water District (SJWD) (together "the participating agencies") to identify opportunities for increased collaboration. The goal of this Study is to identify opportunities for additional operational and financial efficiency, and to improve service provision to customers. This document is the first of three project deliverables and encompasses the activities for Study Activity 1 – Description of the Current Environment, inclusive of all subtasks. It provides an overview of the participating agencies' operations, existing and past collaborations, and identifies the potential for additional activities.

Raftelis gathered information, including virtual interviews with senior representatives of each participating agency, about their organizations, stakeholders, and how they hope to benefit from collaboration. Data about the size and scope of participating agencies, as well as publicly available data from Orange Vale Water Company (OVWC) and Fair Oaks Water District (FOWD), are presented in this document. This Activity 1 Report also contains information about stakeholders, communications, and the current water resources situation, in addition to past and ongoing collaborative efforts.

There are and have been numerous collaborative ventures among the participating agencies. They include working together on water resources issues, joint contracting and procurement activities, and regional advocacy, often through the Regional Water Authority (RWA) and other entities. While all the entities are earnestly looking for opportunities to work together, there is a very strong desire for local control and independence among many of the participating agencies, including the smaller ones. Each reportedly has the minimum resources to accomplish their mission, given current water rates and exiting contractual arrangements for services. Most agencies do not describe immediate and/or urgent drivers that require forcing collaboration. Collaboration opportunities must therefore be viewed with the goal of reducing costs and improving services over the long term.

Raftelis has identified through interactions with the participating agencies numerous options for collaboration. Several categories of options are listed in this document. These will be studied further in the subsequent phases of the project. None of these options jeopardize the sovereignty of any agency, and if executed properly, should help increase efficiency, service levels or drive down costs. However, some compromises will likely be required to pursue them. Note that these collaboration opportunities do not limit future consolidation efforts. Instead, pursuing many of these opportunities will further enable the agencies to work together more easily, making any future discussions of additional collaboration that is potentially worth pursuing.

Introduction

The Sacramento Regional Water Utility Collaboration Study (Study) is a collaboration among CWD, CHWD, the City, DPMWD, RLECWD, SSWD, and SJWD (together "the participating agencies") to identify opportunities for increased collaboration. of this Study is to identify opportunities for additional operational and financial efficiency, and to improve service provision to customers of the participating agencies. Increasing costs of living, evolving regulations, and increased competition for scarce water resources across the State mean that agencies must work together, more seamlessly and regionally, to provide reliable and affordable services.

This Activity 1 Report is the first of three project deliverable documents and encompasses the activities for Study Activity 1 – Description of the Current Environment and all associated subtasks. It provides an overview of the participating agencies' current operations, existing and past collaborations, and provides an opportunity for additional collaborations. This document provides a high-level summary of submitted information from the participating agencies, and provides contextual, cultural, and key service level aspects. Attachments to this document include the Request for Information (RFI) memo (Appendix A), a table detailing the high-level data summary (Appendix B), the Communications Plan (delivered separately), and Project Charter (delivered separately).

This document is not designed to provide an exhaustive summary of each participating utility, nor of the details of every past and ongoing collaborative efforts. There are many other sources that provide high levels of detail about each participating utility and aspects of their operations. Again, this document is designed to provide an overview of the participating agencies and summarize past collaborative efforts in preparation for future project tasks.

Review of Participating Agencies

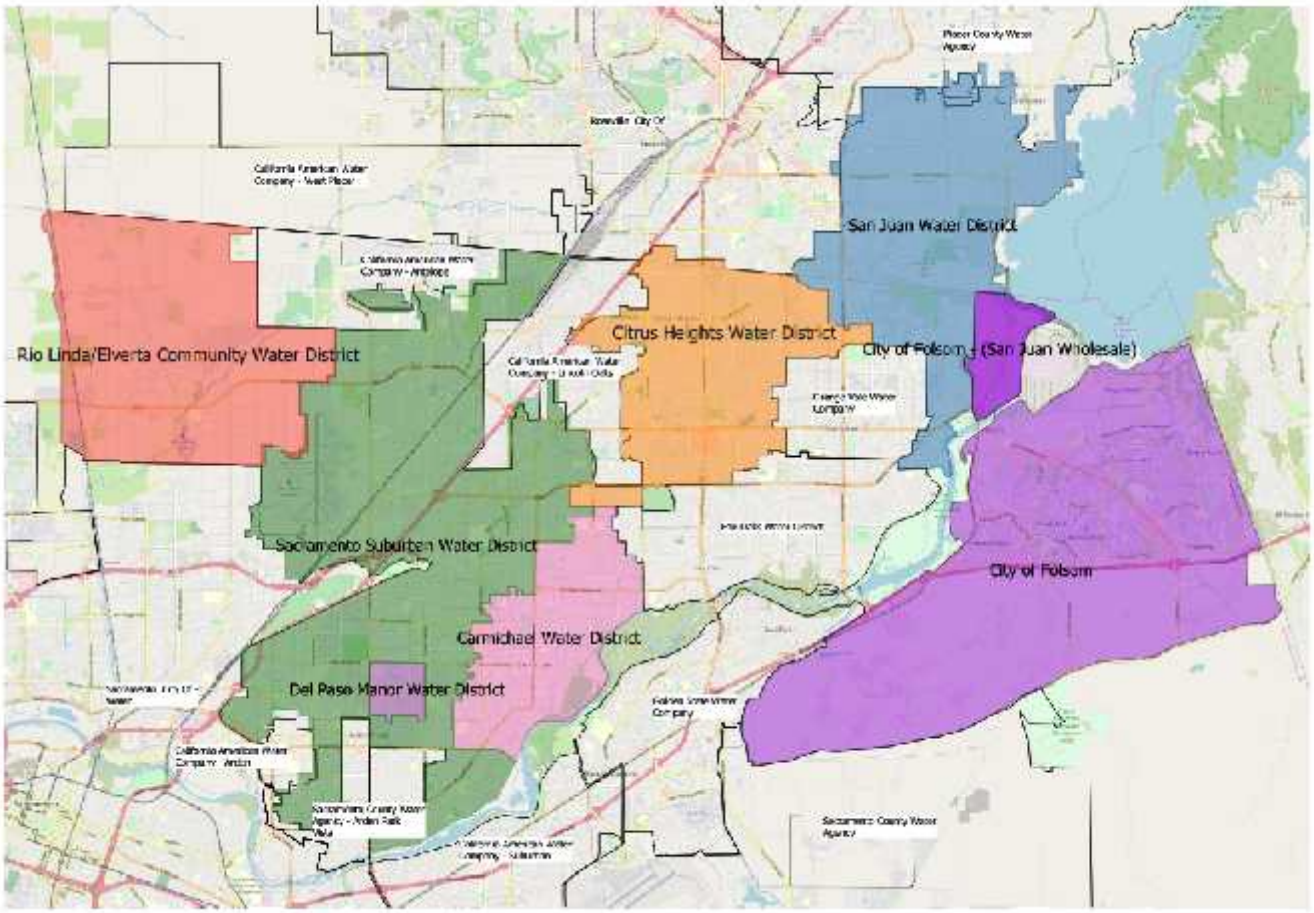
Raftelis gathered information from the participating agencies, generally following the guidelines in a provided Request for Information (RFI) – Appendix A. Following initial information gathering and in parallel with a review of the information, we conducted interviews with senior representatives of each participating agency to gather further information about each agency's organization, stakeholders, and how they hope to benefit from collaboration with other agencies. The interviews were divided into two topic areas: Communications and Collaboration with internal and external stakeholders, and Operations. Interviews were approximately one hour with each agency on Communications and Collaboration, and included differing representation by agencies among the following roles:

- Board members
- Environmental and Water Resources Director
- General Manager
- Assistant General Manager
- Executive Assistant to the General Manager
- Public Information Officer
- Communications Manager
- Public Relations Consultant
- Customer Service Manager
- Utilities Section Manager
- Operations Manager
- Engineering Manager
- Engineering Services Manager
- Finance Director
- Contract staff

In addition to the participating agencies, FOWD and OVWC, as wholesale customers of the SJWD are important stakeholders for regional collaboration efforts. Raftelis collected information from the public domain for these two agencies. We did not interview representatives from OVWC and FOWD as they have elected not to be involved at this point in the project. However, they and others may want to be included in the future at the discretion of the participating agencies. It is intended that a draft of this document is made available to them for their consideration and as a precursor to their possible formal engagement. If they decline to formally engage in the Study after review of the draft document, these additional agencies can be consulted as the participating agencies see fit but will not be included in subsequent analyses or reporting.

Note that other agencies in the region, including the Sacramento County Water Agency, which serves nearly 200,000 customers in the region, have also had discussions about participating in the Study. There are additional utilities such as various California American Water Company (Cal. Am.) and Golden State Water Company systems, Placer County Water Agency (PCWA), and the water systems for the cities of Sacramento and Roseville, that have collaborative relationships with the participating agencies in one or more areas. There are at least 27 different water entities serving Sacramento County, inclusive of this subset of seven participating agencies. Many of these agencies have resource sharing and collaboration arrangements with the participating agencies or that impact the participating agencies. In addition, there are several initiatives and agencies, such as the RWA, that work to form partnerships to address issue that impact the region and/or groups of utilities in and around Sacramento County. Figure 1 (see next page) shows a map of the participating water agencies.

Figure 1: Participating Agencies



Data and Information Summary

It is important for the participating utilities to consider their relative size and scope, as well as differences in how they are structured, their financial status, and how they operate, as they contemplate collaborative efforts. Appendix B highlights some of the key organizational information for each entity. It will be used as appropriate in subsequent analyses of collaborative opportunities. In addition to providing an opportunity to validate baseline information for comparative analytics and benchmarking exercises to come, this information can help the agencies to identify additional areas of possible collaboration, as well as to highlight differences that may make collaboration in areas challenging.

Noteworthy observations from Appendix B include:

- Most of the participating agencies have long histories in the region, often based on water rights arrangements and community development efforts going back well into the 1800s. These rich histories have created established norms and expectations. Any collaborations must consider the long operating histories, and established norms and expectations.

- The City of Folsom is the only municipal department participating in the Study, while all the other participants are independent water agencies, separate from municipal agencies. Note that OVWC is a private mutual water company and has a different structure and additional regulatory requirements compared to either a municipal department or a separate district.
- The service populations of the participating agencies range from less than 5,000 (DPMWD) to nearly 183,000 (SSWD). This represents an opportunity as stratification in sizes, service levels, and resulting specializations can lead to areas of competitive advantage where joint contracting, sharing resources, and best practices can result in service level improvements, costs savings, or even revenue opportunities.
- Sources of supply include a variety of surface water and groundwater resources with varying limits as several utilities have access to several different sources. This variation, if effectively managed as a region, can improve service reliability, hedge against droughts and additional water restrictions, and can provide additional long-term flexibility.
- Differences among customer bases, including water rates, affordability, and desired service levels (and standards that result), must be carefully considered. Investments such as advanced meter technology, for example, may create significant capital costs, which can be barriers to entry. However, such investments may ultimately lead to lower operating costs and improved efficiency. Scale efficiencies from joint efforts can make some purchases feasible for areas where they otherwise might appear to be out of reach.

While these observations can help guide recommendations, it is only through mutual understanding that agreements to collaborate are achieved. To that end, the sections that follow provide an overview of each agency as they embark on this effort. In addition to helping capture topline organizational information that will be useful for future analyses in the Study, during Activity 1 we developed a preliminary understanding of each of the agencies:

- **Context and Culture:** By context and culture, we mean the general history of each agency, customer base attributes, and ways of doing business, as reported by the participating agencies themselves. This provides perspective on what can be achieved through the Study.
- **Services:** Operational highlights with a focus on the services that each organization currently engages in as a shared service involving regional partners.

The perspective that each participating agency brings to the Study, as formed by their experiences, ambitions, values, and resources varies quite a bit. However, it was clear from interviews that there was a strong spirit of cooperation and collaboration across all the agencies even before this Study began. Each agency had at least some experience working with neighboring agencies on collaborative efforts. And, the majority of this experience was characterized as positive.

While the baseline information detailed in Appendix B provides a surface level overview of each organization, the brief narratives below provide a more qualitative description of where each agency finds itself as we engage in this important effort. It is our hope that by sharing these perspectives we can improve mutual understanding and unlock a process that provides the best opportunity for additional collaborative efforts.

Carmichael Water District

Context and Culture

CWD serves a predominantly residential suburban community and largely sources its water from the American River, except during times of water scarcity when available groundwater wells are also utilized. CWD does not serve any major industrial customers that account for a large percentage of its water sales. Customers are engaged on water issues and are reportedly happy with the quality and services that CWD provides. CWD reports that customers like the small town feel of the District, and that, while they take pride in their independence, they are certainly open to collaborative opportunities that could achieve efficiencies through the sharing of resources.

As the Study progresses and in the context of the Covid-19 pandemic, CWD notes that employees will want assurances that collaboration efforts will not threaten their jobs. CWD has benefitted from revenue provided by an award-winning collaborative supply agreement involving contaminated groundwater at an industrial site (Aerojet Rocketdyne) and a private water supplier (Golden State Water Company).

As a result of their dual surface and groundwater supply, award-winning public-private-partnership supply agreement, and their mid-level size relative to peers, CWD has the potential to be an important voice in the Study as an organization that has seen the benefits of collaboration, while maintaining their independence.

Service Highlights

American River water is treated at a micro filtration plant that CWD invested in recently. During times of drought, when withdrawals from the river become limited, CWD is fortunate to have access to supply from groundwater wells. When the supply shifts more to groundwater, residents served by CWD may notice some minimal variation in the taste and properties of their water.

Current or past collaborative efforts noted are listed below:

- During the recent drought and following State legislation there was increased information sharing among regional utilities on how they were approaching water efficiency and compliance.
- CWD and FOWD are working to engage in a water supply sharing agreement and are installing metering now for transfers that will take place this summer.
- There are interconnections with SSWD, FOWD, and CHWD.
- The Regional Water Authority (RWA) shared outreach program involves 20 agencies, including CWD, and has water efficiency programs for customers such as rebates. The program includes cost sharing.
- CWD is an active member of RWA, a joint utility organization.
- CWD is supplied with 4.5 MGD of remediated groundwater from Aerojet Rocketdyne via a 7,400 foot, 24-inch diameter pipeline crossing the American River at Buffalo Creek. CWD then treats this water and delivers it back to Golden State Water Company. This work was funded in part by the RWA, via the State under the Governor's Water Action Plan (Proposition 84) and represents one of 17 Sacramento-area projects awarded $9.7 million in California Department of Water Resources grants in 2014. The projects were designed to help shore up the area's water supply reliability during the drought and beyond.[1]
- Mutual Assistance Agreements with CHWD, DPMWD, FOWD, and SSWD have been helpful.

[1] https://www.rocket.com/article/aerojet-rocketdyne-supports-american-river-pipeline-conveyance-project-dedication

- CWD is involved in several technical studies focused supply sharing between suppliers.
- There have been conversations about sharing staff with three other agencies, including perhaps some HR functions.
- There was a partnership with CHWD for transfer and removal of pipe.
- CWD has purchased emergency materials with CHWD.
- CWD is a participant in the regional bulk chemical purchasing effort.
- CWD's prior engineer shared standard operating procedures (SOPs) with SSWD. CWD used studies and questionnaires to align procedures. They shared presentations with FOWD. However, some of the SOPs are already effectively shared because they are posted online, and the engineers will look at each other's documents.
- There is a billing user group, though involvement has lessened as technologies have moved away from Cogsdale and diverged.
- CWD was involved in metering conversations with other utilities, but CWD was ahead and has already selected a meter technology and vendor.
- Sacramento County Environmental Health Management offered independent backflow testing as part of a regional program that had spawned out of Sacramento Area Water Works Association (SAWWA). CWD participated for a time, but ultimately brought this function in-house.
- There are Water Forum meetings during dry years focused on reliability.
- CWD has collaborated where they can on training through SAWWA, agencies may host but it is coordinated through SAWWA.
- Target Solutions is an online training portal through the Association of California Water Agencies-Joint Powers Insurance Authority (ACWA-JPIA) (billing, PDP, risk management)
- For specific equipment trainings, CWD will often invite other agencies.
- CWD and other entities will share and seek consistency in messaging and practices within the region on power and energy, conservation, and regulatory issues, among other issues. It's shared because "it makes everybody's job easier."
- Rate structure discussions between communities often feature discussion of conservation rates.
- SJWD and CWD did a joint salary survey where the cost was shared.

Citrus Heights Water District

Context and Culture

Since its establishment as an irrigation district in 1920, CHWD's service area has evolved into a bedroom community, along with primarily shopping centers, parks, and schools. Though it remains technically an irrigation district by constitution, in the early 1990s the name was changed to a Water District. Despite sourcing approximately 90% of its supply through a wholesale agreement with SJWD, CHWD is firmly committed to remaining as an independent entity focused on water quality and cost optimization.

CHWD is open to collaborative opportunities that further their goals and those of others in the region, as evidenced by their participation in this Study and leadership on the joint meter study, but they remain cautious about the motives of larger regional peers and have found that some past attempts at working together have not always been successful. The District is careful to involve their own citizenry and business leaders in decision-making processes and formed a Customer Advisory Committee for a recent water main replacement initiative known as Project 2030, as well as for the ongoing meter study. This kind of direct local control is an important value for CHWD. For State advocacy on water issues, CHWD believes that many voices are more powerful and accountable than that of one large regional bureaucracy. CHWD hypothesizes that shared staff resource or joint contract opportunities may prove limited and unnecessary due to the abundance of private contractors available to serve water utilities in the area and the savings they feel are achieved through a more competitive and active contractor market. CHWD has also found that joint materials purchases can also be difficult due to varying preferences of products between communities.

Service Highlights

CHWD is the largest wholesale customer of SJWD and has independent access to six wells in addition to treated water from Folsom Reservoir. The community is largely built out, with the largest active project involving a redevelopment of a golf course into 200 additional residences. The meter study is a current operational focus and is moving from the technology review to implementation phase. CHWD uses c900 PVC pipes in their distribution system and does not have any storage tanks. They have SCADA systems on wells. They note that regional information sharing from SCADA systems could possibly be expanded.

Funding water main replacements presents a decision point for CHWD, as they determine whether costs should be borne more by current or future customers through bonded debt funding or PayGo funding. In general, the district feels that have been able to keep rates lower than many regional peers while maintaining water quality, but they are open to any opportunities that further those efforts as long as they do not threaten their ability to maintain local control of decision-making.

Current or past collaborative efforts noted are listed below:

- RWA gets involved with grants administration, water efficiency programming, and legislative efforts and is a good vehicle for broad collaboration; they are an active member of RWA
- They rely on SAWWA and many other outside and internal training resources.
- CHWD provided comments on the consolidation studies involving SSWD and SJWD.
- The regional meter study is being led by CHWD.
- CHWD has 22 intertie agreements with other systems including those between other SJWD wholesale customer agencies (WCAs)
- Water education in elementary school is a joint effort with SJWD and the WCAs.
- RiverArc Study in the mid-2010s investigating diversion of water from the Sacramento River.
- CHWD was involved with various pipeline capital projects in 1990s with other water agencies including the Cooperative Transmission Pipeline Project.
- A joint bond issue for meters and wells with SJWD.
- They worked with SAWWA on joint SOPs for purchasing many years ago, but they noted the process was challenging.
- ACWA-JPIA, a joint entity, is used for insurance and risk management
- Joint vehicle purchases for pickups and light duty trucks have occurred, in addition to using the State program pricing for fleet vehicles.

City of Folsom Environmental and Water Resources Department

Context and Culture

The Water Resources Department is the only member of the participating agencies that is part of a municipal government, which is ultimately overseen by a body of elected officials that must deal with a wide range of issues from public safety and parks to taxation and commerce. Being part of a municipal government already facilitates a considerable amount of resource sharing and collaboration, much of which is internal to the municipal government. The Department is open to external collaborative opportunities that could continue to improve service levels and identify areas for cost avoidance.

Particularly due to the effective conservation efforts that saved thousands of acre feet of water by driving down consumption per capita, the City currently has the water rights, contractual arrangements, treatment and pumping capacity, and distribution system they need to meet the needs of their service area now and into the foreseeable future. Their next major investment will be to ensure treatment redundancy is available as the City grows, particularly as a result of a major development project being built south of U.S. Route 50. Upon completion, the "South of 50" project will add about 11,500 connections on top of the currently serviced 22,000 connections. The completion of the South of 50 project will bring the City closer to their water treatment plant capacity limits, however, planned water treatment plant capital projects are currently in planning and design to address this . Under a worst-case scenario, they could presumably setup a supply agreement with Golden State Water Company or another agency.

Service Highlights

Even though the Department is larger in staff, as compared with some of the other participating agencies, they operate quite leanly and efficiently. The City uses daily reads from a Zenner advanced meter infrastructure (AMI) system for billing but wants to make sure they are on the right track as South of 50 comes online, and are as a result, actively engaged and eagerly awaiting progress on the shared meter study lead by CHWD. They aren't tied to a specific meter brand and would like to do a joint meter bid as a consortium. They need results from the October 2019 Meter Study as soon as possible because South of 50 homes are now being built. The number of dials, volumetric reading, and other specifications vary by community, which is leading to the slowness of the Meter Study.

The City has a GIS staff person that handles all departments and they have an engineering technician that is specifically for water and wastewater. Their Computerized Maintenance Management System (CMMS) system is Lucity and the same staffer that handles this system also manages work orders. A shift by Lucity to a web-based platform has created some operational challenges due to the difficulty with Lucity transferring existing City data into the web-based platform.

Current or past collaborative efforts noted are listed below:

- Significant involvement in the meter study being led by CHWD.
- The Department is an active member of RWA, a joint utility organization.
- The Department is involved in a regional chemical purchase agreement. The effort has been "beyond amazing." The effort, which started as a bay area consortium that got extended to Sacramento reportedly only costs around $250 per agency to participate and results in significant savings.
- The SJWD interconnection could provide 3 million gallons per day (MGD) if it were used.

- Some information sharing with systems local to their geography on hydraulics, but there have been no efforts on a unified regional hydraulic model.
- The Department participates in a statewide bid for various utility vehicles. A participating agency can use a common specification, which speeds and eases the purchasing process.
- The recently constructed intertie with Golden State Water Company (2019) would also provide up to 2.8 MGD of treated groundwater if it were used.
- The City uses the National Joint Powers Alliance (NJPA) and the California Municipal Awards Schedules (CMAS) for the purchase of utility service vehicles and heavy equipment (dump truck, side loader, backhoe).
- Working with RWA for a Consortium bidding of materials and services.

Del Paso Manor Water District

Context and Culture

DPMWD is the smallest participating agency, which serves a mostly residential area that is reportedly almost fully built out. This puts pressure on water rates, since there is little opportunity for system growth to offset increasing costs. DPMWD's activities have sometimes been met with resistance from active and engaged community advocates, both at Board meetings and in online forums. This has led to periods in the past of financial stress.

DPMWD is undergoing a period of transition. Following significant Board and staff turnover, a largely new staff of four is currently onboarding as SSWD handles operations on a contract basis. The Board and staff turnover have led to a degree of modernization that has stabilized rate increases. DPMWD is recovering costs and investing in infrastructure but their upgrade and replacement rate may be behind compared to others in the region. A plan to address aging infrastructure and to make sure their wells are maintained and compliant is needed. DPMWD runs off up to two wells, but they have six available and could probably produce more water and monetize it, which some Board members favor while others oppose. Overall, as the benefits of effective collaboration become clear, and with strong training for new staff, DPMWD is on the road to becoming a sustainable utility for its community.

Service Highlights

A private consultant is currently helping with system management, while SSWD handles most operating activities on a contract basis. The current situation has curtailed the District's ability to get involved with many external collaboration activities. The arrangement with SSWD may be scaled back or terminated once new staff onboarding is complete. A CPA firm was also hired to deal with accounting which was handled with QuickBooks. The District reports that 99% of customers are billed a flat rate, though there are a few meters for new construction and roughly 100 commercial customers that are all metered. Expanding metering is thought to be cost prohibitive other than for new construction and commercial where it is required, and somewhat controversial. A new General Manager arrived in July 2020. The new GM will be tasked by the Board with developing staffing and training plans and evaluating the SSWD agreement. The Board is open to collaborative opportunities that can offer savings.

Current or past collaborative efforts noted are listed below:

- Two by two meetings with SSWD on collaboration occur.
- DPMWD is a member of RWA, a joint utility organization.

- Mutual aid agreements are in place and were very important to the District when many of the staff departed.
- There is an operations agreement with SSWD.
- DPMWD looked at outsourcing billing with SSWD, but it wasn't believed to be in their interest at the time

Rio Linda / Elverta Community Water District

Context and Culture

RLECWD has worked hard to move from a period of financial and infrastructure distress to one of stability over the last decade. The corrections that began 10-years ago entailed a state mandated loan and stipulated increases in funding to repair and replace infrastructure. More recently, RLECWD has significant, yet unrelated, Board and staff turnover. . In 2018 and 2019, half of the four Distribution System Operators departed to neighboring agencies for higher pay. The labor agreement negotiated in 2012 substantively decreased employee compensation, and subsequent labor agreements made only minor improvements. The District negotiated a collective bargaining agreement with modest compensation improvements in May 2019, thus narrowing the gap between RLECWD and the median compensation in the region. Recent Board Member departures were unrelated to one another and unrelated to the changes in staffing. Three Board Members departed in the spring of 2019. Two of the three moved out of the service area for reasons entirely unrelated to governance of the RLECWD.

Remaining challenges include addressing the regions highest fixed charge percentage (92%) and a rate structure that is incompatible with new state laws compelling efficient water use and restricting water losses. The District engaged a rates consultant this year to revise the rate structure and ensure the cost of service is aligned with rates moving forward. While most of the Board is fully supportive of efforts to achieve collaborative benefits, others mistrust the motives of the larger entities in the region and worry about the sovereignty of RLECWD.

Service Highlights

An example of the progress being made at RLECWD can be seen in their approach to capital planning where historically a fixed dollar amount for capital, not directly related to system needs, would get approved each year. Their asset management efforts are now increasingly professional. They seek to replace 1,000 feet of pipe per year to get closer to desired renewal rates. They would like to move to depreciation level investment, where they invest as much in new capital every year as they lose through depreciation.

Recent investments were made in a Customer Information System (CIS)/billing software, but they are open to discussions of outsourcing billing, nonetheless. RLECWD is required to do a lot of backflow testing due to a groundwater plume at McClellan Field and associated requirements for properties in that area. They are not involved in the regional meter study, because State mandates required them to upgrade to Neptune AMI meters; all the pump stations have a receiver antenna. This has shifted costs from meter reading labor to software and equipment maintenance contracts.

Attention to recent improvement efforts and perhaps a desire for autonomy has minimized the District's ability to get involved with many external collaboration activities.

Current or past collaborative efforts noted are listed below:

- Member of the Sacramento Groundwater Authority (SGA) where they have been involved in the development of the Groundwater Management Plans, Basin Management Reports, and the Integrated Regional Water Management Plan together with RWA[2]
- RLECWD is a member of RWA, a joint utility organization[3]
- National Joint Powers Purchase Contracts for things like iPads
- Outreach on strategic planning and community partnerships with school district and metro fire
- SAWWA Monthly Training Luncheon[4]

Sacramento Suburban Water District

Context and Culture

SSWD is a large utility that was formed in February 2002, due to the consolidation of the former Arcade Water District and Northridge Water District, who were formed in 1954 and 1956, respectively. SSWD continues to make investments in several areas including infrastructure replacement and a conjunctive use program. SSWD is the largest participating agency that is reliant on groundwater. In addition, the District has contractual surface water rights to 26,064 acre-feet per year of surface water from the City of Sacramento water entitlement; and a contract to purchase up to 29,000 acre-feet of surface water per year from PCWA, with a 12,000 acre-feet take or pay caveat in the agreement. SSWDs conjunctive use program has resulted in approximately 230,000 acre-feet of banked groundwater.

Since 2005, SSWD has replaced approximately 100 miles of its distribution system at a cost of approximately $110 million. SSWD is approximately 95% metered; however, is on schedule to be 100% metered by the state deadline of 2025.

Service Highlights

While SSWD's staff of 70 largely meets the agency's needs and has little excess capacity, there are select areas where SSWD may be able to offer services to other agencies, as well as areas where SSWD is interested in exploring opportunities for new shared FTEs. SSWDs Computerized Maintenance Management System (CMMS) is CityWorks. In 2007 SSWD chose to fully implement the CMMS system by placing a computer in each District vehicle.

Prior to this Study, SSWD engaged in an effort with SJWD looking at consolidation, which was largely motivated by opportunities to reduce operational redundancies and the potential for enhanced reliability that would be offered by having access to surface water during certain periods, SSWD recognizes that several of the participating agencies prefer to look at collaboration rather than consolidation, and agree that there are many opportunities to achieve savings or service level improvements as a region through collaboration.

Current or past collaborative efforts noted are listed below:

- SSWD is an active member of RWA, where it is involved in regulatory and legislative affairs, grant preparation, and other regional services.
- SSWDs Antelope Reservoir facility has a large building that is utilized for regional/state water related meetings/training (e.g., ACWA, SAWWA, AWWA, JPIA) at no cost.

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[2]This was noted specifically by RLECWD but applies to most if not all participating water agencies.

[3] Same as 3 above.

[4] Same as 3 and 4 above.

- SSWD utilizes JPIA for insurance, training, and legal support.
- The utility participates in the regional Meter Consortium Project (in process).
- SSWD has participated in joint legal services with other agencies.
- SSWD was involved with RWA's joint chlorine purchasing program, but it reportedly didn't work for SSWD due to the large number of well sites.
- Though few agencies have as many well sites as SSWD, they do share practices with Cal-Am and Sacramento County.
- SSWD has provided emergency distribution inventory to a few regional agencies.
- The District uses a master services agreement (MSA) vehicle for capital projects that is currently held by Veerkamp, Flowline and Domenichelli (contractor) that may allow others to participate. It has worked well for the District. The MSA is a three- to five-year contract and this is the third MSA and has been used for over 15 years.
- SSWD and County of Sacramento developed a Paving Partnership for SSWDs main replacement program.
- SSWD participated in regional water transfers in 2018 and 2020.
- SSWD is involved in mutual aid agreements with CWD, RLECWD, SJWD/Wholesale Agencies, and DPMWD. Mutual aid recently turned into an operations agreement with DPMWD.
- SSWD has 52 interconnections with CWD, DPMWD, RLECWD, CHWD, City of Sacramento, City of Roseville, County of Sacramento, Cal-Am Water Company, and Golden State Water Company.
- Cal-Am is wheeling surface water from PCWA through SSWD.
- Conducted a Phase 1 & 2A Study on Consolidation with SJWD.
- SSWD working with SJWD for delivery of water during the Hinkle reservoir replacement design project.
- SSWD and SJWD collaborated to design and construct the Antelope Pump-Back Facility during the drought.
- SSWD and CWD are working to engage in a water supply sharing agreement, up to including CWD partial funding of a new groundwater well.
- SSWD and SJWD recently completed a water supply sharing agreement to transfer approximately 4,000 af of SJWD's surface water supply to SSWD.

San Juan Water District

Context and Culture

As a retail and wholesale entity with excess water capacity during most periods SJWD brings a lot of resources to the region as well as a unique perspective to this Study. SJWD is by some measures the largest water agency participating in the Study. In some years, SJWD supply and/or treatment capacity is utilized by SSWD in addition to meeting the needs of the District's own retail and wholesale customers. SJWD has 33,000 acre-feet of combined pre-1914 and post-1914 water rights, a Central Valley Project Repayment Contract for 24,200 acre-feet, and an entitlement to Placer County Water Agency Middle-Fork Project water of up to 25,000 acre-feet. Taken together, in all but the most critically dry years, the District has the ability to transfer water up to the level of its historic use, which is well above current use. The District's water treatment plant (WTP) has a permitted maximum treatment capacity of 150 MGD, which is currently significantly greater than the capacity needed to meet the District's needs.

Over the last 10 years SJWD has invested significantly in its water treatment plant where work has included investments in rehabilitation of sedimentation and filter basins, and pipeline improvement projects. The last major hurdle of this capital cycle is the Hinkle Reservoir cover and liner replacement project; following this work plans call only for smaller projects in the subsequent years.

California's changing hydrology, and the need to enhance partnerships to optimize the use of surface and groundwater supplies contributed to purpose of the Phase 1 and Phase 2 consolidation studies that preceded this work on collaboration. Because of the infrastructure and operational connections among the participating agencies, SJWD recognizes that taking a broader approach to collaboration and potential integration could provide even greater benefits.

Service Highlights

Storage capacity of treated water is one concern at SJWD. It currently has just 66 million gallons of storage (of which only 42 million gallons of which is available before operational issues occur at SJWD pump stations), meaning that on peak summer demand days (which historically reached 90 MGD), if the WTP failed to produce water, SJWD would not have enough water to get through the day.

Another operational consideration is coordination of WTP production and system pressures with wholesale customer systems. As Wholesale demands vary throughout the day, storage in Hinkle Reservoir, which acts as a buffer between the WTP and the Wholesale system, fluctuates based on the demand and the WTP production. The WTP varies its production to maintain this buffer volume within the reservoir. Magnetic meters were installed in 2010 to measure flows to wholesale customers. These meters are located at the connection between the wholesale transmission mains and the wholesale agencies' retail service areas and are monitored through Supervisory Control and Data Acquisition (SCADA) system. The metering points allow for two-way flow measurement. There is no visibility of storage, groundwater well production, or retail customer demands in the wholesale agencies retail systems beyond the wholesale meters. Connectivity within the wholesale entities may allow enhanced WTP efficiencies and better system management

SJWD jointly sponsored the meter consortium with CHWD because SJWD is facing the need to replace its aging meter fleet, and sought a collaborative approach with similarly-situated neighbors. SJWD has been deploying Automated Meter Reading (AMR) technology, but is considering the possibility of installing an Advanced Meter Infrastructure (AMI) system. SJWD believes that the meter consortium is an example of the kind of success that can be furthered and used as a model through this Study.

Current or past collaborative efforts noted are listed below:

- Parts are shared between systems; for example, sometimes an odd-size coupling is needed to fix a main break and they will borrow from another utility.
- SJWD operates a regional water treatment and transmission system that serves many of the participating agencies, which includes a major transmission main that was jointly funded and constructed.
- SJWD is an active member of RWA.
- The Mag. meter project is a joint effort with the WCAs and SSWD.
- The Hinkle reservoir cover and liner replacement project will entail integrated operations during the project with many of the participating agencies.
- Safety and regulatory plans have been shared, for example, Covid-19 plan was shared with SSWD.
- SJWD participates in various regional and statewide mutual aid agreements.
- Drought project included flow control stations where there were some shared costs historically.
- SJWD participated in the region's evaluation of the chemical purchasing consortium (now led by DSRSD in the East Bay),but ultimately SJWD secured better pricing separately.
- Mainly contract lab water quality testing and have developed plans and protocols. Their plan was shared with other agencies – they may notice a bac-t spike first because they have SCADA that others don't.
- Nine agencies in the region, including SJWD and other participating agencies, have been collaborating on responses to initiatives and proposed regulations, such as the Bay-Delta Water Quality Control Plan and associated Voluntary Agreement, the Bay Delta Conservation Plan, WaterFix, etc.
- SJWD has participated in regional messaging on water conservation, given that the Sacramento region is typically perceived as one media market.
- SJWD prepares and distributes the Consumer Confidence Report (CCR) for all of its WCAs, which includes groundwater information from the two agencies that have active wells.
- Operations teams collaborate on issues that develop in the wholesale system such as operational challenges, new regulatory requirements, maintenance improvements, and lessons learned.

Preliminary Opportunities

During interviews and through document review, Raftelis reviewed existing collaborations; utility strengths and areas of need, and preliminary ideas on potential future collaborations or initiatives with the potential for expansion. We present these areas of opportunity collectively here for further discussion to stimulate thinking as we grow the list of opportunities, and ultimately prioritize them with the participating agencies as the Study progresses.

Joint Contracting

- Analysis to identify contractors that work for multiple agencies, in anticipation of joint contracting and/or group price discounting
- Joint "piggyback" contracting or joint purchase agreements with multi-year regional terms to achieve savings
    - Paving
    - Tank inspections/painting
    - Well/pump rehabilitation
    - Generator maintenance
    - Cross-connection control program elements
    - Leak detection (possibly using LiDAR once State Water Board releases new standards)
    - Hydraulic modeling
    - Infrastructure or well investments – design engineering
    - Billing mail and print services
    - Meter reading
    - CityWorks Computerized Maintenance Management System (CMMS), CIS/billing or other joint software licensing
    - Joint engineering designs if feasible
    - Lab services / water quality testing
    - Public information contracting (Watergrams, website material)
    - Design consultant

Joint purchasing

- Inventory analysis to identify joint purchasing opportunities to expand success on chemicals, vehicles, and hopefully meters (note that meters are not listed below as an initiative to collaborate on since meter purchases are already underway and therefore the participating agencies have indicated that meters are not a high priority for assessment as part of this Study).
    - Pipes (ductile iron, PVC, or other) using master services agreements
    - Generators
    - Water mains and appurtenances
    - Water loss analyses, or water audits, using billing data based on data optimization and uniform best practice approaches and benchmarking

- Infrastructure or well investments – materials, supplies
- Laptops and technology
- Vehicles
- Chemical cost comparison between Bay Area Consortium and SJWD deal

Resources and staffing

- Identify and attempt to resolve any barriers to joint staffing due to union restrictions or differences in State PERS participation
- Joint staffing or shared contracting (outsource)
  - Engineering, modeling, and design staff
  - Human resources staff
  - Conservation staff
  - Part-time regional water conservation staff once guidelines are clearer from State
  - Preventative maintenance program staff
  - Master gardener for residential vegetation management throughout region
  - Shared leak detection
  - Comprehensive operations agreements and select (functional) operations agreements
  - Billing and customer service
  - Meter installation/testing/replacement/reading
  - Joint technical specifications for vehicle or equipment bids
  - Water audits conducted by staff experts as opposed to through a joint contract
  - Joint SCADA resource for preliminary diagnosis and PLC maintenance
  - Regional training coordinator resource
  - Water operations staff
  - Sharing safety risk officer
  - GIS staff sharing
  - Customer service staff sharing
  - Sharing accounting staff
  - Purchasing coordinator – regionally or with State to document needs and timing and put together joint orders.
- Equipment sharing (e.g. meter test bench, specialized vehicles and attachments etc.)
- Joint warehousing or shared inventory
- Facilities sharing for training, for example
- Asbestos Cement Pipe (ACP) Safety and Disposal Training
- Conflict of Interest and Ethics Training for Board/Council Members and Select Staff

Regional water supplies

- Advancing Sacramento Groundwater Authority (SGA) groundwater bank and conjunctive uses
- Mutual aid agreements
- Intertie agreements
- Expand inclusiveness of regional water transfer through the State Water Quality Control Board

- Groundwater substitution transfers

Training and Standard Operating Procedures (SOPs)

- Sharing training materials, opportunities, and best practices
- Common materials and specifications
- Standardization on training and best practices particularly for technology (meters, SCADA instrumentation, Lucity, GIS, tablets, CityWorks, Cogsdale, Next Door/Facebook/social media engagement etc.)
- Leadership development training
- Safety training
- Engineering drafting training
- Formally sharing and comparing policies and standard operating procedures (SOPs) using studies and questionnaires to identify best practices (areas of interest include staying current on regulatory impacts on SOPs, construction specifications, fire sprinklers, and plumbing codes, hydrant types / sizes, butterfly joints, internal controls vs government standards)
- Share lessons learned from meter study with those not purchasing at this time

Other Opportunities

- Expand information transparency and sharing
    - Clearinghouse website for sharing information
    - Joint calendar
    - SCADA information transparency
    - Formalize regional utility project timing coordination spearheaded by PG&E
    - Providing water use estimates to each other or other financial forecasts
    - Actively sharing planned fee schedules
    - Sharing and benefit salary data
    - Hold regular water operations meetings, particularly within wholesale systems
    - Sharing job descriptions
    - Share more information on well pumping levels within SJWD WCA systems to optimize management of Folsom Reservoir and SJWD water treatment plant (WTP), pressure etc.
- Increasing regional meter operations or networks
- Expand the meter consortium beyond materials purchasing focus
- Joint bond issuances
- Complete RWA cost benefit analysis and expand capacity and capabilities if it could be cost/savings justified
- Clarify role of RWA in advancing all of the above[5]
- Legislative footprint
    - Local, State, and Federal

[5]Likely some of the collaborative efforts identified in this Study would best apply to an even larger set of agencies through RWA or other venues/agreements.

Collaboration Vehicles

Several entities already exist as facilitators of select elements of cooperation and collaboration in the region. Each entity serves a specific role in supporting the local water agencies. RWA is the largest, most active, and most relevant forum for the kinds of collaborative initiatives being discussed as part of this Study, though the SGA and others are certainly important players depending on the initiatives that are ultimately prioritized and pursued. As the Study advances it will be important to determine if, for example, the RWA should play a role, in the details of implementation and execution of identified collaborative initiatives.

Below is an inventory of the most notable entities that are facilitating collaboration:

Regional Water Authority (RWA)

- Mission/Objectives: To serve and represent regional water supply interests and assist RWA members with protecting and enhancing the reliability, availability, affordability and quality of water resources.
- Apparent Focus: Water Utility Collaboration and Advocacy

Sacramento Groundwater Authority (SGA)

- Mission/Objectives: To manage, protect and sustain the groundwater resources of the basin in Sacramento County north of the American River consistent with the Water Forum Agreement for the benefit of the water users within the basin, and to coordinate with other water management entities and activities throughout the region.
- Apparent Focus: Groundwater Management and Coordination

Sacramento Area Water Works Association (SAWWA)

- Mission/Objectives: To advance and implement improvements in knowledge, design, construction, operation, and management of water utilities; To consider and solve problems in the production and distribution of safe, adequate water supplies; To promote the dissemination of water utility information in order to improve the understanding of the complexities of the industry; and to offer to members of the Association, their organizations, and to other appropriate persons or organizations the individual or collective water utility expertise that is available from members of the Association.
- Apparent Focus: Water Utility Operator Training

Sacramento Water Forum (SWF)

- Mission/Objectives: To provide a reliable and safe water supply for the Sacramento region's long-term growth and economic health; and to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River.
- Apparent Focus: American River Stewardship

Regional Water Supply Collaboration Opportunities

The purposes of this section are to describe the fundamental water supplies available among the participating agencies and offer conceptual-level collaboration opportunities. Each participating agency has both active and dormant water assets that may support the collaboration effort. Water asset collaboration could help the agencies:

1. Protect surface water assets for current and future uses against claims of unreasonable use, forfeiture, and abandonment;
2. Maximize opportunities to utilize dormant surface water assets;
3. Improve dry year reliability of available water assets and protect against catastrophic supply outages;
4. Create consistent revenue generation opportunities;
5. Improve efficiencies in diversion, treatment, and conveyance facilities; and
6. Synthesize system operations to maximize opportunities to preserve water assets and reduce system costs.

It is important to note that the regional agencies have undertaken several studies that conceptually address baseline reliability issues. For example, the recently completed Regional Water Reliability Plan (RWRP) states that: "The RWRP is limited in scope to high-level identification of vulnerabilities, possible mitigation actions, regional conjunctive use potential, and interest in establishing a regional water bank – all as they may relate to increasing regional water supply reliability."[6] The RWRP lists 17 recommendations, including the establishment of a water bank and engaging with stakeholders and partners, as well as 106 structural and non-structural actions that would mitigate regional water supply reliability concerns. Importantly, the items considered in this water supply collaboration analysis address actions that go beyond improving regional reliability by addressing water asset preservation, financial benefits linked to coordinated water management and distribution, and water management flexibility among participating agencies. Considering the collaborative agencies' water assets valuation approaches $1 billion, without incorporating the economic activity spawned by reliable water supplies nor the value of the infrastructure used to divert, treat, and deliver these supplies, preserving and protecting water assets is critically important. Regional collaboration could provide an opportunity to protect the agencies' water assets and leverage their economic value.

[6] RWRP at 1-9, May 2019

Collaboration Agencies' Water Assets

The participating agencies have a diverse portfolio of water assets. These water assets consist of surface water rights, groundwater rights, and water entitlements that have independent limitations and opportunities. Each collaborating agency's water asset portfolio is unique and each collaborating agency's system operations are unique in the context of the water assets available to it. Table 1 depicts a simplified spreadsheet of water assets that highlights the key attributes of each collaborating agency's water assets.

As noted in numerous studies, the discordant characteristics of the regional water assets and the complicated regulatory processes related to the water assets, disincentivize the agencies from sharing stranded water assets that could otherwise be made available for use. Accordingly, the fundamental issues facing the collaborating agencies related to their water assets are as follows:

- SJWD and CWD have surplus surface water assets that are at risk of loss if those water rights cannot be put to beneficial use.
- There are limitations on the agencies' water entitlements – like diversion restrictions, place of use restrictions, and dry year restrictions – that diminish these assets' utility absent collaborative management.
- The collaborating agencies' conserved water may have restricted redistribution potential based upon initial consultations with the regulatory agencies.
- Water quality issues related to groundwater contamination, groundwater mineralization, and fluoride application constrain inter-agency water asset distribution.
- The variations in water costs from differing sources render some water collaboration opportunities less desirable for collaborating agencies.

Taken together, these issues inhibit optimizing uses for the agencies' substantial surface water and groundwater assets.

Table 1: Participating Agencies Water Assets

Agency	Water Right	Contract/ Entitlement	Conveyance Agreement	Priority	Diversion Rate and # of wells	Diversion Period	Dry Year	Critical Year	Theoretical Max (AFY)
San Juan Water District	Pre-'14 S000656	Settlement Contract		1853	60 cfs	annual	33,000	33,000	26,400
	Appropriative L006324			02/11/28	15 cfs				6,600
	CVP Water Rights	Repayment Contract 2019				annual	M&I Shortage Policy	Health and Safety	24,200
	PCWA Permits 13856 and 13858	San Juan/PCWA Contract	Warren Act Contract EXP 2/2021	1963		annual	Subject to contract shortage policy	Subject to contract shortage policy	25,000
Citrus Heights Water District	SJWD CVP Settlement	SJWD Wholesale Service Agreement		1853		annual	Equitable manner and water shortage management plan	Equitable manner and water shortage management plan	Total Demand
	Groundwater				6 wells				8,500 estimated from UWMP
Fair Oaks Water District	SJWD water supplies	SJWD Wholesale Service Agreement		1853		annual	Equitable manner and water shortage management plan	Equitable manner and water shortage management plan	Total Demand
	Groundwater				6 wells				12,743 design capacity UWMP
Orange Vale Water Company	SJWD water supplies	SJWD Wholesale Service Agreement		1853		annual	Equitable manner and water shortage management plan	Equitable manner and water shortage management plan	Total Demand
	Groundwater				3 to 5 wells				At least 1,600 from photo of old map
Del Paso Manor Water District	Permits 11358, 11359, 11360, 11361 and D893	City of Sacramento Contract	City of Sacramento Contract	1958		annual	0 in months when plant can't operate		2,460
	Groundwater				8 wells				~6,600 based on 2009 master plan
Carmichael Water District	License 001387			09/18/15	15 cfs	annual	9,050	9,050	10,859
	License 008731			08/22/25	10 cfs	5/1-11/1	1,048	0	3,669
	Permit 007365			04/22/49	25 cfs	annual	15,000	0	18,099
	Aerojet Dry Year								2,200
	Groundwater				5 active wells and 3 inactive wells				~13,000 max 6,000 safe
Sacramento Suburban Water District	Permits 11358, 11359, 11360, 11361 and D893	City of Sacramento Contract	City of Sacramento Contract	1958		annual	0	0	26,064
	PCWA Permits 13856 and 13858	PCWA Contract	Warren Act Contract SJWD CTP Contract	1963		annual	0		29,000
	Groundwater				72 wells				~180,000 max 35,000 safe
City of Folsom	Pre-1914 Appropriative	Settlement Contract	Folsom Reservoir and Folsom South Canal	1851	60 cfs	annual	22,000	22,000	22,000
	Pre-1914 Appropriative	Lease of GSWC portion of right	Folsom Reservoir and Folsom South Canal	1851	60 cfs	annual	5,000	5,000	5,000
	CVP Water Rights	Folsom CVP WIIN Act Repayment Contract 6-07-20-W1372B-P	Folsom Reservoir			annual	5,250	Public Health and Safety under the CVP M&I Shortage Policy	7,000
	Ashland Area Contract	SJWD Wholesale Service Agreement	Folsom Reservoir				Equitable manner and water shortage management plan	Equitable manner and water shortage management plan	No limit
Rio Linda Elverta Community Water District					12 wells				Per well between 350 gpm and 2100 gpm

San Juan Water District

SJWD's water assets include a pre-1914 water right, a licensed appropriative water right, a Central Valley Project Repayment Contract, and a water contract with PCWA. In total, SJWD's water assets include 33,000 acre-feet of water rights water and almost 50,000 acre-feet of contract water supplies. These surface water assets are used by SJWD and also made available to CHWD, FOWD, and OVWC through the SJWD's Wholesale Service Agreements. In addition to these water assets, SJWD has access to additional water that may be made available in the Central Valley Project (CVP) system called "215 Water". This CVP water is surplus Project Supply that is made available to CVP contractors when the system is in extreme surplus conditions.

SJWD's water assets have varying degrees of reliability. The water rights water is available in all year types subject to curtailment by the State Water Resources Control Board. SJWD's CVP Repayment Contracts, however, is less reliable because the volume of water available under the contract entitlement during shortage conditions is directly tied with historical use. As such, the availability of the CVP Project Supply in dry conditions requires that it be regularly used in normal and wet conditions otherwise the supply is unavailable in dry conditions. And SJWD's PCWA contract also has dry year limitations that could include temporary termination of use in Sacramento County, and a pro-rated allocation for supplies used in Placer County. In short, SJWD's preservation of its water assets and determinations of water supply in dry conditions, require that SJWD, its WCAs, and other regional agencies use SJWD's water assets. The collaboration effort is working to identify opportunities to put SJWD's surface water assets to beneficial use in all year types.

SJWD operates the diversion and treatment facilities for its water assets. SJWD diverts water from Folsom Reservoir through a shared intake facility and delivers the diverted raw water to the Sydney N. Peterson Water Treatment Plant (Peterson WTP). The Peterson WTP has a maximum capacity of about 150 million gallons per day (150 MGD) , with sustainable maximum production of 120 MGD. SJWD is working with other agencies in the region to utilize the full capacity of the treatment plant to deliver water into Sacramento and Placer counties.

Water treated at Peterson WTP may be widely distributed into the collaborative agencies' service areas. The priority is to deliver water to SJWD retail customers and the WCAs – FOWD, CHWD, the City, and OVWC. After this priority is met, SJWD may deliver surface water to SSWD and CWD through existing conveyance facilities. SSWD could receive water through the Cooperative Transmission Pipeline (CTP)[7], and interties with CHWD, and CWD could receive water through its interties with FOWD, CHWD, and potentially its interties with SSWD. CWD recently discovered that a portion of its service area lies within the original place of use of SJWD's North Fork Ditch Company pre-1914 appropriative water right making delivery of this supply less onerous.[8] Nevertheless, the opportunities to deliver SJWD surface supplies to a larger area, that includes additional collaborating agencies' service areas, could occur with existing infrastructure and minimal regulatory interference.

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[7] RLECWD is at the west end of the CTP/ATP

[8] Water can also be delivered from SJWD to Rio Linda and Del Paso Manor, via interties with SSWD.

Carmichael Water District

CWD has three surface water rights, a water entitlement, and groundwater available to meet demands within its boundaries. In a normal year, CWD's water asset portfolio far exceeds its annual water demands – with approximately 30,000 acre-feet of available surface water supplies alone. But CWD's surface water assets have varying degrees of reliability based upon the constraints in its asset portfolio and the severity of the dry period. For the first time in its 100-year history, CWD's 1915 water right license was curtailed during the extreme drought in 2014 and 2015. And although CWD mitigated the reliability issue by acquiring alternative water supplies, the recognition of this vulnerability – including the future potential of increased curtailments of its surface water supplies – became real. As such, CWD is investigating opportunities to improve its dry year reliability through acquiring new supplies, drilling new wells, and exchanging water assets.

CWD needs to use its surface water supplies or it risks losing them. Putting CWD's significant volumes of water to beneficial use requires innovative thinking and coordination with neighboring agencies. In 2019, CWD and SSWD initiated a temporary conserved water transfer action in an effort to not only provide surface water to SSWD so that SSWD could bank groundwater, but also to preserve CWD's water assets for future uses. This temporary water action is ongoing and demonstrates the rationale for collaborative activities that CWD must undertake in order to preserve its surface water assets for future uses.

CWD's groundwater assets are also significant. CWD has five wells with a potential pumping capacity of approximately 13,000 AFY – although the safe yield maximum pumping capacity is closer to 6,000 AFY. Moreover, CWD has banked upwards of 17,000 acre-feet of groundwater under the regional Water Accounting Framework. CWD's groundwater pumping capacity limitations coupled with its system pressure issues and water quality concerns, reduce CWD's ability to rely upon its current groundwater assets in dry conditions. As such, CWD's water supply situation is essentially "feast or famine." In nearly all years, CWD has ample water supplies to meet its needs – so much so that it leaves huge volumes of water as stranded assets. But in critically dry conditions, CWD's system limitations and its lack of surface water storage, make its supplies less reliable to meet its demands. The collaboration will help CWD address its reliability limitation in critically dry years and provide opportunities for CWD to deliver water assets to its collaboration partners.

CWD's infrastructure is also an asset that may be valuable in this collaboration effort. CWD operates the Bajamont Water Treatment Plant (Bajamont WTP) with a maximum capacity of 25 MGD. CWD uses a portion of the capacity in Bajamont WTP to treat and deliver surface water supplies to its customers. CWD recently entered into an agreement with Golden State Water Company to divert, treat, and deliver 5,000 AFY of Aerojet GET water (4.5 MGD) through the Bajamont WTP. CWD has some additional capacity at Bajamont WTP to divert and treat surface water assets that could be derived from alternative water sources. For instance, if SJWD were to consider delivering pre-1914 water supplies to CWD or SSWD, CWD could potentially divert and treat those supplies at the Bajamont WTP for delivery within CWD's service area or through CWD's interties with SSWD, FOWD, or CHWD. This type of collaborative opportunity will be further explored in this effort.

CWD also possesses a dormant water diversion facility on the American River – the Ranney 4 Collector (Ranney 4). Ranney 4 stands in the American River near Ancil Hoffman Park and could be activated, with some necessary alterations, to divert and deliver water from the American River into CWD's service area. All CWD's water rights and entitlements may be diverted at this facility. CWD is investigating the opportunities to rehabilitate this facility, potentially augment its water treatment capacity, and connect Ranney 4 into CWD's distribution system.

Citrus Heights Water District

CHWD's water assets consist of a contract entitlement with SJWD to receive treated surface water and groundwater supplies derived from its current six wells. CHWD is planning for four more wells and is considering Aquifer Storage and Recovery (ASR). CHWD's contract entitlement with SJWD enables CHWD to access any of SJWD's surface water supplies. As such, CHWD provides a needed water demand for SJWD's surface water supplies so that SJWD may demonstrate beneficial use of those supplies and improve its dry year supply reliability by using supplies that would otherwise be dormant. CHWD's dry year reliability is tied to SJWD's water supply reliability in that CHWD has a reduced surface water allocation under the wholesale contract under certain conditions. CHWD's demand is predicted to remain at its current level or perhaps decline slightly into the future and the ability to access and collaborate on the use of CHWD's and SJWD's water assets may provide mutually beneficial opportunities for both agencies.

An ongoing issue between the wholesale customer agencies and SJWD is the increasing cost to acquire SJWD surface water. Accordingly, the need for CHWD to use SJWD water in order to preserve those water assets is juxtaposed against a CHWD's use of its groundwater assets. The collaboration effort may provide some guidance to help address the relevant conditions that create this tension.

CHWD also pumps groundwater to serve to its customers. The wells are typically operated on a one well per week rotational basis during normal maintenance / readiness-to-serve protocols. The total yield from the current well system could be upwards of 13,000 acre-feet annually (although insufficient for Max. Day) which could serve CHWD's projected future demand while allowing CHWD to weather critically dry conditions with the wholesale contract limitations

Fair Oaks Water District

FOWD is not a participating agency in the collaboration process but its water assets and uses may be an important aspect of the collaborative findings in this Study. FOWD is like CHWD in its access to SJWD surface water through a Wholesale Agreement and its ability to provide groundwater to meet its needs. FOWD helps SJWD demonstrate beneficial use and improve its dry year reliability by using SJWD surface water assets. FOWD contests SJWD's water costs and seeks to reduce costs by using more groundwater in lieu of surface water. FOWD's 2015 UWMP notes that it has six wells with a capacity of up to 12,500 acre-feet of groundwater pumping – enough to meet its entire future demands. There are outstanding questions about the viability of meeting all FOWD demands with groundwater. The collaboration effort will incorporate FOWD's current activities in an effort to identify opportunities to create additional regional benefits.

Orange Vale Water Company

Like FOWD, OVWC is not a participating agency in the collaboration process. However, OVWC's water assets and uses may be an important aspect of the collaborative findings. OVWC is a retail agency, like CHWD and FOWD, that derives nearly all its annual water supplies from SJWD's surface water assets. And although OVWC has access to groundwater, its wells are dormant, and it relies upon SJWD wholesale water deliveries to serve its demands. OVWC's access to groundwater, however, may provide an opportunity to help distribute limited dry year surface water supplies in order to increase long-term regional reliability. The collaboration effort will incorporate OVWC's current activities in an effort to identify opportunities to create additional regional benefits in this collaboration Study.

City of Folsom

The City of Folsom (Folsom) has its own water asset portfolio that consists of a pre-1914 appropriative water right for 22,000 acre-feet of surface water, a lease for an additional 5,000 acre-feet of water under the same appropriative right, and a CVP Project supply for 7,000 acre-feet of water. Folsom anticipates using approximately 31,000 of its 34,000 AF of surface water supply portfolio and is looking for opportunities to improve its water supply reliability in dry and critically dry water years

<u>Pre-1914 appropriative water right for 22,000 acre-feet per year</u>

The City's 22,000 acre-foot entitlement is based on a pre-1914 appropriative right from the South Fork of the American River established by the Natoma Water Company in 1851. Natoma Water Company's original pre-1914 water right established a maximum diversion rate "to fill a Canal Eight feet wide and Four feet deep with a current running ten miles per hour." This correlates to a diversion rate of 60 cubic feet per section (cfs) and a maximum allocation of 32,000 acre-feet per year. The City acquired its 22,000 acre-foot entitlement under a 1967 co-tenancy agreement with what is now Golden State Water Company (GSWC). The City's 22,000-acre-foot portion of the pre-1914 right is conveyed by the Bureau of Reclamation to the City under Contract No. 14-06-200-5515A. There are no dry-year shortage terms in Contract No. 14-06-200-5515A.

Pre-1914 appropriative water right for 5,000 acre-feet per year

The City's 5,000 acre-foot entitlement is also based on Natoma Water Company's pre-1914 appropriative water right from the South Fork of the American River. In November 1994, the City executed a contract with Southern California Water Company-Folsom Division (SCWC) – which is now Golden State – under which the City acquired the right to use 5,000 acre-feet of water per year of the 10,000 acre-feet per year that SCWC had retained under the 1967 co-tenancy agreement. The City's 5,000 acre-feet entitlement is conveyed by the Bureau of Reclamation to the City under Contract No. 14-06-200-4816A. There are no dry-year shortage terms in Contract No. 14-06-200-4816A.

Central Valley Project (CVP) contract entitlement for 7,000 acre-feet per year

On February 28, 2020, the City executed a repayment contract with Reclamation for 7,000 AFA of Central Valley Project (CVP) water supplies. This water is derived solely from American River water rights held by the Bureau of Reclamation for diversion and storage at Folsom Reservoir. Reclamation's CVP water rights are junior to water rights that existed prior to the development of the CVP. In dry years, the water supply is subject to Reclamation's Municipal and Industrial Water Shortage Policy (M&I Shortage Policy). Under this policy, water supplies are reduced from a baseline volume depending upon the inflow and storage conditions

Contract with San Juan Water District

The City has a contract with the San Juan Water District (SJWD) for water use on City lands on the north side of the American River. There are two areas located here: the Ashland Area and the American River Canyon Area. In the Ashland Area, the City controls the water conveyance facilities, but the water provided to those facilities is delivered by San Juan Water District. In the American River Canyon Area, SJWD provides all water services. Water service to these two areas is subject to the San Juan Water District and City of Folsom Wholesale Water Supply Agreement (Agreement) that was signed on September 26, 2007 and the subsequent Amendment dated January 1, 2011. The Agreement covers water service to the Ashland Area as well as the American River Canyon Area.

Under this Agreement, SJWD provides surface water assets to the City to serve the Ashland Area. SJWD agrees to serve the Ashland Area in the City and could reduce allocations to the City in times of water shortage. It would reduce its deliveries to the City in pursuant to SJWD's "Surface Water Supply and Water Shortage Management Plan."[9] At this time, SJWD has significant water assets that are very reliable, and curtailment of the water supplies is unlikely.

[9] Article 6 H San Juan Water District and City of Folsom Wholesale Water Supply Agreement as amended by Amendment 1 to San Juan Water District and City of Folsom Wholesale Water Supply Agreement dated January 1, 2011.

Sacramento Suburban Water District

SSWD uses surface water assets derived from its contract entitlements with regional water agencies and groundwater supplies extracted through its seventy-two wells in its service area. SSWD has access to the City of Sacramento's (City) surface water supplies pursuant to a water supply contract as well as access to PCWA's surface water supplies under a separate water agreement. SSWD regularly takes delivery of both water supplies when the supplies are available. SSWD has recently considered the cost implications of accessing these supplies and has reduced reliance on these supplies when the costs are too high. Importantly, the PCWA supply is less reliable in dry years while the City supplies have become more reliable[10] – where SSWD retains access to the supplies through interties with the City even if "Hodge Flow" restrictions are activated on the American River.

SSWD has an extensive groundwater system with seventy-two wells available to produce groundwater supplies. However, even though SSWD is legally a single urban supplier it is, for all practical purposes, operated as two distinct water systems. Arcade Water District's consolidation with Northridge Water District to form SSWD brought together two agencies that operated with two different perspectives. The reason for SSWD's dual operations is because in the Southern Service Area, water supplies are treated with fluoride whereas in the Northern Service Area – the former Northridge Water District – the water supplies are devoid of fluoride. Because of this difference in water treatment, the water supplies developed in each area may not be easily commingled.

As a participating collaborating agency, SSWD has a significant water demand and the opportunity to use additional surface water supplies from its neighboring water agencies. Although SSWD is contained in the place of use of PCWA's and the City's surface water assets, it may be beyond the place of use of SJWD's and CWD's water assets. Both SJWD and CWD are working on delivering surface water supplies to SSWD in order to expand potential uses of each agency's surplus surface water assets. Importantly, SSWD presents an opportunity to improve groundwater banking opportunities through in lieu recharge that could be useful in furthering the regional groundwater banking objectives[11] identified in the RWRP. The collaborative Study will further explore these opportunities.

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[10]City water cost began at $116 af and is now at $598 af. SSWD has taken surface water when the City has conducted pilots and greatly reduced the cost to $150 af.

[11]SSWD has a very robust conjunctive use program to the extent it has banked approximately 230,000 af of groundwater. SSWD wishes to enhance that program in order to consistently utilize its infrastructure.

Del Paso Manor Water District

DPMWD primarily uses groundwater to serve its customers and it retains access to the City's surface water supplies through an agreement. DPMWD's 2009 Water Master Plan indicates that it has eight wells with a total capacity of about 6,600 acre-feet per year (AFY). DPMWD's access to groundwater supplies far exceeds its demands that approximate 1,500 AFY. DPMWD is working with neighboring agencies, in particular SSWD, to help reduce its overall costs for water delivery to its customers. DPMWD's water assets and opportunities will be further considered in this collaboration effort.

Rio Linda Elverta Community Water District

RLECWD primarily uses groundwater to serve its customers and has interconnections with Sacramento Suburban Water District that may allow it to obtain alternative supplies. RLECWD's 2015 Urban Water Management Plan indicates that it has twelve wells. Each well has differentiated capacity ranging from 350 gpm to as high as 2,100 gpm. RLECWD has extracted and used between 2,000 and 3,000 acre-feet per year over the course of the last ten years derived from its well system. The interconnection between SSWD and RLECWD could allow water assets from SSWD's system to move into RLECWD's service area. SSWD has access to both surface water and groundwater supplies from a variety of sources. As such, this assessment will identify potential water supply options that may improve regional water asset preservation and use.

Water Asset Collaboration Summary

The collaborating agencies have significant surface water and groundwater assets that could be better utilized. The dormant surface water supplies as well as supplies protected through active water conservation, could be better leveraged by the collaborating agencies. Specifically, increased surface water use by all of the agencies would (a) protect the region's water assets against future loss; (b) improve dry year reliability of the available supplies; (c) augment groundwater supply conditions; and (d) create opportunities to generate more revenue through water transfers and exchanges both within and beyond the American River watershed. The collaborative Study will further refine the collaborative opportunities available among the participating agencies to address these leveraging objectives.

Conclusion

Each of the participating agencies has a long history of serving their customers and considerable roots in their communities, some going back well into the 1800s. While several have experienced challenges with water rates, staffing, water resources or other issues, each reportedly now has the minimum resources to accomplish their mission, given current water rates and exiting contractual arrangements for services. The agencies do not describe immediate and/or urgent drivers that require forcing collaboration. Collaboration opportunities must therefore be viewed with the goal of reducing costs and improving services over the long term. They must be elective and foster partnerships, rather than create divisions. While all the entities are earnestly looking for opportunities to work together, there is a very strong desire for local control and independence across most of the participating agencies, including the smaller ones that have relatively fewer resources.

Raftelis has identified through interactions with the participating agencies numerous options for collaboration. Several categories of options are listed in this document. They include working together on water resources issues, joint contracting and procurement, and regional advocacy, often through the Regional Water Authority (RWA) and other entities. These partnership organizations may create additional opportunities. These will be studied more in the subsequent phases of the Study.

None of the collaboration options identified jeopardize the sovereignty of any agency, and if executed properly, should help increase efficiency, service levels and/or drive down costs. However, some compromises will likely be required to pursue them. Note that these collaboration opportunities do not limit future consolidation efforts. Instead, pursuing some of these collaboration opportunities will further enable for agencies to work together more easily, making any future discussions of more comprehensive collaboration easier.

APPENDIX A:

Request for Information

MEMO

To: Sacramento Region Water Utility Collaboration/Integration Study
From: Seth Garrison
Date: April 29, 2020
Re: Preliminary Request for Information

For this study there are several areas of focus where Raftelis seeks information to support this project's assessment work. This information is being requested of the utilities participating in the Regional Water Utility Collaboration/Integration Study. To support our initial screening and assessment work, we seek information pertaining to:

Area 1. Budgets: Financial Data
   a. Current budget
   b. Budget structure and allocation of costs

Area 2. Organization and Staffing: (Organizational/Management/Staffing)
   a. Number of staff
   b. Organizational structure
   c. Roles and responsibilities

Area 3. Services: (Services and Customers)
   a. # Customers/Accounts
   b. Services that are self-provided (operational and support)
   c. Services that are contracted (operational and support)
   d. Services that are centralized or joint contracted across participants
   e. Services that are "wish-list" services

Area 4. System Overview: (System Data)
   a. Overview description of the water system
   b. Number and type of facilities
   c. Buried asset information

As the project evolves, we anticipate needing more detailed information of each of the areas of focus from above including some or all of the information as outlined below.

Financial Data:

1. Comprehensive Annual Financial Reports for the most recent available 3 years.

2. Detail level revenue and expense budgets for the water system for the most recent budget year available. Please provide budget detail by department or water system function (e.g. source of supply, treatment, distribution operation and maintenance, customer service and billing, administration, etc.).
3. Current capital improvement plans (5-year or 10-year plans, if available).
4. Latest financial plan projection or rate studies completed for the water system, if any.
5. Current schedule of water rates.

Organization/Management/Staffing Data:

1. Copies of latest strategic plans in connection with the water system or the municipality in general, if available.
2. Organizational chart showing staffing positions in connection with the water system.
3. List of staff associated with the water system by position title. Where staff responsibilities are split between water system and non-water system functions, please identify the % of staff time dedicated to the water system.
4. Position descriptions for each of the staff positions identified above, if available.
5. Compensation and benefit cost information in connection with each of the staff positions identified above.
6. Copies of latest staffing studies in connection with the water system or the municipality in general, if available.
7. Copies of any written standard operating procedures (SOPs), policies, procedures, and workflow processes associated with the water system, if available.
8. Any benchmarking or measurements data collected by the utility or any data on current levels of service and goals such as the number of water mains.

Services and Customers:

1. Copies of any outsourcing contracts or existing intermunicipal agreements in connection with the water system.
2. Any customer surveys or feedback instruments showing customer preferences, opinion of service levels, etc.

System Data:

1. Summary information and statistics for the water system (e.g. source of supply, average and max day water demands, number of pumping stations, amount of system storage, miles of transmission & distribution piping).
2. Summary water customer information (customer accounts and billed consumption by type of customer, historical and projected customer account and consumption trends).
3. A map of the water system showing major system component locations.
4. Copy of the latest annual operating reports for the water system (last 3-years, if available).
5. Any master planning documents showing planned upgrades, changes, new ventures, etc.

6. A description of the billing/Customer Information System (CIS), key vendors and any outsourcing/partnership arrangements, such as relationships with a bill printing or mailing vendor.
7. Available summary statistics on performance of systems and billing/CIS activities such as levels of unaccounted for water, water quality violations, number of estimated readings, meter read rate, aged billing AR, etc.
8. Breaks per 100 miles of pipe, average duration of an outage, etc.
9. Any prior study reports or associated analysis that touched on collaboration or consolidation opportunities, such as the Phase 1 and Phase 2A reports.

Thank you for your efforts in responding to this request in a timely fashion. Please do not hesitate to reach out to me if you have any questions at 207.303.0138 or sgarrison@raftelis.com.

APPENDIX B:

Organizational Summary

Appendix B: Organizational Summary

	CWD	CHWD	Folsom	DPMWD	FOWD	OVWC	RLECWD	SSWD	SJWD
Structure & Governance:									
Type of Agency	Irrigation District	Irrigation District	Municipal Department	County Water District	Irrigation District	Mutual Water Company	County Water District	County Water District	Community Services District
Governance Entity	Board	Board	City Council	Board	Board	Board	Board	Board	Board
Retail / Wholesale	Retail	Retail	Retail	Retail	Retail	Retail	Retail	Retail	Both
Year Entity Established (as currently incorporated)	1916	1920	1946	1955	1917	1896	1948	2002[12]	1954
Size:									
Employee Full-Time Equivalents (FTE)[13]	27	35	34.75	4	28	4	10	70	48
Connections	11,521	19,944	21,654	1,600-1,797	14,241	5,500	4,628	46,268	10,700
Residential Retail	11,000		19,511	1,500-1,697					
Non-Residential Retail	521		2,143	100					
Wholesale	1 (GSWC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4 (40,075)
Service Pop.	40,000	67,000	70,000	4,967	36,200	15,200	13,400	182,500	154,781
Permitted Treatment Capacity (million gallons per day, MGD)	22 (surface) 9.4 (wells)	11.6 (wells)	50 (surface)	wells	wells		wells	115 (wells)	150 (surface)
Average Day Demand (ADD) (MGD)	12.31 (includes 4.5 that goes back to GSWC)	14.57 (5 year average)	17.1		8.40			27.3	40
Maximum Day Demand (MDD) (MGD)	24.62	23.5	29.1		16.1		8.9	90.4	
Storage Capacity (MG)	6	0	33.2	0	3	0	1.3	15.8	66
Infrastructure:									
Source of Supply	American River (primary) and wells; GSWC provides 4.5 MGD via American River	Folsom Reservoir (SJWD), plus 6 CHWD wells	Folsom Reservoir, SSWD groundwater from the Antelope Pump Station	Wells	Folsom Reservoir (SJWD), Wells	Folsom Reservoir (SJWD), SSWD groundwater from the Antelope Pump Station	Wells	Wells, and purchased surface water contracts	Folsom Reservoir, SSWD groundwater from the Antelope Pump Station
Surface vs Groundwater (%)	75/25 (seasonal May-Sep)	90/10	100/0	0/100	?	100/0	0/100	57/43[14]	100/0
Treatment Type	Plant: membrane filtration, clearwell, and chlorine contact chamber		15 MGD conventional pre-treatment system and Actiflo system with two 20 MGD trains fed by a dry dynaBLEND polymer system.					Fluoridation in South Service Area	Two flocculation-sedimentation basins, and two filter basins
Miles of Pipe	154.25	241	305		183.05		84	698	222
Type of Pipe	Steel (17%), asbestos cement (60%), PVC (10%), and ductile iron (13%)	ACP 63%, PVC 24%, DIP 7%, STEEL 6%	Cast iron and asbestos cement in older areas, PVC, ductile iron, and steel in newer developments				Asbestos cement (majority) and some ductile iron and PVC	Asbestos cement, steel, ductile iron, cement mortar lined, and PVC	Asbestos concrete, steel, ductile iron, and PVC
Financial:									
Revenue (2019)	$12,634,608	$15,340,476	$13,912,610		$9,599,201		$2,590,786.00	$48,078,000	$27,005,500
Operational Expenses (2019)	$7,101,576	$13,666,214	$14,234,824		$9,760,382		$1,803,560.00	$23,241,000	$20,020,600
% Debt Service Coverage Ratio	250%	267%	277%		2981%		205%	366%	188%

[12]Consolidation of Arcade and Northridge Water Districts.
[13]Excludes Board of Directors
[14]This varies depending on availability of surface water.

	CWD	CHWD	Folsom	DPMWD	FOWD	OVWC	RLECWD	SSWD	SJWD
Days Cash on Hand	549	TBD	612				272	653	313
Median Household Income	$60,466	$59,008	$109,762	$58,456	$81,462	$79,532	$62,740 / $71,000	$48,961 - $81,462	$53,933 - $132,034
Rate Structure	Uniform rate structure	Bi-monthly service charge, plus a charge per ccf.	Tiered rate structure (3-tier)	Flat rate for 99% of customers varies by lot size, and a flat service component	Uniform rate structure	Uniform rate structure	Uniform rate structure (with drought rates)	Mix of flat service chart accounts and tiered rate structure for metered accounts	Uniform rate structure
Monthly bill for typical household[15]	$79.51	$71.09	$50.03	$58.25	$47.43	$44.54[16]	$81.27	$91.89[17]	$83.75

[15]Includes 1" meter service or fixed charges. Based on a family of 4 and 143 gallons per capita per day, or about 23.26 ccf per month as per: https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html
[16]Tier 2 rate noted above 15 ccf but not published
[17]SSWD's primary revenue/rate structure, approximately 85% of funds, come from a ¾" metered service, which is $44.40 per month. I believe the primary revenue/rate structure for the majority of other agencies is typically 1".

APPENDIX B:

Activity 2 Final Report

Sacramento Regional Water Utility Collaboration Study

Activity 2 Report

Benchmarking

January 2021 - FINAL

RAFTELIS

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Summary

The Sacramento Regional Water Utility Collaboration Study (Study) is a collaboration among Carmichael Water District (CWD), Citrus Heights Water District (CHWD), the City of Folsom Environmental & Water Resources Department (Folsom), Del Paso Manor Water District (DPMWD), Rio Linda/Elverta Community Water District (RLECWD), Sacramento Suburban Water District (SSWD), and San Juan Water District (SJWD) (together the "participating agencies") to identify opportunities for increased collaboration with the goal of creating additional operational and financial efficiency, and improving service provision to customers.

This document is the second of three project deliverables. It encompasses the activities for Study Activity 2 – Benchmarking. It provides an overview of organizational and opportunity specific data and benchmarks relative to each participating agency, and nationally where available. Raftelis gathered information, including virtual interviews with senior representatives of each participating agency, about the opportunities and how they hope to benefit from each. Data about the opportunities are summarized and compared in this document.

Overall, data analysis shows there is an array of approaches and different levels of services being provided by the participating agencies in the studied services. These different approaches and service levels mean resource requirements for the services vary widely among the participating agencies. This translates into a range of costs and staffing requirements normalized on a per account (customer) basis. For example, some of the agencies allocate very little time toward water conservation and human resources activities, while others have extensive water conservation programs and full-time HR resources. Some follow American Water Works Association (AWWA) best practices in terms of preventative maintenance and leak detection, while others employ their own customized approaches based on their governing board's priorities. There is some alignment between the size of the utility and the level of services provided, but a bigger determinant appears to be what the utility prioritizes and historical practices.

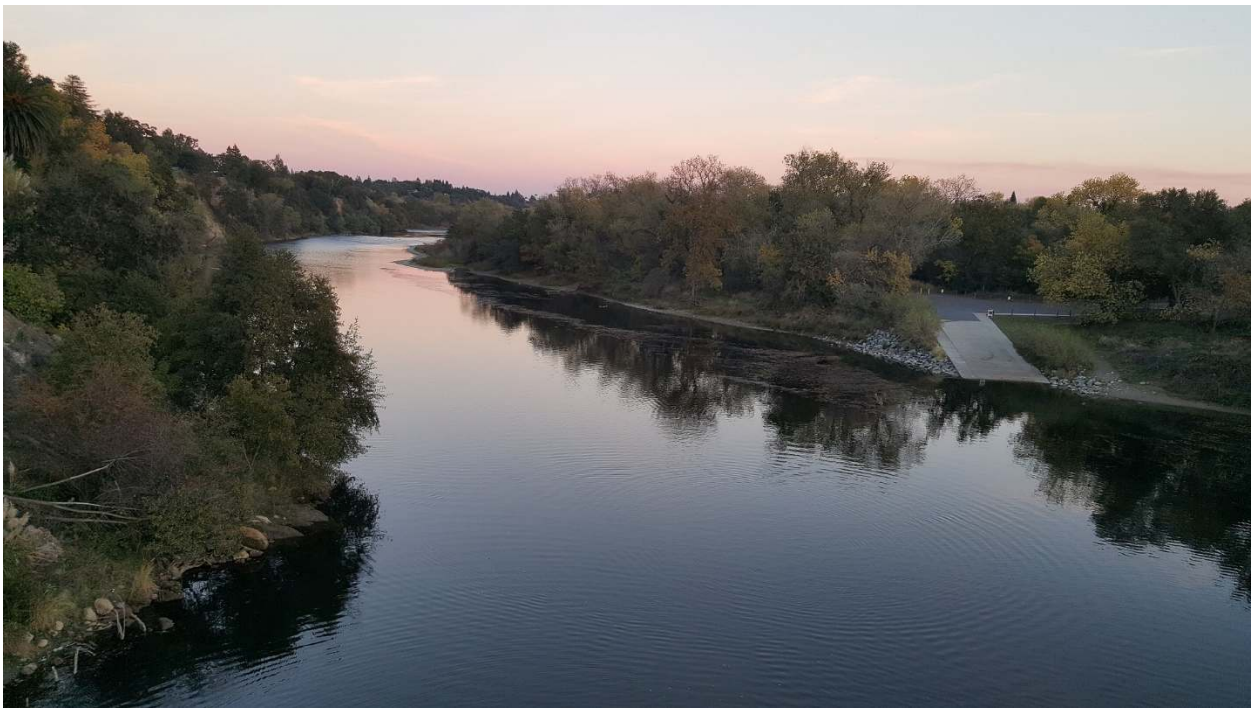
Even with the differing approaches and levels of services being provided by the participating agencies, there are commonalities. These commonalities are opportunities for collaboration. They will be explored in Study Activity 3 – Business Case Evaluations.

Introduction

The Sacramento Regional Water Utility Collaboration Study (Study) is a collaboration among CWD, CHWD, Folsom, DPMWD, RLECWD, SSWD, and SJWD (together the "participating agencies") to identify opportunities for increased collaboration. The goals of this Study are to identify opportunities for additional efficiency and to improve service provision to customers. Increasing costs of living, evolving regulations, and additional competition for scarce water resources across California mean that agencies must work together, more seamlessly and regionally, to provide reliable and affordable services.

This document is the second of three project deliverables and encompasses the activities for Study Activity 2 – Benchmarking. It provides an overview of organizational and opportunity specific data and benchmarks relative to each participating agency, and nationally where available. Raftelis gathered information, including virtual interviews with senior representatives of each participating agency, about the opportunities and how they hope to benefit from each. Data about the opportunities are summarized and compared in this document.

Studying every aspect of each participating agency's operation is infeasible, so Raftelis worked with the participating agencies to focus on a list of common areas that presented viable opportunities for potential collaboration. The group reviewed and narrowed a list of over 80 potential opportunities for further study. The participating agencies prioritized seven of those opportunities for investigation during a workshop on September 24, 2020. Note that while the full list of opportunities may be explored at any time by any collection of agencies, the seven priority opportunities are the focus of Study efforts for Activity 2 – Benchmarking and subsequently Activity 3 – Business Case Evaluations.



Prioritized Opportunities

Prioritization Process

After gathering the initial list of over 80 opportunities through interviews and document reviews during Activity 1, each participating agency was asked to submit their top five priority opportunities for assessment. Raftelis gathered the top five selections to identify overlaps and isolate the full unique set of opportunities. Ultimately, through combinations of directly and partially overlapping opportunity scopes, nine unique priority opportunities were isolated. These nine opportunities were discussed in a workshop with the participating agencies on September 24, 2020. The goal of the workshop was to narrow down the list of opportunities from nine to 5-7 to ensure sufficient effort could be allocated to the evaluation of each opportunity in subsequent Study phases. The result of that workshop was the identification of seven priority areas for further evaluation:

1. Distribution System Preventative Maintenance
2. Human Resources
3. Leak Detection
4. Paving
5. Stand-by / Emergency Operations
6. Water Conservation Programs
7. Water Supply

Description of Opportunities

Distribution System Preventative Maintenance

Distribution system preventative maintenance (PM) is the collection of activities employed to maintain a water system's distribution network with the goal of increasing its longevity, lowering lifecycle operating costs, and providing better service to customers. Activities such as proactive valve exercising, hydrant maintenance, and water main flushing are considered typical distribution system PM activities. Robust programs have dedicated staff employing industry best practices to achieve outcomes measured by metrics and aligned with service level targets. Representatives from some of the participating agencies would like to explore if and how joint efforts could improve PM activities.

Differing resource levels, priorities, and attitudes are the primary drivers of varying distribution system PM activity levels among the participating agencies. Practices often correlate with the number of assets and their location, age, condition, and criticality. Historical practices also strongly influence activities. PM data availability varied by participating agency with Raftelis focusing on flushing, valve exercising, and hydrant activities. Note that capital replacement and repair, as well as customer leak response and other reactive field efforts were not the focus of this review, because they are not considered PM activities.

Human Resources

Human resources (HR) functions were prioritized because many participating agencies noted gaps in their respective HR capacity to cover the full range of activities demanded. Larger agencies with dedicated staff find that their greater headcounts demand one or more dedicated HR positions. Smaller agencies do not have dedicated HR staff, thereby requiring agency general managers or other staff to include this effort in their responsibilities. Given the broad array of activities that HR covers, the participating agencies identified joint HR resources and contract resources to consider.

Leak Detection

Leak detection, whether conducted on an ad-hoc, systematic, or reactive basis in response to leaks presents an efficiency and service-level enhancing opportunity. Whether through joint contracting or sharing equipment and staff there is a sense that this area may be rife for increased collaboration. While the age, size, water pressure, and even geology of a given service area can change the perspective of a utility with respect to the need for preventative system-wide leak detection, when engaged in this more proactive manner it can lead to water loss reductions. This can be critical in periods of drought. Examples of financial incentives to explore collaboration in this area include sharing the mobilization charges that contractors often include among participants. Joint contracts could present savings on leak detection, as well as offer technology advances such as the use of Light Detection and Ranging (LiDAR), which is a remote sensing method that uses light in the form of a pulsed laser to take measurements from a plane, for which regional flyovers could be contracted. They present opportunities for reducing labor hours, mobilization, and fuel costs, while producing scale efficiencies that also reduce non-revenue water losses. Finally, it is acknowledged that there may be some overlap in ad-hoc leak detection activities with the stand-by / emergency operations opportunity area as some emergency ad-hoc leak detection activity may occur during stand-by periods, though the activities are thought to be broadly distinct enough to justify separate reviews for the purposes of this Study.

Paving

All the participating agencies outsource their paving activities that follow in-street and facility repairs, replacement, new asset construction, and other pavement disturbances. Several contractors compete for this paving work. Raftelis observed variable per area costs and contract structures across the participating agencies. Opportunities such as joint bidding may therefore be worth exploring.

If scale capacities, contracting limitations, or desires to support local firms are not prohibitive, cost savings could be obtained, particularly where larger minimum area or multiple year contract commitments are deemed acceptable. While paving requirements (thickness, material, etc.) may vary by participating agency, and overlaying City / County jurisdictions, there is a feeling that this would not be prohibitive to contractors since most roads share similar paving requirements. Some participants have cited the success of chemical consortia programs in achieving savings, despite varied requirements, as a template or reason for optimism in exploration of a successful paving collaboration.

Stand-by / Emergency Operations

Stand-by / emergency operations occur after normal business hours to address a concern or a system issue such as a leak or service failure. Discussions pertaining to the stand-by / emergency operations opportunities focused on after-hours on-call staffing costs and resource availability. Future collaboration in this area would be understood to go above and beyond any aspect of existing Mutual Aid Agreements for support during significant emergencies, and would therefore require either modifications to those agreements or wholly separate agreements. Most participating agencies provide rotating staff with stipends or additional pay for weekly on-call duty with overtime pay for callouts. Other costs include dedicated vehicles, as well as answering service and other supporting technology costs (e.g. dedicated iPads, SCADA alarm systems).

Some larger agencies in the region may have sufficiently infrequent rotation intervals that there is the possibility that staff would have an appetite for more overtime opportunities in support of select tasks for smaller agencies where staff may be overburdened.

Water Conservation Programs

Water conservation programs promote the efficient use of water resources by customers through education and awareness. The water conservation programs opportunity was framed as an area where collaboration could occur to augment existing efforts by each participating agency to provide customer service programming and materials coordination. The goal is to foster joint efforts to enhance the communications channels that agencies utilize to increase awareness and participation in conservation activities.

The Regional Water Association (RWA) offers programming to support regional collaborative success in the area, yet the participating agencies identified an appetite for more offerings during the opportunity prioritization process. This suggests that RWA and other activities could be expanded. Another element within this area of opportunity is a concept of involving Non-Government Organizations (NGOs) such as community non-profit groups to provide installation or cost assistance to low income households to improve their indoor or outdoor water efficiency.

Water Supply

Regional groundwater and surface water sources extend across and outside the service area boundaries of the participating agencies. The agencies are also impacted collectively by changes in legislation and policy that apply broadly to regional or state-wide water management. The Water Supply opportunity considers areas to collaborate on preservation, distribution, and use of water assets.

During the prioritization process, opportunities for collaborative successes around water supply touched upon reliability enhancement and optimization of water banking, transfers, and/or wheeling potential. This opportunity presents a chance to improve water security in the region, particularly during periods of drought, and to increase monetization of assets.

Organizational Benchmarking

Organizational and Opportunity Benchmarks

The sections that follow detail high-level organizational metrics and associated national benchmarks (where available), as well as comparative metrics among the participating agencies that focus on the seven priority opportunities. Following Activity 2 – Benchmarking, Activity 3 – Business Case Evaluations will advance these data analytics and interpret them within the context of potential collaborative models to better understand the savings and service level enhancements that working together may offer.

This section provides a comparison of organizational benchmarking data collected for each of the participating agencies and national metrics contained in the publication *AWWA Utility Benchmarking (2019): Performance Management for Water and Wastewater.*[1] High-level organizational information about the participating agencies is shown in Table 1.

Table 1: Participating Agencies Information

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Type of Agency	Irrigation District	Irrigation District	Municipal Department	County Water District	County Water District	County Water District	Community Services District
Total Customer Accounts (Retail and Wholesale)	11,522	19,944	21,654	1,797	4,628	46,268	10,704
Wholesale Accounts	1[2]	0	0	0	0	0	4
Total Employees (FTEs)	32	36	34	4	10	70	48
MGD Produced (Avg per Day)	12.31	14.57	17.1	1.08	1.9	27.3	40
Miles of Pipe	160	249.6	367	21	62.66	698	222

[1] This is a high-level comparison to national benchmarks and the middle 50% of the national range. Raftelis recognizes that many factors impact spending levels for a given utility.

[2] Golden State Water Company / Aerojet Rocketdyne Agreement

Operations and Maintenance Budget	$7,101,576	$13,071,059	$14,234,824	$1,106,450	$1,803,560	$23,241,000	$20,020,600
Capital Budget	$4,942,816	$4,378,110	$3,881,601	$473,483	$2,887,500	$19,565,000	$10,900,200

Overall Staffing Levels

The participating agencies have between 4 and 70 employees, serve between 1,797 and 46,268 customer accounts (including wholesale), and produce between 1.08 and 40 million gallons per day (MGD) of water. With such a range in scale, comparing the number of accounts served per employee and the MGD produced per employee provides a reasonable comparison of the agencies through normalization of the data to like units.

The number of customer accounts per employee are compared between the participating agencies in Figure 1. Also included in this comparison are the AWWA utility benchmarking median, 25th percentile, and 75th percentile. As seen in the figure, Folsom and SSWD serve the most retail customer accounts per employee and are both above the 75th AWWA percentile. Being above the 75th percentile means that the utility serves more accounts per FTE than 75% of the utilities in the AWWA survey. The operations of SJWD including wholesale and CWD serve fewer customers per FTE than the AWWA Median. While the ratio of customer accounts per employee when including retail and wholesale operations is lower for SJWD, staffing is reflective of the need to meet wholesale customers requirements. Wholesale entities are counted as just four customer accounts but serve a population that is larger than the SJWD retail service area. By reviewing the population served per employee (including wholesale population served) as shown in Figure 2, it becomes clear that SJWD is serving a larger population per FTE than suggested in the customer accounts per employee figure, because of the wholesale customers. Note that customer accounts per employee can be an indicator of efficiency, but it is heavily influenced by the scale of the operation, and more importantly, the service levels provided. Higher service levels often require more staff.

The MGD of water produced per employee is compared between the participating agencies in Figure 3. The AWWA benchmarking data is shown on the figure as well. Most of the participating agencies produce more water per employee than the AWWA 75th percentile of 0.27 MGD per employee. RLECWD produces 0.19 MGD per employee, which is slightly less than the national median of 0.20 MGD per employee. SJWD produces 0.83 MGD per employee which is significantly higher than the other participating agencies and the national data. The four wholesale customers SJWD serves are likely impacting this statistic. Note that the demographics of the customer base significantly impact these metrics. Systems with large and/or high numbers of large commercial, wholesale or industrial customers will have a much higher ratio.

Figure 1: Customer Accounts per Employee

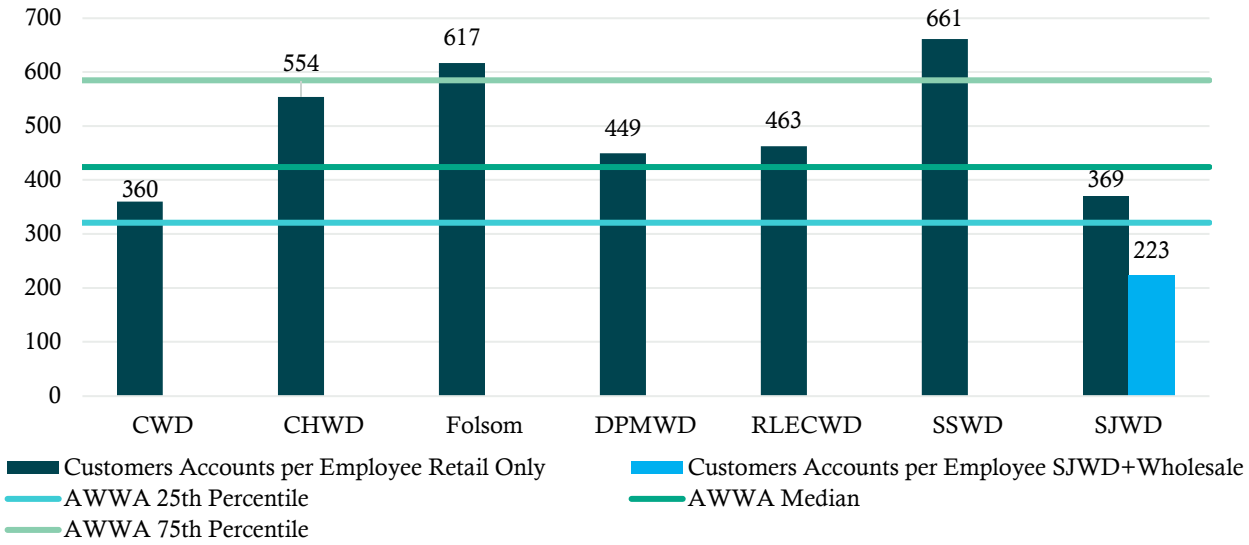


Figure 2: Population Served per Employee

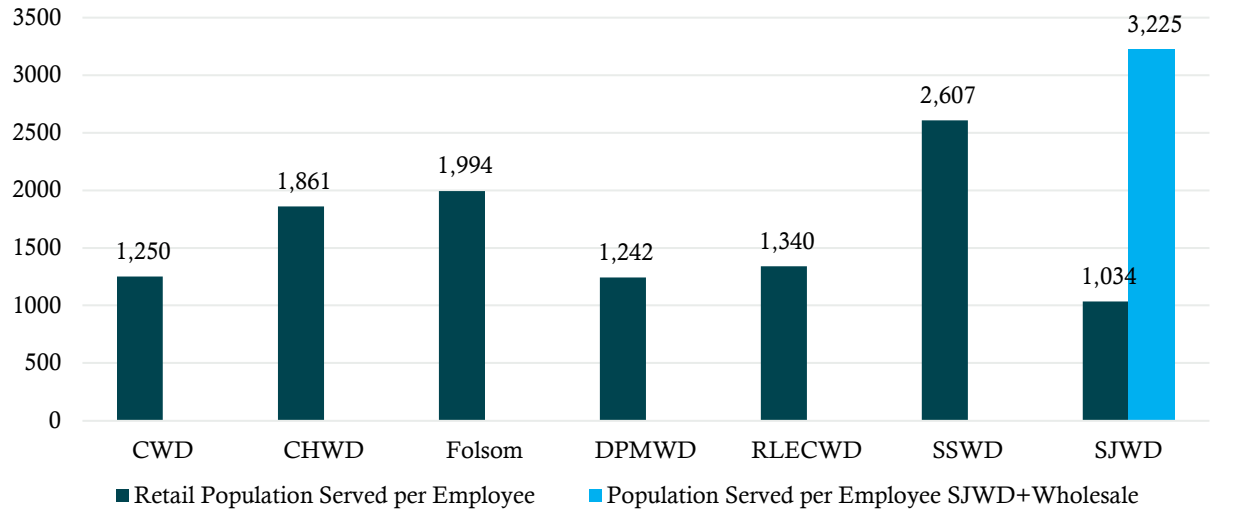
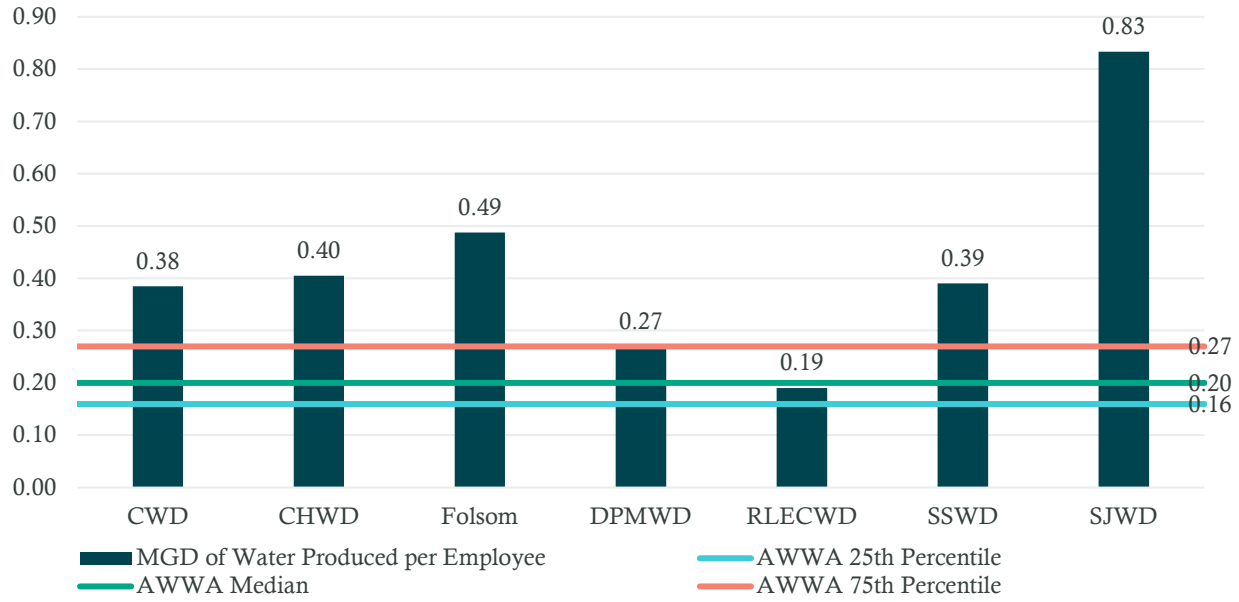


Figure 3: MGD of Water Produced per Employee

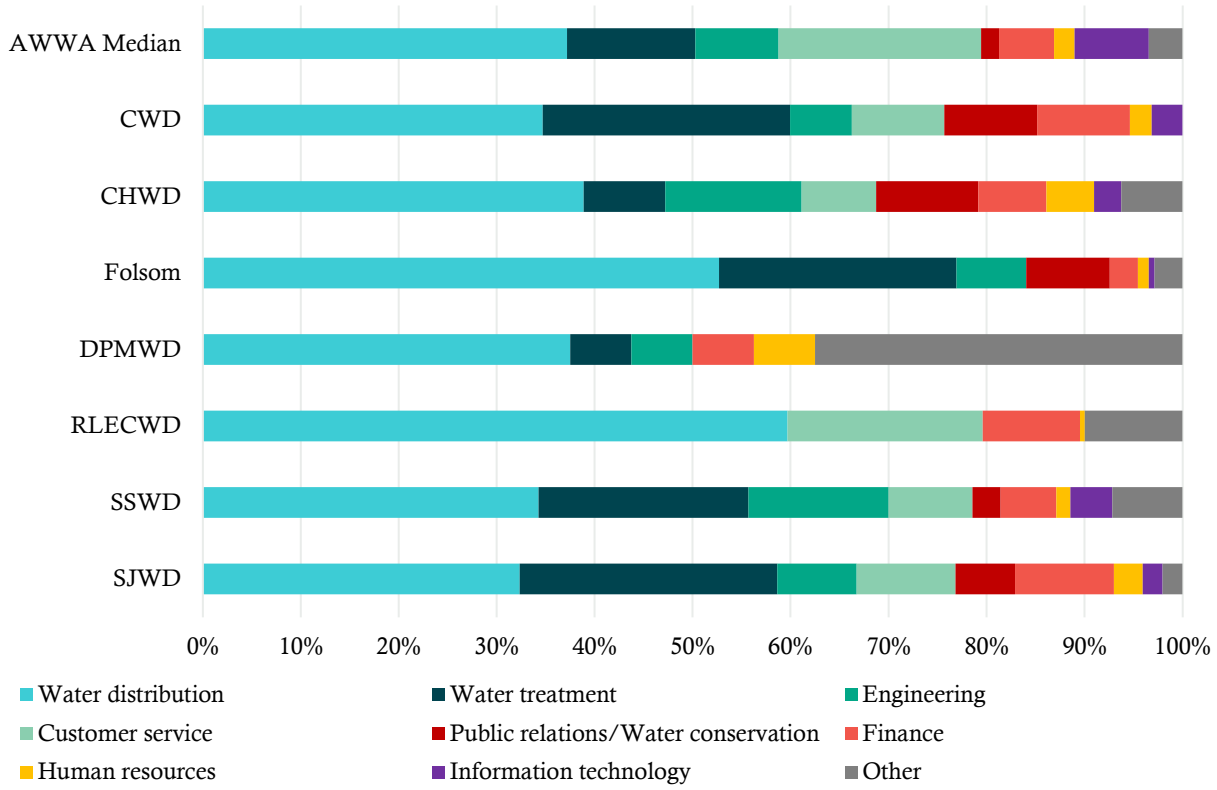


The number of budgeted staff within each of the participating agencies is aggregated in Appendix A, showing the breakdown by functional area. The areas shown are:

- Water distribution
- Water treatment
- Engineering
- Customer service
- Public relations/Water conservation
- Finance
- Human resources (HR)
- Information technology (IT)
- Other

To normalize the comparison of staffing levels, an employee by function ratio was calculated as a percentage of the overall number of employees budgeted to the utility. Additionally, some administrative and management functions have been rolled into the "Other" category. These comparisons are shown in Figure 4. The AWWA 2019 median for these functional areas is included in the figure.

Figure 4: Employee Distribution by Function



Operations and Maintenance Costs and Capital Budget

The operations and maintenance (O&M) costs for water service can be compared between utilities once normalized. For the participating agencies, these costs have been normalized by water production (Figure 5), by the number of accounts served (Figure 6), per capita of population (Figure 7), and by the miles of distribution pipeline (water mains excluding customer service lines) (Figure 8).

Reviewing these three metrics provides a fuller comparison between the agencies, especially because both CWD and SJWD provide water to wholesale customers as well as retail customers. There is national benchmarking data from AWWA for these three metrics, which are included on the figures. The final operational comparison between these agencies is the capital budget spent per customer account (Figure 9). This provides a comparison of capital improvement spending.

Shown in Figure 5, the O&M cost normalized by water production gives a unit cost ($/MG) for each of the agencies. The AWWA national median is $2,537 per MG and the 75th percentile is $1,803 per MG. Most of the participating agencies are near the median or between the 75th percentile and the median. Both CWD and SJWD (including wholesale) have unit costs of production less than the 75th percentile. SJWD's retail O&M cost per MG produced is higher and falls near the AWWA 25th percentile.

Figure 6 presents the O&M cost normalized by the number of accounts served. It shows that most of the participating agencies spend near or above the national 25th percentile of $526 per account. RLECWD spends near the national median of $383 per account. SJWD, which provides service to its retail area and four wholesale customers, spends close to $1,870 per customer account overall, but a still higher than others $1,102 per account for their retail operations alone. Figure 7 reveals that on a per capita basis (including wholesale populations served), SJWD has among the lowest O&M costs, but the highest for their retail only operations. Again, level of service differences play a big factor in the cost per customer account. In addition, surface water tends to be more expensive to treat than ground water.

The O&M costs normalized by the miles of distribution pipeline are shown in Figure 8. It is calculated per 100 miles of pipe. The national median is $2,988,629 per 100 miles of pipe. Many of the participating agencies have O&M costs per 100 miles of pipe close to the median. CHWD, DPMWD, and SJWD's retail operations are spending close to the national 25th percentile of $4,897,484 and SJWD with wholesale spends $9,018,288 per 100 miles of pipe.

Figure 9 shows the capital budget per customer account for the participating agencies. There is not a national benchmark for this metric. CHWD, Folsom, and DPMWD are on the lower end of the agencies for capital spending per customer account—the average for these three agencies is $221 per account. RLECWD has the highest capital spending per account and per capita as shown in Figure 10.

Figure 5: Operations and Maintenance Cost per MG Produced

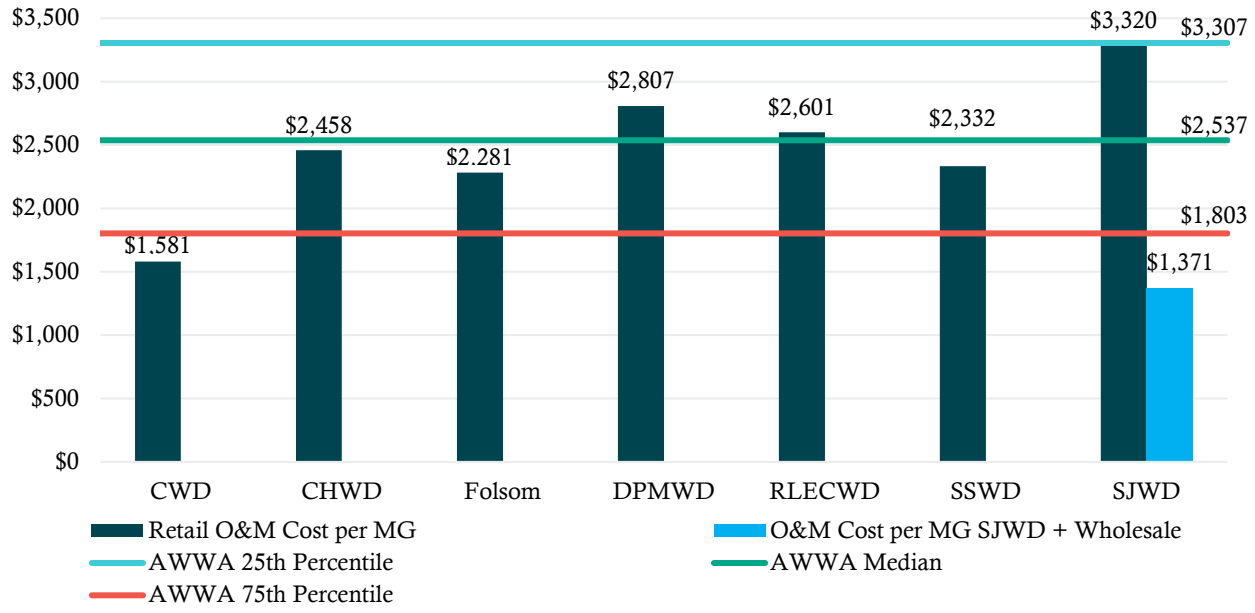


Figure 6: Operations and Maintenance Cost per Customer Account

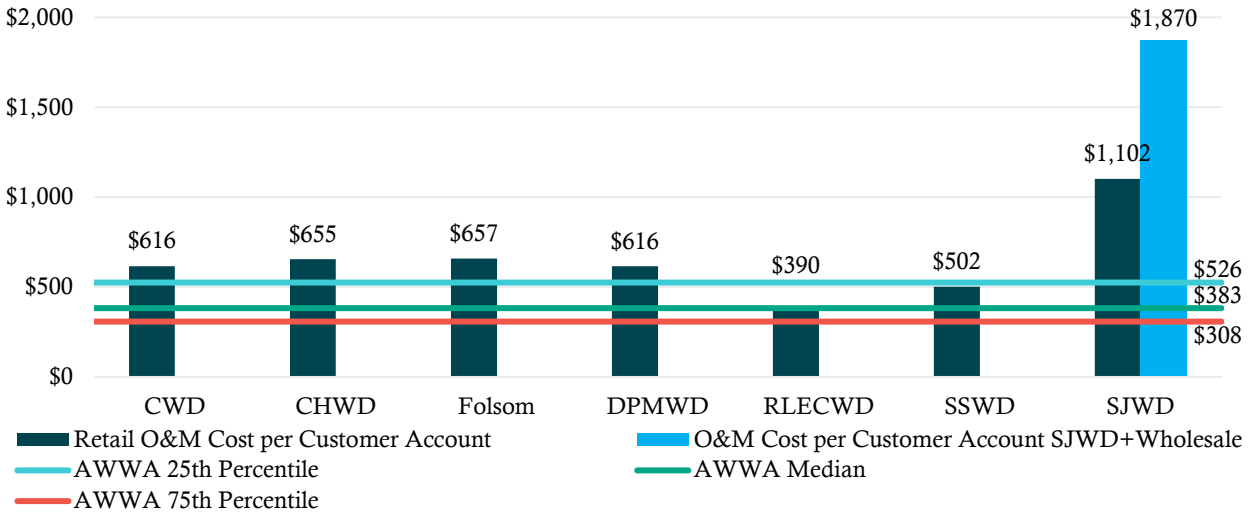


Figure 7:Operations and Maintenance Cost per Capita

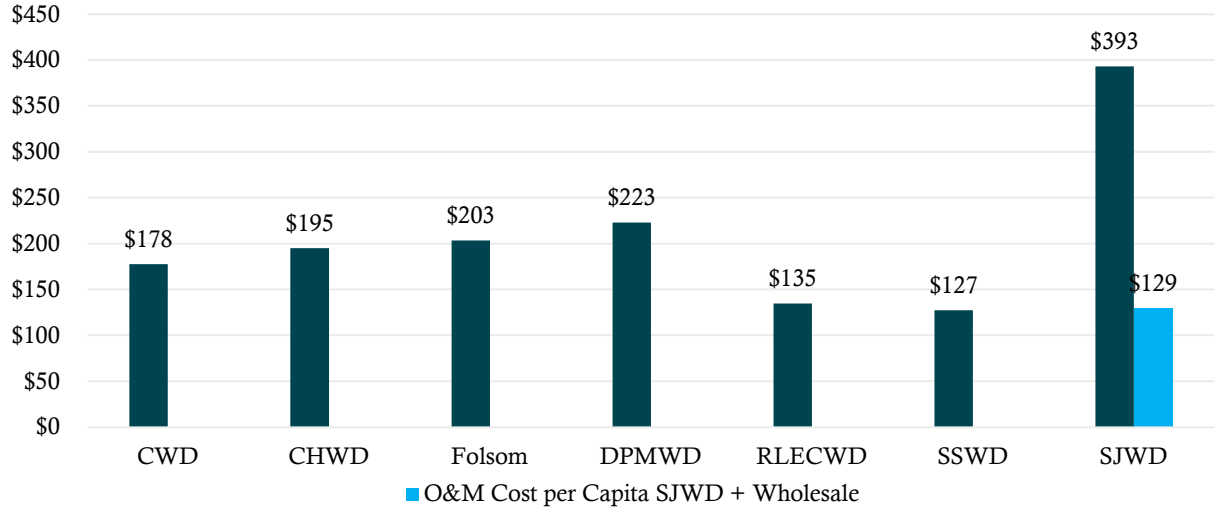


Figure 8: Operations and Maintenance Cost per 100 Miles of Pipe

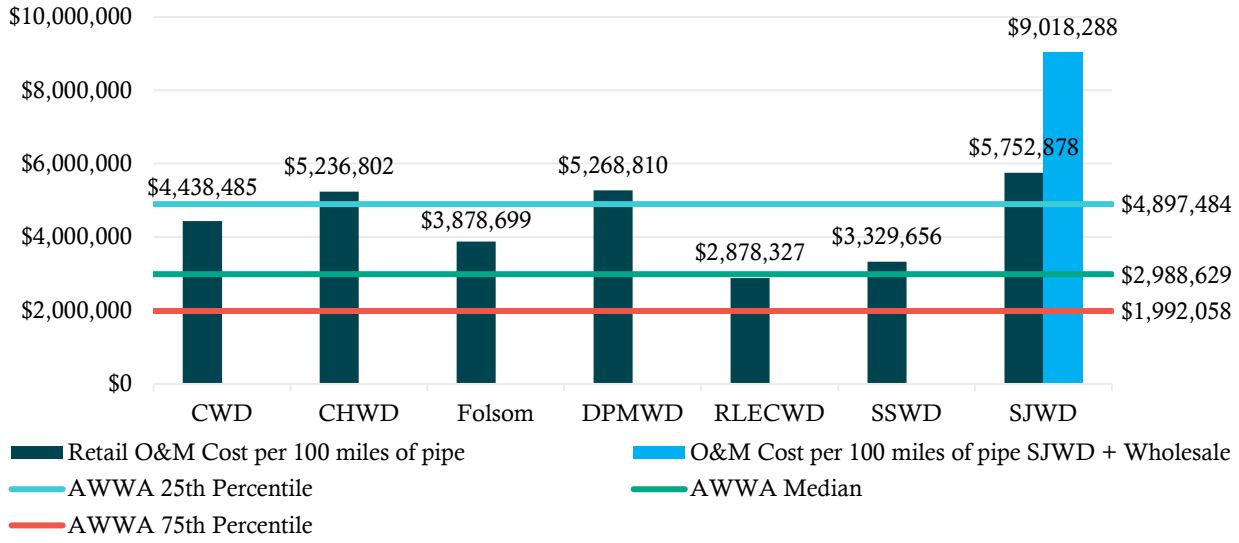


Figure 9: Capital Budget per Customer Account

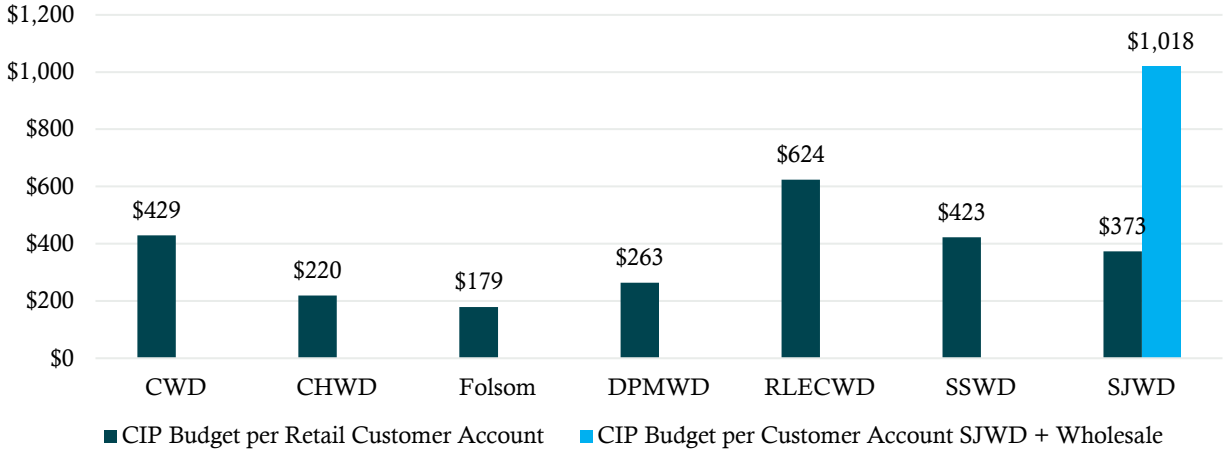
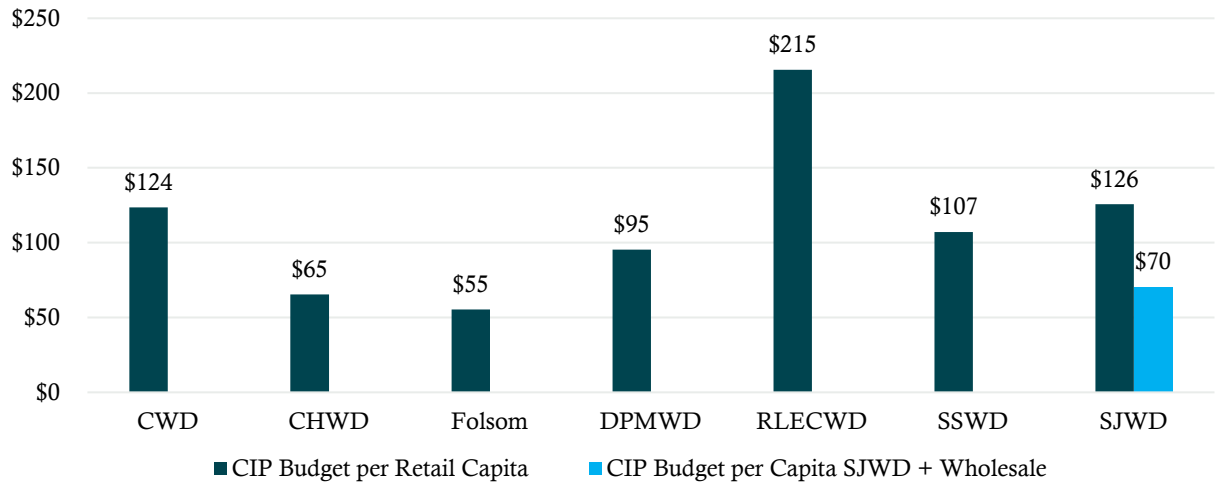


Figure 10: Capital Budget per Capita



Each of the participating utilities have O&M and capital costs within a regional range, and certainly in alignment with national peers. Because these graphs don't convey the differences between the costs and complexity of surface water treatment and groundwater treatment or show the different service levels provided, and don't accurately depict wholesale customer service, they must be interpreted carefully. Few conclusions can be drawn from these graphics and underlying data alone.

Opportunity Benchmarking

Opportunity benchmarking data and analysis is presented in this section. The sections covering each opportunity are arranged in alphabetical order as there is no preference given to the opportunity priorities at this stage. Subsequent analysis in Activity 3 may reveal either greater financial savings opportunities, likelihoods of success, or appetites for some opportunities over others.

Distribution System Preventative Maintenance

PM ensures the reliability of a water distribution and transmission system and that levels of services are provided to customers at the least possible long-term cost. PM is often neglected because of competing priorities and because its benefits are often less apparent in the short term. You might say this is where the "rubber *does not* hit the road" for the "out of sight, out of mind" conundrum that is buried infrastructure. The participating agencies have identified the possibility of collaborative action as a way to overcome the varied stresses placed on achieving desired PM service levels. PM activities considered in this assessment are detailed in Appendix C. Note that few agencies provided data on large meter testing, but costs for that work are intended to be captured in this section However, meter repair and replacement work is considered reactive rather than preventative and excluded from the assessment.

Figure 11 charts PM expenditures by year, while Figure 12 charts the same on a per mile of pipe basis for the participating agencies. In the per mile of pipe chart, CWD costs appear to represent outliers suggesting that further cost allocation may be necessary. Otherwise, PM expenditure per mile of pipe falls into a range from $376 (RLECWD) to $2,217 (CHWD). These costs reflect a combination of different PM activity levels, pay and benefits, infrastructure age and quantity. They represent very different PM approaches among the participating utilities. Note that AWWA has manuals of practice with guidance on maintaining all major distribution asset types. Each recommends regular PM activities at various intervals.

Figure 11: Annual Preventative Maintenance Expenditure

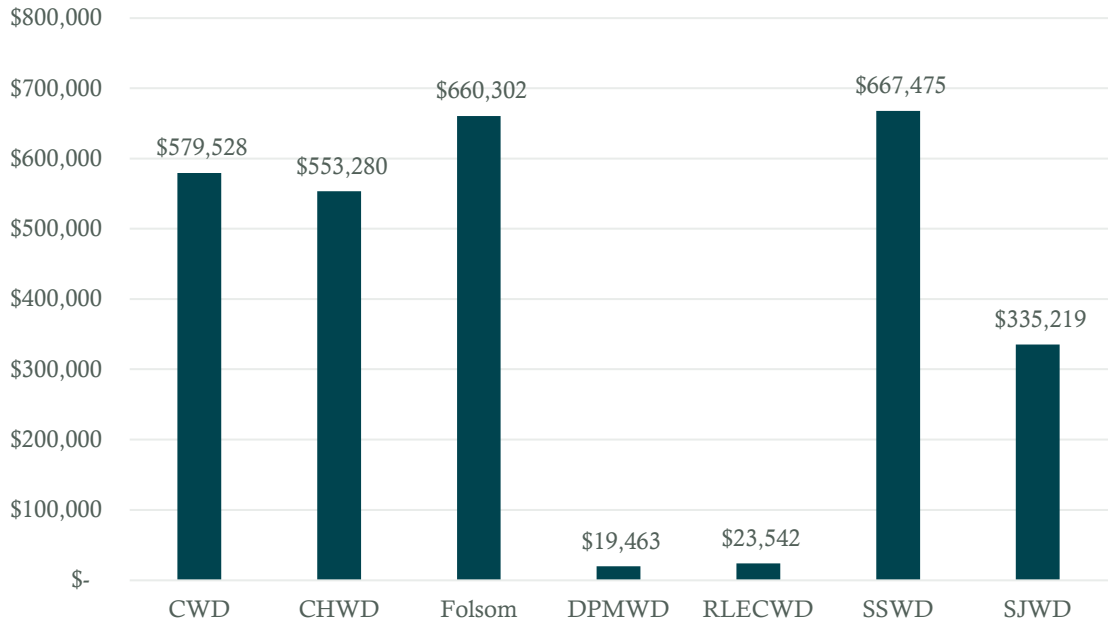


Figure 12: Annual Preventative Maintenance Expenditure per Mile of Pipe

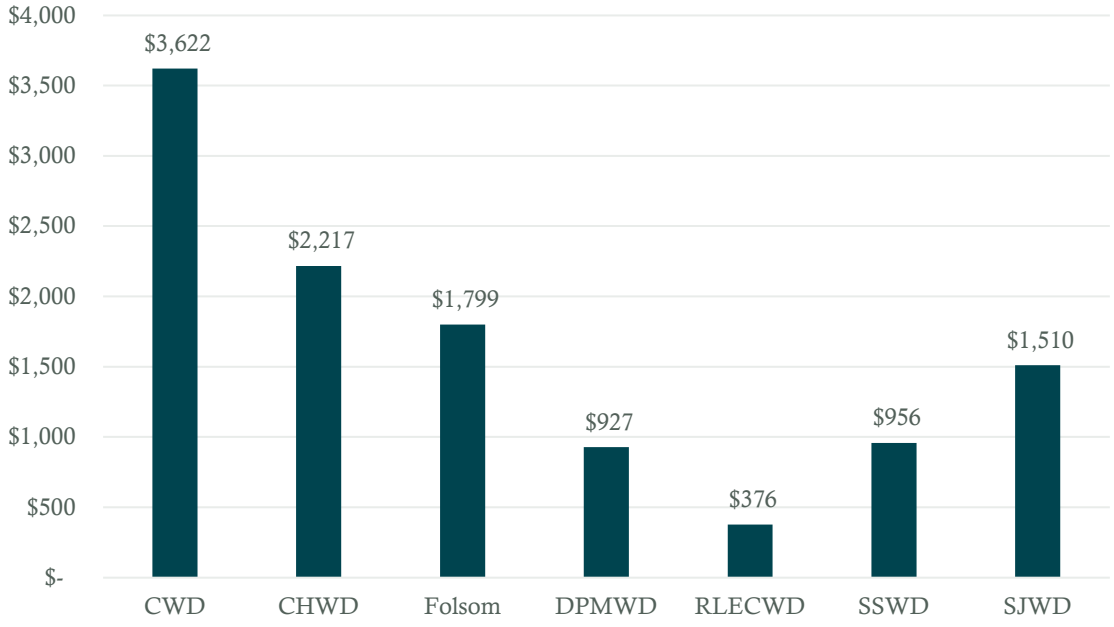


Figure 13 details available data on the frequency of hydrant maintenance. Reported hydrant maintenance activities vary by utility and may include painting, flushing, inspecting, exercising, and servicing of the hydrant. The frequency of engaging with a given hydrant ranges from every year (DPMWD noted annual flushing of their 200 hydrants) to about every 7 years (CHWD noted general maintenance for 300 of 2,156 per annum).

Figure 14 details available data on the frequency of valve exercising. Some utilities noted that their activities in this area cover mainline, blow-off, hydrant, and/or ARV/CARV valves with the largest assets having greater PM frequency than the system-wide intervals. The frequency of valve exercising ranges from unspecified and infrequent due to access issues (DPMWD) to about every 12 years (CHWD noted about 500 of 5,964 are exercised per year). Many entities do not have PM valve exercising and maintenance programs, instead relying on reactive pipeline renewal activities and main breaks for opportunities to exercise valves.

Table 2 describes reported flushing practices, which vary based on groundwater usage and resulting water quality, pipe age, the number of dead-ends, drought conditions or other factors. Reported practices range from as needed flushing and unspecified approaches to annual dead-end or hydrant flushing. None of the agencies reported annual unidirectional flushing. CWD reported that they are in the process of developing a system-wide plan, which may present an opportunity to share notes with others in the region given the wide variation in practices. AWWA recommends utilities employ a regular unidirectional flushing program.

Figure 13: System-wide Hydrant Maintenance Interval (Years)

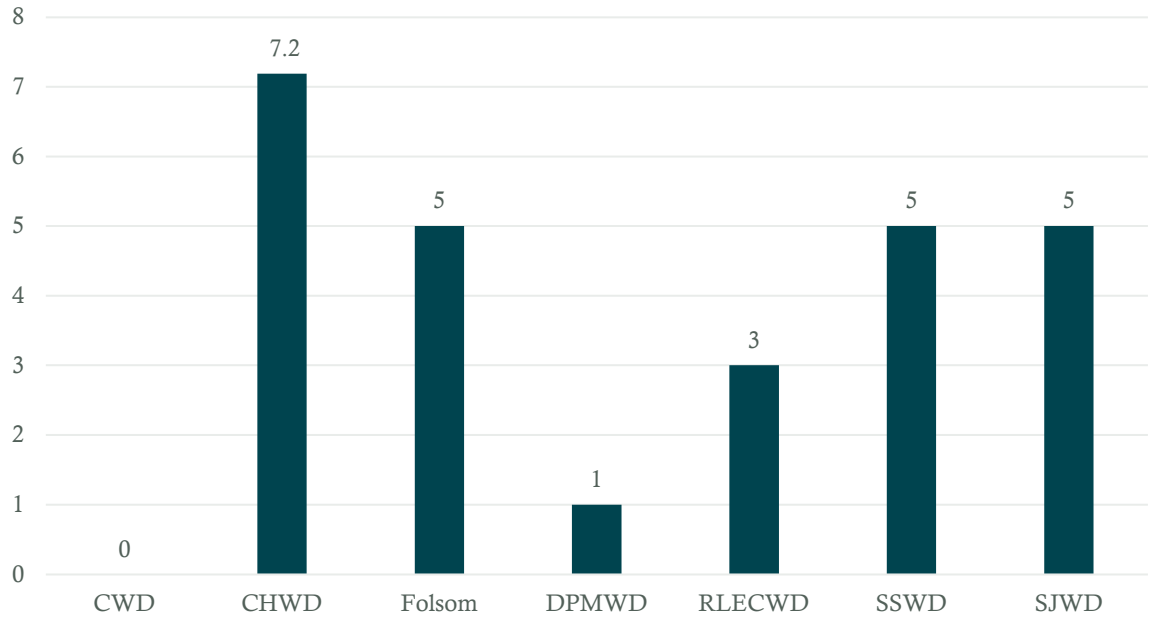


Figure 14: System-wide Valve Exercising Interval (Years)

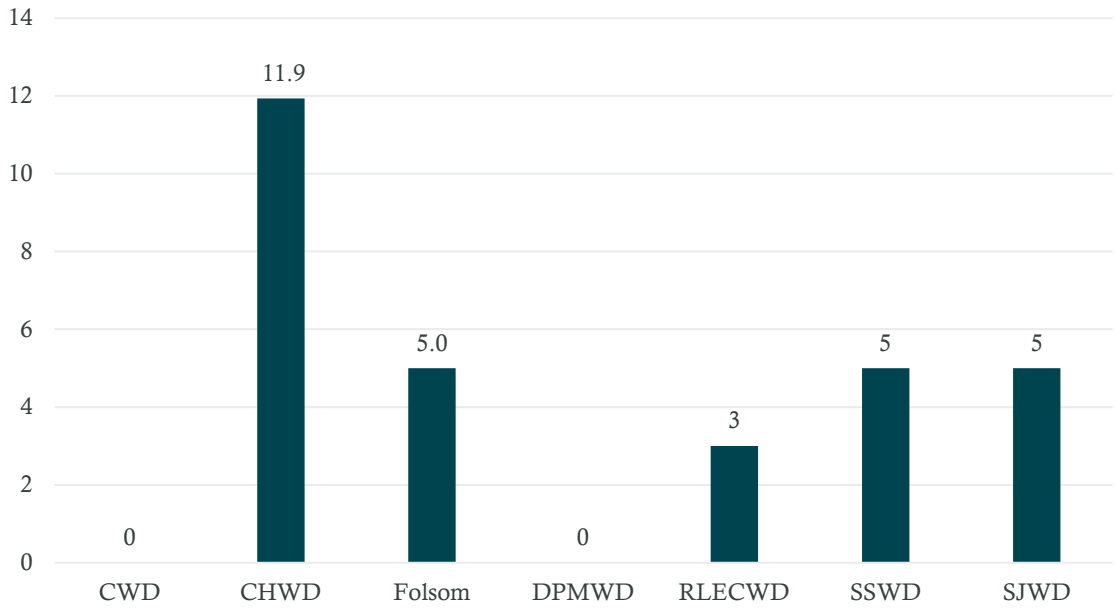


Table 2: Reported Flushing Practice

Participating Agency	Reported Flushing Practice
CWD	As needed currently but system-wide plan in development
CHWD	As needed
Folsom	Dead-ends every year and system-wide every 5 years
DPMWD	Annual hydrant flushing
RLECWD	System-wide every 3 years
SSWD	When necessary, no formal program
SJWD	Dead-ends every year

While the current metric comparisons included in this section do not have national benchmarking equivalents, there is national benchmark data for planned linear maintenance to distribution system length (hours per 100 miles of pipe), which is shown in Table 3. For Task 3, the participating agencies should consider whether the comparison of this metric on a national level would provide further context for the agencies for the identification of collaborative opportunities.

Table 3: AWWA Benchmark - Planned Linear Maintenance to Distribution System Length

AWWA Benchmark	75th Percentile	Median	25th Percentile
Planned Linear Maintenance Hours per 100 Miles of Distribution Pipe (hr./100 miles of pipe)	1,793	937	642

There are many collaborative opportunities for PM ranging from equipment and staff sharing to communicating lessons learned. For example, DPMWD may gain insights from SSWD's efforts to relocate assets from backyards to streets to improve access. Some participating agencies have recently begun to engage in contracting to meet PM objectives, while others might not yet have seriously considered such an approach. There are opportunities to do more through a collaborative scale contract with attractive rates per mile of pipe compared to what might be offered otherwise.

Appendix C details the reported PM activity areas reported by each agency. The participants should review the tables in Appendix C and consider both where their PM activities could be enhanced relative to peers and how collaborative action might get them closer to a more comprehensive program with less cost.

Human Resources

The participating agencies vary in how Human Resources (HR) services are provided. Each agency identified some areas of gaps and opportunities for shared or expanded HR services. All agencies have some internal capabilities, and a few agencies hire external contractors to fill in the gaps in services provided. This information is shared at a high level in Table 4.

SSWD contracts HR service support as needed to supplement the work of the one HR FTE who supports 70 FTEs in the agency. The supplemental work includes some of the following services:

- Bryce Consulting:
  - Classification analysis and job description development/revision
  - Recruitment support (review of job applications, development of oral interview questions, facilitation of oral interview, reference checks)
  - General HR support (development/revision of personnel policies, audit of personnel practices, advising managers on performance management issues)
- Employee Benefits Insurance Brokerage and Consulting Firm (EPIC)
  - Complete benefit renewal analysis for all district benefits and assist with contract negotiations and renewals.
- Management Partners
  - Developed a training and leadership development plan for the district.

SJWD contracts legal labor assistance with Meyers Fozi, LLP and HR service support with Bryce Consulting. The support provided by Bryce Consulting includes:

- Development of job announcements
- Placement of ads
- Receipt and screening of applicants
- Development of selection materials

- Scheduling and facilitating interviews
- Maintaining contact with candidates
- Making offer to selected candidate
- Conducting reference checks

CHWD also contracts with Bryce Consulting for unspecified services.

To normalize the number of HR related FTEs at each of the agencies, the number of utility FTE served by one HR FTE was calculated and shown in Figure 15. RLECWD stands out among the participating agencies in that the General Manager provides HR services as a portion of their duties. So, while the agency has 10 FTEs, the time spent on HR is representative of one full-time HR employee supporting 200 full-time employees. It is important to also note that Folsom is supported by the shared HR department with the City; this agency would be unable to support the other agencies on HR collaboration.

Another comparison made is the total HR cost per utility employee. Figure 16 shows this comparison which highlights that cost goes down when the scale of the utility increases.

Table 4: HR Services Overview

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Total Employees	32	36	35	4	10	70	48
HR FTE	0.7	1.75	0.4	0.25	0.05	1	1.45
Total HR Cost	$70,000	-	$53,865	$23,228	$7,540	$8,650	$8,785
HR Services Offered	Comprehensive less gaps	Comprehensive	Recruitment, City policy and procedures, worker's compensation, short-term and long-term disability, maintain personnel files	Comprehensive less gaps	Comprehensive less gaps	Comprehensive less gaps Good training facility; ACWA-JPIA is an online resource	Comprehensive less gaps
HR Service Gaps or Opportunities	Staff morale building, training coordination	Training coordination	None	None	GM provides the HR services currently (lack of capability for separation of powers)	Training and recruitment, updating policies and procedures handbooks, restart regional JPIA group	Recruitment and selection, non-technical staff development, training and team building, performance management and employee coaching/discipline, culture building, keeping abreast of labor laws.
Contract Services	None	Bryce Consulting	None	None	None	Bryce Consulting, Employee Benefits Insurance Brokerage and Consulting Firm (EPIC), Management Partners	Bryce Consulting, Meyers Fozi, LLP

Figure 15: Utility FTE Served per HR FTE

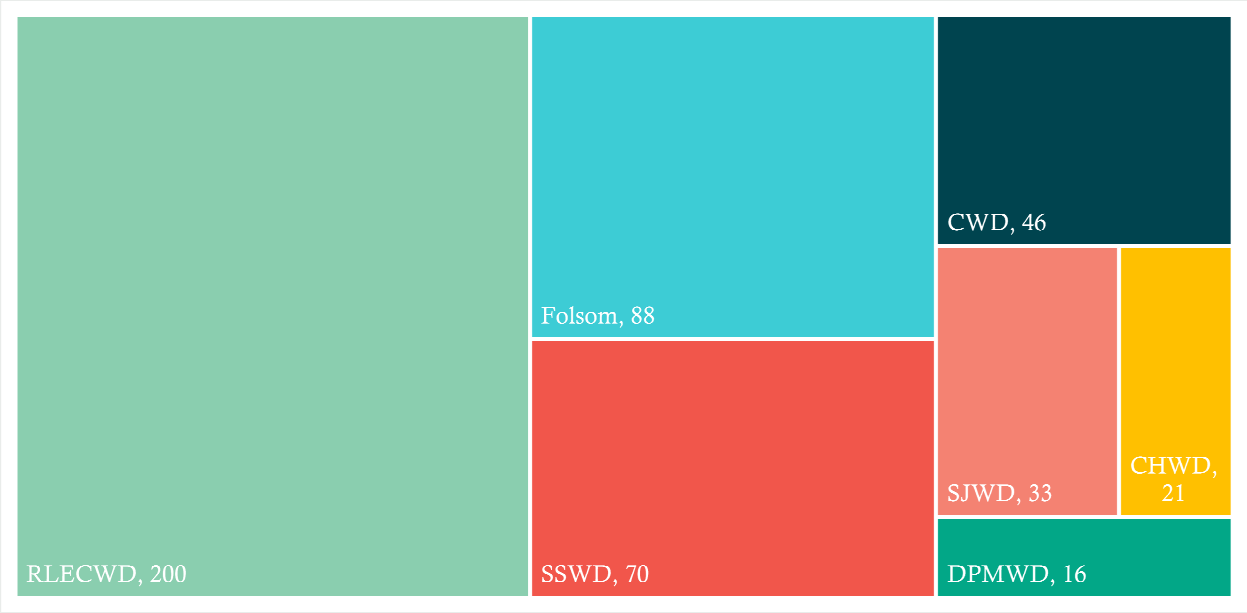
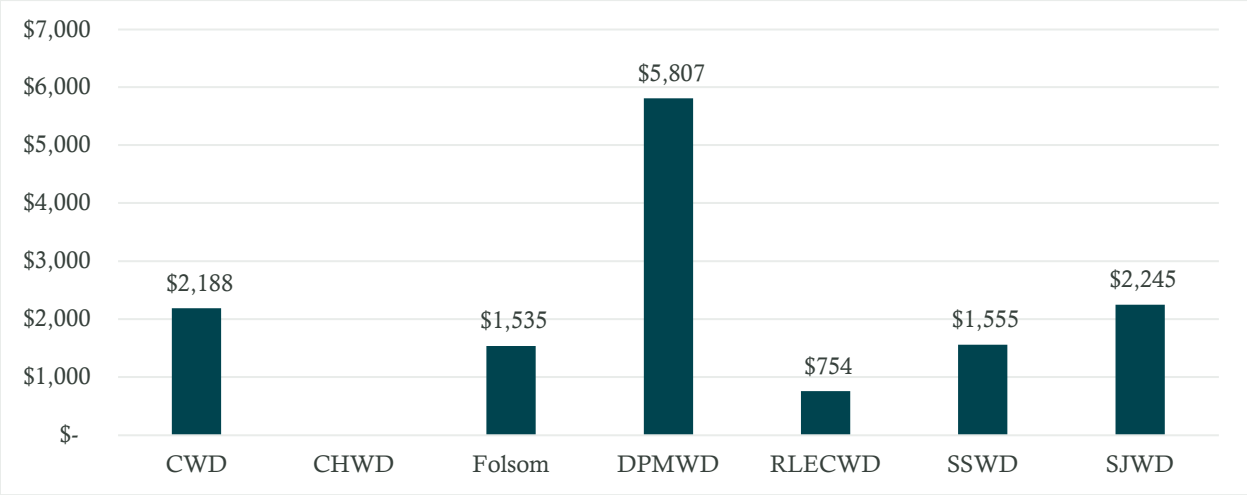


Figure 16: Total HR Cost per Utility FTE Served[3]



[3] CHWD was not able to share this information.

Leak Detection

The participating agencies maintain a total of 1,780 miles of water distribution and transmission pipelines. Table 5 lists the total miles of pipe, leaks and breaks relating to service lines and mains, and the total acceptable number of main breaks per 100 miles if the agency has set an acceptable range. For further comparison, AWWA utility benchmarking provides a median of 9.2 for leaks and breaks per 100 miles of mains per year (services not included in AWWA benchmark).

Table 5: Leaks and Breaks

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD	AWWA Median
Miles of pipe	160	249.6	367	21	62.66	698	222	-
Leaks and breaks per 100 miles of pipe (service lines)	59.1	35.3	31.4	53.5	121.9	10.9	36.8	-
Leaks and breaks per 100 miles of pipe (mains)	27.9	4.5	0.4	11.1	4.8	7.4	1.9	9.2
Acceptable number of main breaks per 100 miles	0	N/A	0.3	95.2	N/A	N/A	40.5	-

Figure 17 shows the miles of pipe ordered by total miles by agency. In Figure 18, keeping with the same order, the total leaks and breaks per 100 miles of pipe per year are shown for each agency. This is split between the leaks and breaks per 100 miles of main per year and per 100 miles of service lines per year.

Figure 17: Miles of Pipe

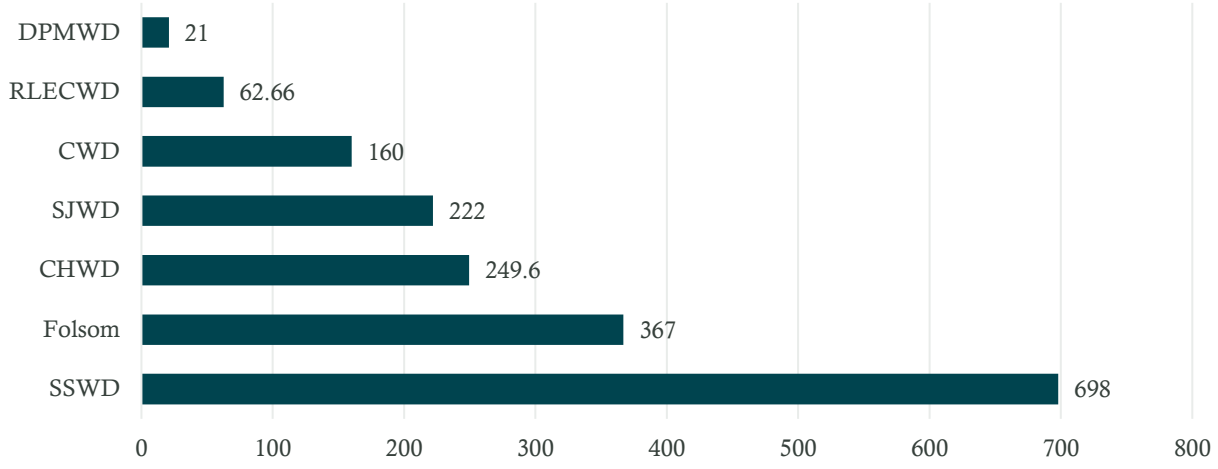
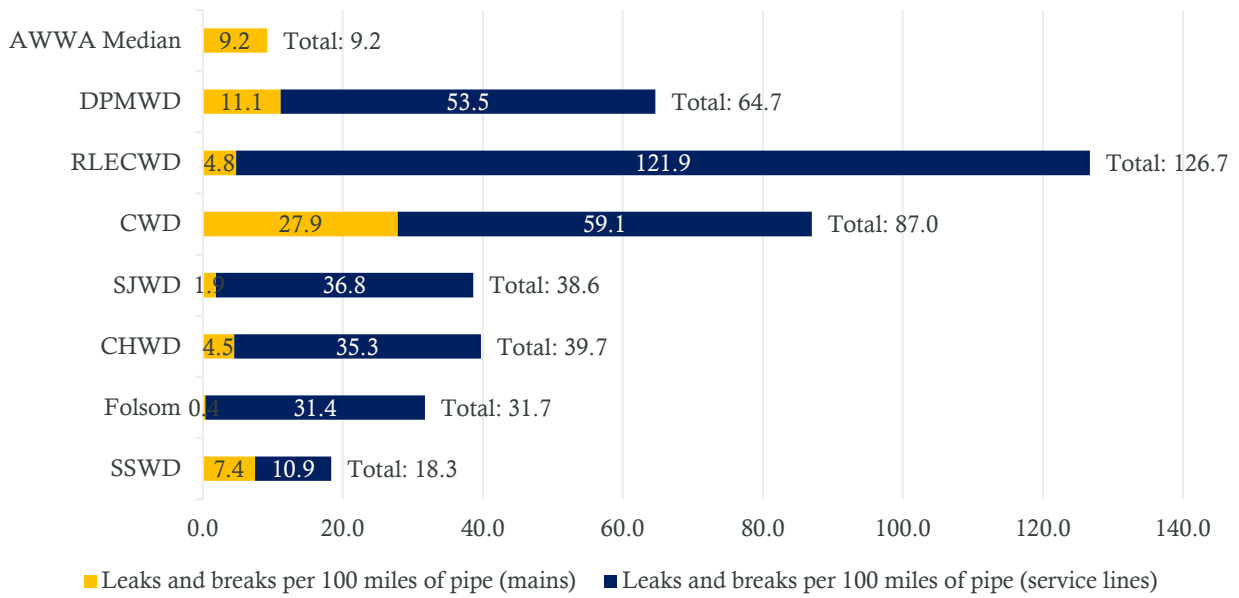


Figure 18: Leaks and Breaks per 100 Miles of Pipe



CHWD, DPMWD, and RLECWD all do not have system-wide leak detection programs, and DPMWD does not perform any systematic leak detection on their 21-mile system because the pipes are in backyards. For the other agencies, the frequency of the single system-wide leak detection cycle ranges from 4 to 6.4, shown in Table 6. The leak detection costs per miles of pipe are shown in Figure 19. CHWD, which does not have a system-wide leak detection program, has an expected lower cost per mile compared to the other agencies as they are only spending time on this task on an ad-hoc basis.

Table 6: Leak Detection Program

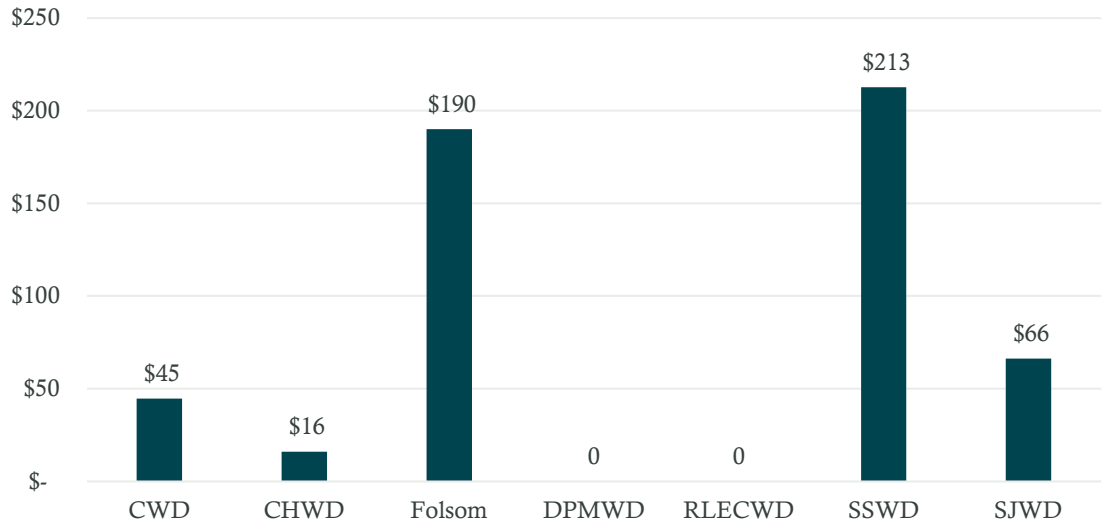
	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Miles of pipe	160	249.6	367	21	62.66	698	222
Frequency of a single system-wide leak detection cycle	6.4[4]	N/A	4[5]	N/A	N/A	5	5
Leak detection costs per mile of pipe	$45	$16	$190[6]	N/A		$213	$66

[4] Goal is 3

[5] Goal is 3; reality has been 3-5 based on most recent 3 rounds

[6] Includes leak detection for 21,654 service lines as well

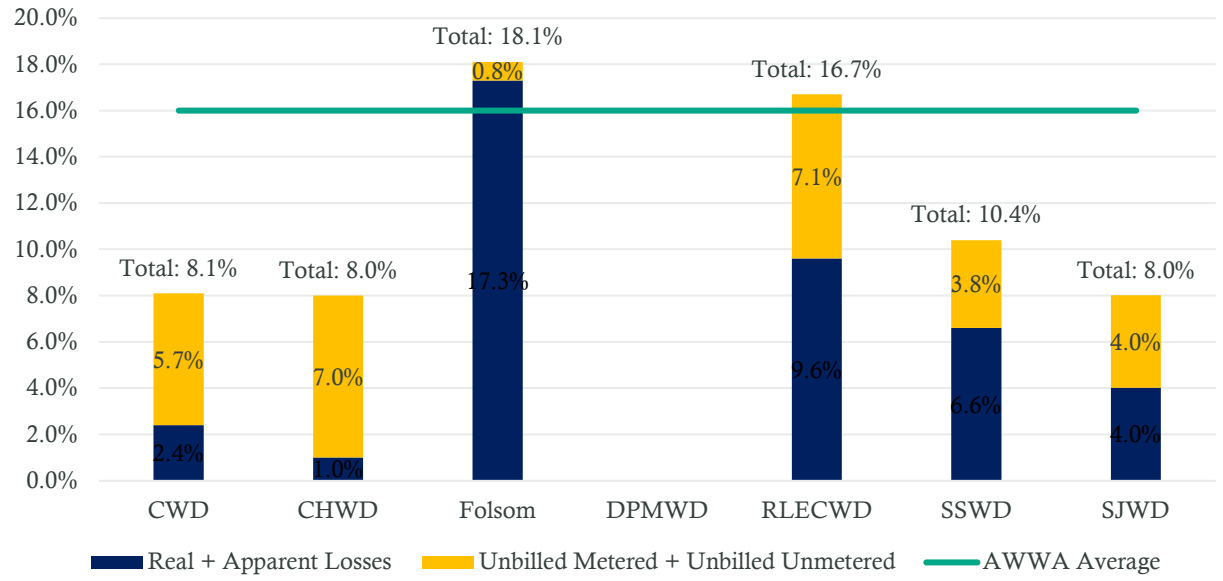
Figure 19: Leak Detection Costs per Mile of Pipe



Utilities incur Real Water Losses from pipeline leakage and Apparent Water Losses when customer water consumption is not properly measured or billed.[7] This is considered a portion of the non-revenue water at the utility. Also subsumed in non-revenue water is unbilled metered usage and unbilled unmetered usage. Except for DPMWD, which solely provides unmetered service to residential accounts, the participating agencies provided data about non-revenue water. This includes the breakdown of real and apparent water losses and unbilled metered and unbilled unmetered water. The percentage of the total water produced is shown in Figure 20 for the agencies.

[7] Real Water Losses and Apparent Water Losses are formally defined by AWWA in its manual M36 Water Audits and Loss Control Programs, Fourth Edition.

Figure 20: Non-Revenue Water



Paving

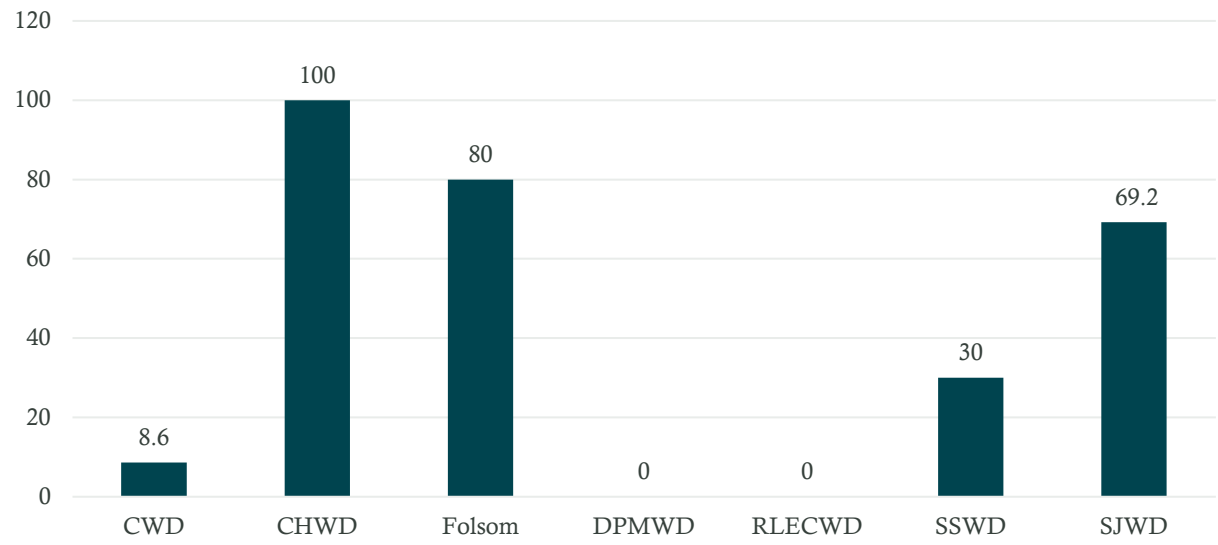
Shown in Table 7 are the annual volumes and costs of patch paving for each of the participating agencies. CIP investment related paving costs are often bundled with project work and were not considered as part of this assessment. DPMWD primarily has pipes located in backyards, so they typically have little to no paving. When possible, both the number of paving work orders and the square feet of paved area were collected to gauge volume and size of projects. Figure 21 shows the number of annual paving work orders. The number of work orders do not always equate to a larger size of square feet paved, as can be seen comparing CHWD and SJWD reported annual square feet paved to the number of work orders. Note that Central Valley Engineering and Asphalt has the CHWD and Folsom contracts and bid on SSWD, suggesting that there are regional contractors with scale and appetite for broader coverage.

Table 7: Annual Paving Volume and Cost

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Number of paving work orders (annual)	8.6	100	80	0	N/A	30	69.2
Square feet paved (annual)	N/A	11,000	N/A	0	N/A	8,319	9,000
Total spend (annual)	$172,747	$109,000	$90,161	$0	$25,000	$283,958	$128,250

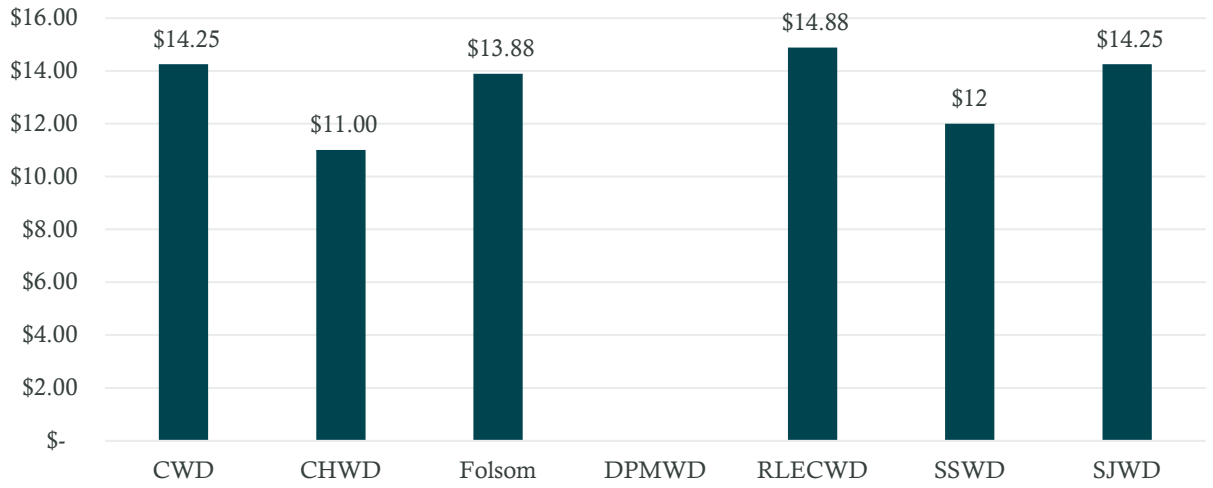
Contractor	Planet Paving and Grading	Central Valley Engineering and Asphalt	Central Valley Engineering and Asphalt	N/A	N/A	Various options including Central Valley Engineering & Asphalt and Flowline Contractors	Sierra National Asphalt

Figure 21: Volume of Annual Paving Work Orders



The annual cost of paving has been normalized per square foot of paved area to better compare the paving costs. Figure 22 shows this comparison of paving cost. All the agencies with paving work are spending an average of $13.65 per square foot paved.

Figure 22: Cost per Square Foot Paved



Stand-by / Emergency Operations

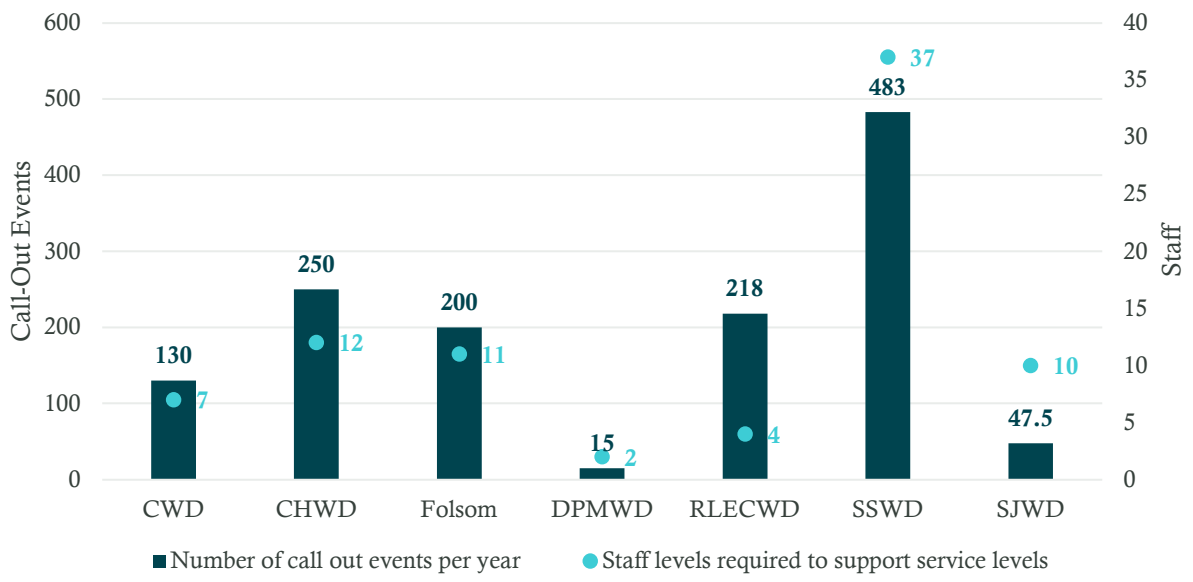
The number of emergency call out events each agency responds to annually is shown in Table 8. This table also shows the costs per year, the calculated costs per event, and the staff levels that are required to support the service levels currently provided.

Table 8: Annual Call Out Events

	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Number of call out events per year	130	250	200	15	218	483	47.5
Contract / in-house costs per year	$86,190	$87,565	$127,990	$14,758	$43,184	$379,382	$26,281
Costs per event	$663	$350	$640	$984	$198	$785	$553
Staff levels required to support service levels	7	12	11	2	4	37	10

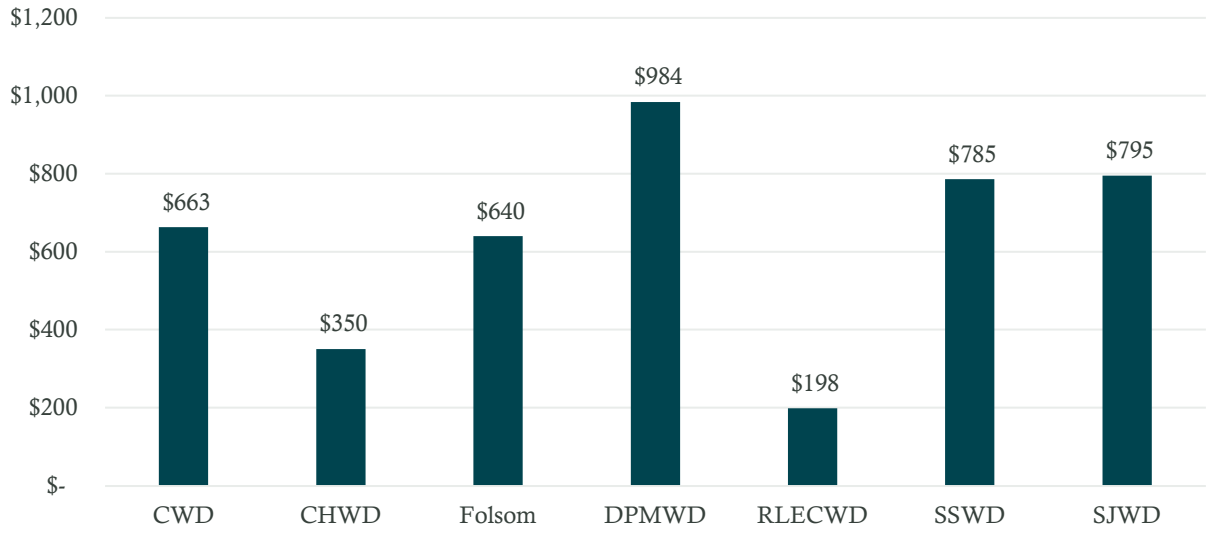
Comparing the number of call out events per year across the agencies as well as the staff levels required (Figure 23) shows that some agencies are staffed at a similar level to each other while the call out event volume is significantly different. In other cases, such as when comparing Folsom to RLECWD, the call out event volume is similar, but the staff level is very different. The numbers gathered reflect all after hours calls that resulted in an individual being dispatched regardless of whether it was a full crew or just the on-call individual.

Figure 23: Call Out Events per Year and Staff Levels Required



The annual costs of call out events have been normalized per call out event for comparison between agencies, as seen in Figure 24. CWD, Folsom, SSWD, and SJWD are spending near the same amount per event, whereas DPMWD is on the higher end and CHWD and RLECWD are both on the lower end of the group.

Figure 24: Costs Per Call Out Event



Water Conservation Programs

The participating agencies operate in a Mediterranean, but drought susceptible climate in the northern half of California's Central Valley. They share variable surface and groundwater supplies, which are coveted by other area users and those in the southern parts of the state. The water conservation program opportunity represents a chance to collectively and individually manage water usage by further encouraging efficient water use among customers. While reduced water usage can initially seem counter intuitive to a water utility because it presents the risk of revenue reductions (reduced volume consumed), well-designed practices can help to ensure water rates fully recover revenue requirements even on reduced consumption units.

A component of a water conservation program is education detailing water usage trends and resulting impacts on rates. As such, and as reflected in the collective appetites for pursuing this opportunity, the participating agencies should consider enhanced water conservation through collaborative action to be both financially viable and practically important to pursue. Indeed, it is both the last drought, and the next, that should motivate such action.

Figure 25 shows the annual costs of water conservation programs at each participating agency including salaried positions dedicated to water conservation as well as related programming and contract costs. The larger agencies (CHWD, Folsom, SSWD, and SJWD) have the highest total spend. However, as shown in Figure 26, CHWD, CWD and Folsom are higher in terms of conservation program spending per capita relative to SSWD and SJWD. A table detailing the many varied channels, enforcement mechanisms, events, incentives, management tools, and other programming and messaging activities that each participating agency engages in is detailed in Appendix B.

As the participating agencies consider their relative spending overall and per capita costs relative to peers, as well as the programmatic detail in Appendix B covering normal operations and drought only initiatives, each may find opportunities for enhancement through the various collaborative models to be explored in Activity 3. Those showing relatively higher spend per capita may achieve the same service levels with less expenditures through collaboration, and those showing less spend may find that enhanced service levels are not as unobtainable as they might have been alone. While the modes of collaborative action will be explored further in Activity 3, consider a scenario where staff time at each agency is being spent to develop different versions of the same water efficiency messages seven times, whereas a collaborative approach might allow for simply stamping each agencies logo on a menu of aligned regional messaging (as is done currently through RWA with 19 agencies participating including most but not all of the participants in this Study). This has the potential to free up often multi-tasking staff for other functional needs, thereby potentially either reducing contractor support needs or enhancing service levels.

Figure 25: Costs of Water Conservation Programs

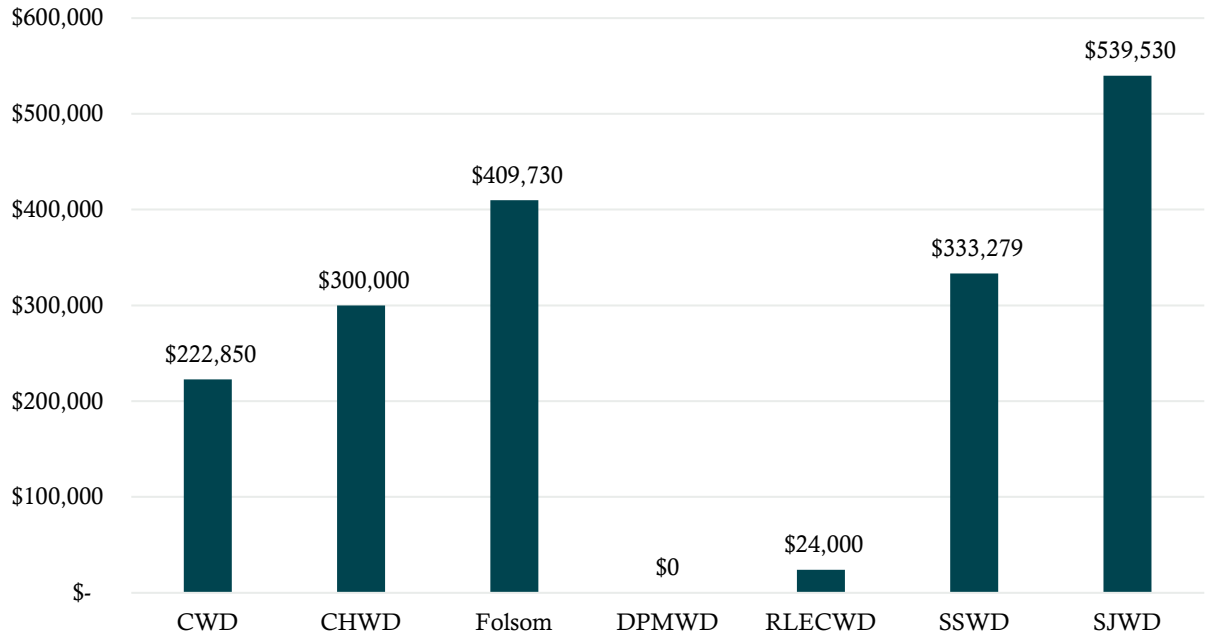
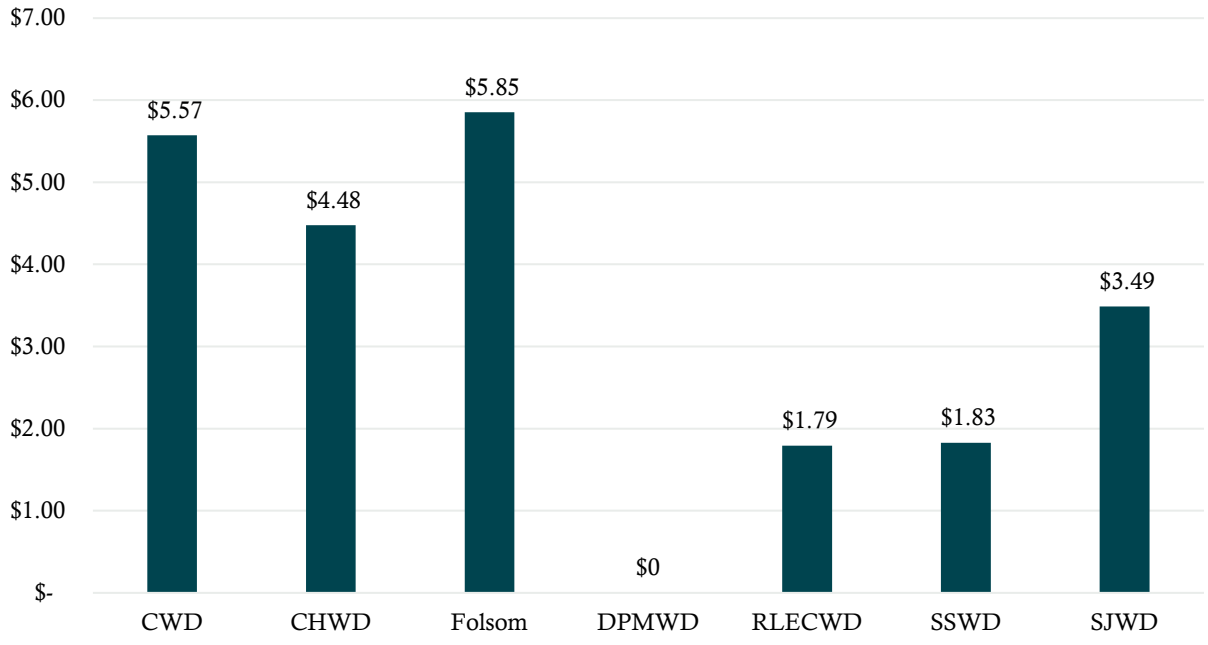


Figure 26: Costs of Water Conservation Programming Per Capita



Water Supply

The Sacramento Region's water suppliers have many opportunities to collaborate on preservation, distribution, and use of their water assets since the regional groundwater and surface water sources they depend on extend across and outside the service area boundaries of the various entities. They are also impacted collectively by changes in legislation and policy that apply broadly to regional or State-wide water management. This Study by the participating agencies should be a catalyst for further assessing regional water asset opportunities.

In the past four decades collectively the water agencies in the greater Sacramento Region have made great strides in diversification of water supplies and capital facilities associated with addressing drought, climate change, redundancy, reliability, groundwater overdraft (including creation of the Sacramento Groundwater Authority), emergency response and other factors. Within the agencies participating in this Study, examples of those facilities include improvements to SJWD's Sydney Peterson WTP, CWD's Bajamont WTP, the Cooperative Transmission Pipeline, the Antelope Transmission Pipeline, the Antelope Booster Pump Station and additional groundwater wells in CHWD. These facilities reflect millions of dollars of ratepayer dollars and State Grant funds coordinated through RWA to enable the agencies to conjunctively use the region's surface and groundwater assets as needed.

The total annual volume of the participating agencies' surface water and groundwater assets far exceeds the current and projected needs of their customers. However, the stagnant nature of the surplus water assets may have unanticipated long-term consequences. A fundamental tenet of California's surface water prior appropriation law is "use it or lose it" and the regional surface water supplies have not been fully utilized. This inability to put all surface water assets to beneficial use may jeopardize the future ability to retain those water assets or derive the maximum benefit available under the provisions of each water asset. Similarly, the continued water conservation regulatory actions further reduce the purveyor's actual water use that may limit long-term asset preservation despite purported legislative protections.

For those participating agencies that rely on groundwater exclusively or predominantly there may not be an obvious association with surface water supplies and the requirements associated with their use. Several suppliers indicated to Raftelis that they have adequate supplies now and into the foreseeable future, especially since per capita usage has trended downward and there is little significant growth in their service areas. This view may be shortsighted as groundwater withdrawal requirements can change and there could be unanticipated problems and/or limitations with groundwater resources for a variety of reasons. Furthermore, coordination between groundwater and surface water resources not only provides insurance against resource and policy changes but can also provide a revenue source. None of the participating agencies indicated that they are overfunded, and several noted the opposite, which should make revenue enhancement opportunities attractive.

As noted in the Task 1 Report, the participating agencies water assets total valuation approaches $1 billion, without incorporating the economic activity spawned by reliable water supplies or the value of the infrastructure used to divert, treat, and deliver the supplies. The combined current water assets available to the participating agencies exceeds 300,000 acre-feet per year while the current water demands for the participating agencies totals approximately 100,000 acre-feet per year. The future

projected total demand for the participating agencies is approximately 137,000 acre-feet per year. As such, the agencies have more than 170,000 acre-feet of apparent surplus water that is not, and may not in the future, be put to beneficial use (and this figure excludes banked water assets). Table 9 shows the total water supplies and demands for the participating agencies and the banked groundwater supplies attributable to each participating agency. Of course, changes in policies or new studies on the resources could impact these supplies at any time.

Table 9: Participating Agencies Water Demands and Supplies[8]

Agency*	Current Demand (Annual)	Future Demand	Own Surface Supply	Contract Supply	Reasonable GW Capacity**	Future Surplus w/out GW	Future Surplus w/ GW
SJWD	12,000	13,000	57,200	25,000			
CHWD	12,400	13,100			5,000		
FOWD	8,800	9,600			8,343		
OVWC	3,500	3,900			500		
Ashland	1,100	1,100					
San Juan Family Totals	**37,800**	**40,700**	**57,200**	**25,000**	**13,843**	**41,500**	**30,343**
DPMWD	1,700	1,700			2,460		760
CWD	10,000	10,000	32,627		2,200	22,627	24,827
SSWD	29,000	39,567		55,064	135,493	15,497	150,990
Folsom	19,000	28,200	34,000			5,800	5,800
RLECWD	2,500	17,000			15,767		0
Other Agency Totals	**62,200**	**96,467**	**66,627**	**55,064**	**155,920**	**43,924**	**182,377**
All Agency Totals	**100,000**	**137,167**	**123,827**	**80,064**	**169,763**	**85,424**	**212,720**

*Data derived from recent planning documents
**Reasonable Groundwater Capacity is a yield less than maximum groundwater pumping capacity

Collaborative management of the regional water asset portfolio may provide additional dry year reliability protections, improved emergency response management, and potential revenue streams for participating agencies. For instance, the value of the underutilized water assets likely exceeds $30 million in a conservatively priced short-term (annual) water transfer market if all of the supplies could be fully used and transferred. The long-term water asset value approximates $250 million based upon

[8] All units are in acre-feet (AF)

a permanent transaction water asset valuation of $2,000 per acre-foot. Leveraging the financial value of even a portion of these water assets would provide alternative revenue streams that could be used for system improvements.

Many of the participating agencies also have additional water assets, like contracts with neighboring purveyors and banked groundwater assets that may be called upon to further support the water supply portfolio. For example, SSWD has contract supplies with the City of Sacramento and Placer County Water Agency that may also be considered in this collaborative effort. In addition, SSWD, CWD, DPMWD, and RLEWD have banked groundwater supplies that may provide utility in collaborative activities and these values have been excluded from Table 9. In short, Table 9 presents a conservative estimate of the total supplies available to the participating agencies.

Collaborative management and use of regional water supplies, through contracts or other mutually beneficial agreements for use and storage, will protect the water assets for each purveyor's benefit, improve dry year reliability, and potentially improve short-term and long-term revenue opportunities for all participating agencies. Differences in costs of production per unit of water produced as identified in Figure 5 also may suggest regional opportunity. Activity 3 will provide potential options to improve the collaborative efforts among the purveyors in water management and use.

APPENDIX A:

Number of Staff by Function

Appendix A 1: Number of Staff by Function

Function	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Water distribution	11	14	18.5	1.5	6	24	16
Water treatment	8	3	8.5	0.25	0	15	13
Engineering	2	5	2.5	0.25	0	10	4
Customer service / billing	3	2.75	2	0	2	6	5
Public relations/Water conservation	3	3.75	3	0	0	2	3
Finance	3	2.5	1	0.25	1	4	5
Human resources (HR)	1	1.75	0.4	0.25	0.05	1	1.45
Information technology (IT)	1	1	.2	0	0	3	1
Other	0	2.25	1	1.5	1	5	1
Total	32	36	35	4	10	70	48

Note: For the purposes of this table the minimum reported or estimated staffing level is 0.25 FTE for most reporting, however, agencies are welcome to refine this further in subsequent drafts.

APPENDIX B:

Conservation Programming

Appendix B 1: Water Conservation Communication Channels

Channels	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Website / scrolling banner	X	X	X			X	X
Social media	X	X	X				X
Online advertising		X	X			X	
Emails							X
Digital video	X					X	X
Messages for on-hold customers (phone system?)						X	
Print newsletter / mailers / bill inserts or on bill	X	X	X		X	X	X
Lobby brochures / water wise gardening literature	X	X				X	X
Local newspaper articles /ads	X	X	X			X	
Children's workbooks						X	
Welcome packets with efficiency messaging for new customers							X
Drought: Door-to-door messaging in high use neighborhoods		X				X	
Drought: Increase frequency of public outreach campaign interventions through usual media content	X	X	X			X	
Drought: Push info to media outlets (radio, print, web, TV)	X		X			X	
Drought: Develop and distribute drought information to customers	X	X	X			X	
Drought: Display signs alerting public of reduction drought stage in community or at district offices	X					X	

Channels (continued)	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Drought: Update website with current demand reduction information	X		X			X	
Drought: Work with outside groups to post District literature or links on respective websites, email lists, or meetings	X					X	
Drought: Special mailing to customers notifying drought stage requirements	X	X	X			X	
Drought: Restaurant water efficiency window stickers						X	
Drought: Manage to state imposed 32% reductions target						X	
Drought: Adding requirements of the water shortage contingency plan	X	X	X			X	

Appendix B 2: Water Conservation Enforcement Mechanisms

Enforcement Mechanisms	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Water waste patrol		X	X			X	X
Restricted watering times during midday hours			X			X	
Water use prohibitions (SSWD Regulation No. 15)						X	
Drought: State imposed 32% reductions target		X				X	
Drought: Adding requirements of the water shortage contingency plan	X	X	X			X	
Drought: Late night / early morning water waste patrol		X	X			X	
Drought: Restricted watering days		X	X			X	

Enforcement Mechanisms (continued)	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Drought: Change regulations to increased Water Conservation Stage in Regulation No. 15 based on severity of drought conditions or state mandates						X	
Drought: Develop/revise message and content to reflect reduction requirements.	X		X				

Appendix B 3: Water Conservation Events

Events	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Community outreach events and workshops / HOH/neighborhood association presentations	X	X	X		X	X	X
Irrigation efficiency education communications			X			X	X
Community outreach event, water efficiency workshop sponsorships (Rotary, Chamber of Commerce, Kiwanis)	X		X			X	
School water efficiency calendar art contest	X	X					X
School presentations	X	X				X	
Facility tours	X		X			X	
WaterSmart Classes / conservation related classes or trainings		X				X	
Water efficient garden tours						X	X
Drought: Increase in presentations to neighborhood associations, community groups, and schools.	X		X			X	
Drought: Increase school presence by offering presentations and materials	X					X	
Drought: Offer presentations to all local civic groups, HOAs, and neighborhood associations.	X					X	

Appendix B 4: Water Conservation Incentives

Incentives	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Free low flow outdoor components (hose end nozzles, hose timers)	X	X				X	
Free or promote low flow indoor appliance kits (low-flow bathroom or kitchen faucet aerators)	X	X			X	X	
Rebate programs (toilet=$75-175, pressure reducing valve=$150, clothes washers ($50-100), pool covers, on demand hot water $100)		X	X			X	X
RWA irrigation controller rebates (reduced to $75)	X	X	X			X	X
Irrigation equipment rebates up to $500, $1500 commercial (heads or weather based timers, rain sensors)			X			X	X
Mulch program / giveaway						X	X
Rate structure that promotes efficient use per SB-606 and AB-1668			X		X	X	
Drought: Consider plumbing retrofit programs and increased advertising through public outreach efforts	X		X			X	
Drought: District will determine cost effectiveness and whether or not to offer additional rebates. i.e. smart -controllers, high efficiency washer, etc.	X		X			X	
Drought: High user surge to focus on contacting customers with higher use patterns in order to encourage participation in water efficiency programs and incentives (Top 20 percent of water users in each parcel acreage category)	X		X			X	

Appendix B 5: Water Conservation Management Tools

Management Tools	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Tracking usage at public facilities	X		X				
Tracking irrigation rebate program customer usage impacts			X			X	
Customer water usage is monitored each meter reading cycle to identify abnormal water use patterns and those customers are contacted.	X		X		X	X	X
Annual water loss submission and monthly reporting		X	X			X	
Customer portal for usage			X		X (pilot)	X	
AMI system that flags continuous use			X		X	X	
UWMP Public Notification		X	X			X	
Drought: High user surge to focus on contacting customers with higher use patterns in order to encourage participation in water efficiency programs and incentives (Top 20 percent of water users in each parcel acreage category)	X		X			X	
Drought: Utilize regional partnerships for messaging and implementation depending on purpose of water shortage stage declaration.	X		X			X	

Appendix B 6: Other Water Conservation Programming and Messaging

Other Programming and Messaging	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Messaging on efficiency stage						X	X
Messaging on indoor outdoor efficiency tips			X			X	X
Messaging on leak detection information						X	X
Encouraging reporting water waste						X	X
Messaging on native planting to attract wildlife						X	X
Residential water efficiency evaluations (WaterWise housecalls)	X	X	X			X	
CII water efficiency evals	X	X	X			X	
Private leak detection service / notifications / investigations	X	X	X			X	X
Water budget development			X			X	X
Drought: Additional staff and resources may be allocated to conduct an expected increase in requests for water audits, water efficiency device distribution, landscape budgets, and other programs offered as part of the Districts water efficiency program	X					X	

APPENDIX C:

Preventative Maintenance Activities

Appendix C 1: Preventative Maintenance Activities

Activities	CWD	CHWD	Folsom	DPMWD	RLECWD	SSWD	SJWD
Infrastructure maintenance	X	X	X	X	X	X	X
Dead-end or groundwater area flushing when quality issue	X	X	X			X	X
Hydrant maintenance / paint / flushing / greasing / inspecting	X	X	X	X	X	X	X
System-wide flushing			X		X		X
Valve exercising (mainline, blow off, hydrant valve, ARV/CARV)	X	X	X		X	X	X
Tank / storage reservoir inspections			X			X	
Large meter testing			X			X	X
Cathodic protection program						X	X

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT : DISCUSSION AND POSSIBLE ACTION TO APPROVE AN AGREEMENT WITH B&M BUILDERS, INC. FOR HVAC MAINTENANCE AND REPAIR SERVICES
STATUS : Action Item
REPORT DATE : November 3, 2021
PREPARED BY : Brian Hensley, Water Resources Supervisor
Rebecca Scott, Director of Operations

OBJECTIVE:
Consider approval of an agreement with B&M Builders, Inc. for HVAC Maintenance and Repair Services.

BACKGROUND AND ANALYSIS:
The District executes limited-term contracts for many of its maintenance services, including Heating, Ventilation, and Air Conditioning (HVAC) Services. As the current contract ends at the end of 2021, and in an effort to potentially obtain better pricing, the District recently issued a Request for Quotes (RFQ) from licensed contractors for HVAC services. The contract scope includes visual inspections, maintenance, repairs, and/or new installations of the District's HVAC systems. The proposed agreement is for a two-year term with the option to renew for up to twenty-four (24) additional months. On average, the District requests HVAC service six times per year, including quarterly inspections and annual maintenance. In addition, corrective maintenance is requested as needed.

The RFQ was published on the District's website and sent to local contractors within the greater Sacramento Region. In response, four quotes were received on October 28, 2021. The apparent low proposer is B&M Builders, Inc. The RFQ results are below:

Contractor	Hourly Rate	Material Markup	Truck Charge (Maintenance/Repairs)
B&M Builders, Inc.	**$105**	**20%**	**$40 / $40**
AK Mechanical, Inc.	$144	20%	$0 / $0
Mesa Energy Systems, Inc.	$145	25%	$0 / $85
Intech Mechanical, Inc.	$130	25%	$65 / $65

The new contract would save the District 22% on the hourly rate and 38% on the truck charge compared to the current HVAC provider. District staff recommends that the Board authorize the General Manager to execute the agreement with B&M Builders, Inc. for HVAC Maintenance and Repair Services.

RECOMMENDATION:
Authorize the General Manager to execute the agreement with B&M Builders, Inc. for HVAC Maintenance and Repair Services.

ATTACHMENT:
Agreement with B&M Builders, Inc. for HVAC Maintenance and Repair Services.

<u>ACTION</u>:

Moved by Director _____, Seconded by Director _____, Carried _____

CITRUS HEIGHTS WATER DISTRICT
MAINTENANCE SERVICES AGREEMENT

1. PARTIES AND DATE.

This Agreement is made and entered into this _____ day of _____, 2021, by and between the Citrus Heights Water District, a municipal corporation organized under the laws of the State of California with its principal place of business at 6230 Sylvan Road, Citrus Heights, California ("District") and B&M Builders, Inc., a Corporation with its principal place of business at 11330 Sunrise Park Dr., Ste. C, Rancho Cordova, California 95742 ("Contractor"). District and Contractor are sometimes individually referred to as "Party" and collectively as "Parties" in this Agreement.

2. RECITALS.

2.1 Contractor.

Contractor desires to perform and assume responsibility for the provision of certain maintenance services required by the District on the terms and conditions set forth in this Agreement. Contractor represents that it is experienced in providing HVAC Maintenance and Repair services to public clients, that it and its employees or subcontractors have all necessary licenses and permits to perform the Services in the State of California, and that is familiar with the plans of District. Contractor shall not subcontract any portion of the work required by this Agreement, except as expressly stated herein, without prior written approval of District. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement.

2.2 Project.

District desires to engage Contractor to render such services for the HVAC Maintenance and Repair Services project ("Project") as set forth in this Agreement.

3. TERMS.

3.1 Scope of Services and Term.

3.1.1 General Scope of Services. Contractor promises and agrees to furnish to the District all labor, materials, tools, equipment, services, and incidental and customary work necessary to fully and adequately supply the professional HVAC maintenance services necessary for the Project ("Services"). The Services are more particularly described in Exhibit "A" attached hereto and incorporated herein by reference. All Services shall be subject to, and performed in accordance with, this Agreement, the exhibits attached hereto and incorporated herein by reference, and all applicable local, state and federal laws, rules and regulations.

3.1.2 Term. The term of this Agreement shall be from January 3, 2022, to December 31, 2024, unless earlier terminated as provided herein. Contractor shall complete the Services within the term of this Agreement, and shall meet any other established schedules and deadlines. The Parties may, by mutual, written consent, extend the term of this Agreement if necessary to complete the Services.

3.2 Responsibilities of Contractor.

3.2.1 Control and Payment of Subordinates; Independent Contractor. The Services shall be performed by Contractor or under its supervision. Contractor will determine the means, methods and details of performing the Services subject to the requirements of this Agreement. District retains Contractor on an independent contractor basis and not as an employee. Contractor retains the right to perform similar or different services for others during the term of this Agreement. Any additional personnel performing the Services under this Agreement on behalf of Contractor shall also not be employees of District and shall at all times be under Contractor's exclusive direction and control. Contractor shall pay all wages, salaries, and other amounts due such personnel in connection with their performance of Services under this Agreement and as required by law. Contractor shall be responsible for all reports and obligations respecting such additional personnel, including, but not limited to: social security taxes, income tax withholding, unemployment insurance, disability insurance, and workers' compensation insurance.

3.2.2 Schedule of Services. Contractor shall perform the Services expeditiously, within the term of this Agreement, and in accordance with the Schedule of Services set forth in Exhibit "C" attached hereto and incorporated herein by reference. Contractor represents that it has the professional and technical personnel required to perform the Services in conformance with such conditions. In order to facilitate Contractor's conformance with the Schedule, District shall respond to Contractor's submittals in a timely manner. Upon request of District, Contractor shall provide a more detailed schedule of anticipated performance to meet the Schedule of Services.

3.2.3 Conformance to Applicable Requirements. All work prepared by Contractor shall be subject to the approval of District.

3.2.4 District's Representative. The District hereby designates Rebecca Scott, Director of Operations, or his or her designee, to act as its representative for the performance of this Agreement ("District's Representative"). District's Representative shall have the power to act on behalf of the District for all purposes under this Agreement. Contractor shall not accept direction or orders from any person other than the District's Representative or his or her designee.

3.2.5 Contractor's Representative. Contractor hereby designates Patrick Mullen, or his or her designee, to act as its representative for the performance of this Agreement ("Contractor's Representative"). Contractor's Representative shall have full authority to represent and act on behalf of the Contractor for all purposes under this Agreement. The Contractor's Representative shall supervise and direct the Services, using his best skill and attention, and shall be responsible for all means, methods, techniques, sequences and procedures and for the satisfactory coordination of all portions of the Services under this Agreement.

3.2.6 Coordination of Services. Contractor agrees to work closely with District staff in the performance of Services and shall be available to District's staff, consultants and other staff at all reasonable times.

3.2.7 Standard of Care; Performance of Employees. Contractor shall perform all Services under this Agreement in a skillful and competent manner, consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California. Contractor represents and maintains that it is skilled in the professional calling necessary to perform the Services. Contractor warrants that all employees and subcontractors shall have sufficient skill and experience to perform the Services assigned to them. Finally, Contractor represents that it, its employees and subcontractors have all licenses, permits, qualifications and approvals of whatever nature that are legally required to perform the Services, including any required business license, and that such licenses and approvals shall be maintained throughout the term of this Agreement. As provided for in the indemnification provisions of this Agreement, Contractor shall perform, at its own cost and expense and without reimbursement from the District, any services necessary to correct errors or omissions which are caused by the Contractor's failure to comply with the standard of care provided for herein. Any employee of the Contractor or its sub-contractors who is determined by the District to be uncooperative, incompetent, a threat to the adequate or timely completion of the Project, a threat to the safety of persons or property, or any employee who fails or refuses to perform the Services in a manner acceptable to the District, shall be promptly removed from the Project by the Contractor and shall not be re-employed to perform any of the Services or to work on the Project.

3.2.8 Period of Performance. Contractor shall perform and complete all Services under this Agreement within the term set forth in Section 3.1.2 above ("Performance Time"). Contractor shall perform the Services in strict accordance with any completion schedule or Project milestones described in Exhibit "C" attached hereto, or which may be provided separately in writing to the Contractor. Contractor agrees that if the Services are not completed within the aforementioned Performance Time and/or pursuant to any such completion schedule or Project milestones developed pursuant to provisions of this Agreement, it is understood, acknowledged and agreed that the District will suffer damage. Pursuant to Government Code Section 53069.85, Contractor shall pay to the District as fixed and liquidated damages, and not as a penalty, the sum of $250.00 per day for each and every calendar day of delay beyond the Performance Time or beyond any completion schedule or Project milestones established pursuant to this Agreement.

3.2.9 Disputes. Should any dispute arise respecting the true value of any work done, of any work omitted, or of any extra work which Contractor may be required to do, or respecting the size of any payment to Contractor during the performance of this Agreement, Contractor shall continue to perform the Work while said dispute is decided by the District. If Contractor disputes the District's decision, Contractor shall have such remedies as may be provided by law.

3.2.10 Laws and Regulations; Employee/Labor Certifications. Contractor shall keep itself fully informed of and in compliance with all local, state and federal laws, rules and regulations in any manner affecting the performance of the Project or the Services, including all Cal/OSHA requirements, and shall give all notices required by law. Contractor shall be liable for all violations of such laws and regulations in connection with Services. If the Contractor performs

any work knowing it to be contrary to such laws, rules and regulations and without giving written notice to the District, Contractor shall be solely responsible for all costs arising therefrom. District is a public entity of the State of California subject to certain provisions of the Health & Safety Code, Government Code, Public Contract Code, and Labor Code of the State. It is stipulated and agreed that all provisions of the law applicable to the public contracts of a municipality are a part of this Agreement to the same extent as though set forth herein and will be complied with. These include but are not limited to the payment of prevailing wages, the stipulation that eight (8) hours' labor shall constitute a legal day's work and that no worker shall be permitted to work in excess of eight (8) hours during any one calendar day except as permitted by law. Contractor shall defend, indemnify and hold District, its officials, officers, employees and agents free and harmless, pursuant to the indemnification provisions of this Agreement, from any claim or liability arising out of any failure or alleged failure to comply with such laws, rules or regulations.

3.2.10.1 Employment Eligibility; Contractor. By executing this Agreement, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time. Such requirements and restrictions include, but are not limited to, examination and retention of documentation confirming the identity and immigration status of each employee of the Contractor. Contractor also verifies that it has not committed a violation of any such law within the five (5) years immediately preceding the date of execution of this Agreement, and shall not violate any such law at any time during the term of the Agreement. Contractor shall avoid any violation of any such law during the term of this Agreement by participating in an electronic verification of work authorization program operated by the United States Department of Homeland Security, by participating in an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, or by some other legally acceptable method. Contractor shall maintain records of each such verification, and shall make them available to the District or its representatives for inspection and copy at any time during normal business hours. The District shall not be responsible for any costs or expenses related to Contractor's compliance with the requirements provided for in Section 3.2.10 or any of its sub-sections.

3.2.10.2 Employment Eligibility; Subcontractors, Sub-subcontractors and Consultants. To the same extent and under the same conditions as Contractor, Contractor shall require all of its subcontractors, sub-subcontractors and consultants performing any work relating to the Project or this Agreement to make the same verifications and comply with all requirements and restrictions provided for in Section 3.2.10.1.

3.2.10.3 Employment Eligibility; Failure to Comply. Each person executing this Agreement on behalf of Contractor verifies that they are a duly authorized officer of Contractor, and understands that any of the following shall be grounds for the District to terminate the Agreement for cause: (1) failure of Contractor or its subcontractors, sub-subcontractors or consultants to meet any of the requirements provided for in Sections 3.2.10.1 or 3.2.10.2; (2) any misrepresentation or material omission concerning compliance with such requirements (including in those verifications provided to the Contractor under Section 3.2.10.2); or (3) failure to immediately remove from the Project any person found not to be in compliance with such requirements.

3.2.10.4 Labor Certification. By its signature hereunder, Contractor certifies that it is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that Code, and agrees to comply with such provisions before commencing the performance of the Services.

3.2.10.5 Equal Opportunity Employment. Contractor represents that it is an equal opportunity employer and it shall not discriminate against any subcontractor, employee or applicant for employment because of race, religion, color, national origin, handicap, ancestry, sex or age. Such non-discrimination shall include, but not be limited to, all activities related to initial employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination.

3.2.10.6 Air Quality. Contractor must fully comply with all applicable laws, rules and regulations in furnishing or using equipment and/or providing services, including, but not limited to, emissions limits and permitting requirements imposed by the California Air Resources Board (CARB). Contractor shall specifically be aware of the CARB limits and requirements' application to "portable equipment", which definition is considered by CARB to include any item of equipment with a fuel-powered engine. Contractor shall indemnify District against any fines or penalties imposed by CARB or any other governmental or regulatory agency for violations of applicable laws, rules and/or regulations by Contractor, its subcontractors, or others for whom Contractor is responsible under its indemnity obligations provided for in this Agreement.

3.2.10.7 Water Quality.

(A) Management and Compliance. To the extent applicable, Contractor's Services must account for, and fully comply with, all local, state and federal laws, rules and regulations that may impact water quality compliance, including, without limitation, all applicable provisions of the Federal Water Pollution Control Act (33 U.S.C. §§ 1300); the California Porter-Cologne Water Quality Control Act (Cal Water Code §§ 13000-14950); laws, rules and regulations of the Environmental Protection Agency and the State Water Resources Control Board; the District's ordinances regulating discharges of storm water; and any and all regulations, policies, or permits issued pursuant to any such authority regulating the discharge of pollutants, as that term is used in the Porter-Cologne Water Quality Control Act, to any ground or surface water in the state.

(B) Liability for Non-Compliance. Failure to comply with the laws, regulations and policies described in this Section is a violation of law that may subject Contractor or District to penalties, fines, or additional regulatory requirements. Contractor shall defend, indemnify and hold the District, its officials, officers, employees, volunteers and agents free and harmless, pursuant to the indemnification provisions of this Agreement, from and against any and all fines, penalties, claims or other regulatory requirements imposed as a result of Contractor's non-compliance with the laws, regulations and policies described in this Section, unless such non-compliance is the result of the sole established negligence, willful misconduct or active negligence of the District, its officials, officers, agents, employees or authorized volunteers.

(C) Training. In addition to any other standard of care requirements set forth in this Agreement, Contractor warrants that all employees and subcontractors shall have sufficient skill and experience to perform the Services assigned to them without impacting water quality in violation of the laws, regulations and policies described in this Section. Contractor further warrants that it, its employees and subcontractors will receive adequate training, as determined by District, regarding the requirements of the laws, regulations and policies described in this Section as they may relate to the Services provided under this Agreement. Upon request, District will provide Contractor with a list of training programs that meet the requirements of this paragraph.

3.2.11 Insurance.

3.2.11.1 Time for Compliance. Contractor shall not commence Work under this Agreement until it has provided evidence satisfactory to the District that it has secured all insurance required under this Section. In addition, Contractor shall not allow any subcontractor to commence work on any subcontract until it has provided evidence satisfactory to the District that the subcontractor has secured all insurance required under this Section.

3.2.11.2 Minimum Requirements. Contractor shall, at its expense, procure and maintain for the duration of the Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Agreement by the Contractor, its agents, representatives, employees or subcontractors. Contractor shall also require all of its subcontractors to procure and maintain the same insurance for the duration of the Agreement. Such insurance shall meet at least the following minimum levels of coverage:

(A) Minimum Scope of Insurance. Coverage shall be at least as broad as the latest version of the following: (1) *General Liability*: Insurance Services Office Commercial General Liability coverage (occurrence form CG 0001); (2) *Automobile Liability*: Insurance Services Office Business Auto Coverage form number CA 0001, code 1 (any auto); and (3) *Workers' Compensation and Employer's Liability*: Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance. The policy shall not contain any exclusion contrary to the Agreement, including but not limited to endorsements or provisions limiting coverage for (1) contractual liability (including but not limited to ISO CG 24 26 or 21 29); or (2) cross liability for claims or suits by one insured against another.

(B) Minimum Limits of Insurance. Contractor shall maintain limits no less than: (1) *General Liability:* $1,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with general aggregate limit is used including, but not limited to, form CG 2503, either the general aggregate limit shall apply separately to this Agreement/location or the general aggregate limit shall be twice the required occurrence limit; (2) *Automobile Liability:* $1,000,000 per accident for bodily injury and property damage; and (3) *Workers' Compensation and Employer's Liability:* Workers' Compensation limits as required by the Labor Code of the State of California. Employer's Liability limits of $1,000,000 per accident for bodily injury or disease. Defense costs shall be paid in addition to the limits.

(C) Notices; Cancellation or Reduction of Coverage. At least fifteen (15) days prior to the expiration of any such policy, evidence showing that such insurance coverage has been renewed or extended shall be filed with the District. If such coverage is cancelled or materially reduced, Contractor shall, within ten (10) days after receipt of written notice of such cancellation or reduction of coverage, file with the District evidence of insurance showing that the required insurance has been reinstated or has been provided through another insurance company or companies. In the event any policy of insurance required under this Agreement does not comply with these specifications or is canceled and not replaced, the District has the right but not the duty to obtain the insurance it deems necessary and any premium paid by the District will be promptly reimbursed by Contractor or the District may withhold amounts sufficient to pay premium from Contractor payments. In the alternative, the District may suspend or terminate this Agreement.

(D) Additional Insured. The Citrus Heights Water District, its officials, officers, employees, agents, and volunteers shall be named as additional insureds on Contractor's and its subcontractors' policies of commercial general liability and automobile liability insurance using the endorsements and forms specified herein or exact equivalents.

3.2.11.3 Insurance Endorsements. The insurance policies shall contain the following provisions, or Contractor shall provide endorsements on forms supplied or approved by the District to add the following provisions to the insurance policies:

(A) General Liability. The general liability policy shall include or be endorsed (amended) to state that: (1) using ISO CG forms 20 10 and 20 37, or endorsements providing the exact same coverage, the Citrus Heights Water District, its officials, officers, employees, agents, and volunteers shall be covered as additional insured with respect to the Services or ongoing and complete operations performed by or on behalf of the Contractor, including materials, parts or equipment furnished in connection with such work; and (2) using ISO form 20 01, or endorsements providing the exact same coverage, the insurance coverage shall be primary insurance as respects the District, its officials, officers, employees, agents, and volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Contractor's scheduled underlying coverage. Any excess insurance shall contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of the District, before the District's own primary insurance or self-insurance shall be called upon to protect it as a named insured. Any insurance or self-insurance maintained by the District, its officials, officers, employees, agents, and volunteers shall be excess of the Contractor's insurance and shall not be called upon to contribute with it in any way. Notwithstanding the minimum limits set forth in Section 3.2.11.2(B), any available insurance proceeds in excess of the specified minimum limits of coverage shall be available to the parties required to be named as additional insureds pursuant to this Section 3.2.11.3(A).

(B) Automobile Liability. The automobile liability policy shall include or be endorsed (amended) to state that: (1) the District, its officials, officers, employees, agents, and volunteers shall be covered as additional insureds with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Contractor or for which the Contractor is responsible; and (2) the insurance coverage shall be primary insurance as respects the District, its officials, officers, employees, agents, and

volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Contractor's scheduled underlying coverage. Any insurance or self-insurance maintained by the District, its officials, officers, employees, agents, and volunteers shall be excess of the Contractor's insurance and shall not be called upon to contribute with it in any way. Notwithstanding the minimum limits set forth in Section 3.2.11.2(B), any available insurance proceeds in excess of the specified minimum limits of coverage shall be available to the parties required to be named as additional insureds pursuant to this Section 3.2.11.3(B).

(C) Workers' Compensation and Employer's Liability Coverage. The insurer shall agree to waive all rights of subrogation against the District, its officials, officers, employees, agents, and volunteers for losses paid under the terms of the insurance policy which arise from work performed by the Contractor.

(D) All Coverages. Each insurance policy required by this Agreement shall be endorsed to state that: (A) coverage shall not be suspended, voided, reduced or canceled except after thirty (30) days (10 days for nonpayment of premium) prior written notice by certified mail, return receipt requested, has been given to the District; and (B) any failure to comply with reporting or other provisions of the policies, including breaches of warranties, shall not affect coverage provided to the District, its officials, officers, employees, agents, and volunteers. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the District, its officials, officers, employees, agents and volunteers, or any other additional insureds.

3.2.11.4 Separation of Insureds; No Special Limitations; Waiver of Subrogation. All insurance required by this Section shall contain standard separation of insureds provisions. In addition, such insurance shall not contain any special limitations on the scope of protection afforded to the District, its officials, officers, employees, agents, and volunteers. All policies shall waive any right of subrogation of the insurer against the District, its officials, officers, employees, agents, and volunteers, or any other additional insureds, or shall specifically allow Contractor or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Contractor hereby waives its own right of recovery against District, its officials, officers, employees, agents, and volunteers, or any other additional insureds, and shall require similar written express waivers and insurance clauses from each of its subcontractors.

3.2.11.5 Deductibles and Self-Insurance Retentions. Any deductibles or self-insured retentions must be declared to and approved by the District. Contractor shall guarantee that, at the option of the District, either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the District, its officials, officers, employees, agents, and volunteers; or (2) the Contractor shall procure a bond guaranteeing payment of losses and related investigation costs, claims and administrative and defense expenses.

3.2.11.6 Subcontractor Insurance Requirements. Contractor shall not allow any subcontractors to commence work on any subcontract relating to the work under the Agreement until they have provided evidence satisfactory to the District that they have secured all insurance required under this Section. If requested by Contractor, the District may approve different scopes or minimum limits of insurance for particular subcontractors. The Contractor and

the District shall be named as additional insureds on all subcontractors' policies of Commercial General Liability using ISO form 20 38, or coverage at least as broad.

3.2.11.7 Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating no less than A:VIII, licensed to do business in California, and satisfactory to the District.

3.2.11.8 Verification of Coverage. Contractor shall furnish District with original certificates of insurance and endorsements effecting coverage required by this Agreement on forms satisfactory to the District. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf, and shall be on forms provided by the District if requested. All certificates and endorsements must be received and approved by the District before work commences. The District reserves the right to require complete, certified copies of all required insurance policies, at any time.

3.2.11.9 Reporting of Claims. Contractor shall report to the District, in addition to Contractor's insurer, any and all insurance claims submitted by Contractor in connection with the Services under this Agreement.

3.2.12 Safety. Contractor shall execute and maintain its work so as to avoid injury or damage to any person or property. In carrying out its Services, the Contractor shall at all times be in compliance with all applicable local, state and federal laws, rules and regulations, and shall exercise all necessary precautions for the safety of employees appropriate to the nature of the work and the conditions under which the work is to be performed. Safety precautions as applicable shall include, but shall not be limited to: (A) adequate life protection and life saving equipment and procedures; (B) instructions in accident prevention for all employees and subcontractors, such as safe walkways, scaffolds, fall protection ladders, bridges, gang planks, confined space procedures, trenching and shoring, equipment and other safety devices, equipment and wearing apparel as are necessary or lawfully required to prevent accidents or injuries; and (C) adequate facilities for the proper inspection and maintenance of all safety measures.

3.2.13 Bonds.

3.2.13.1 Performance Bond. If required by law or otherwise specifically requested by District in Exhibit "D" attached hereto and incorporated herein by reference, Contractor shall execute and provide to District concurrently with this Agreement a Performance Bond in the amount of the total, not-to-exceed compensation indicated in this Agreement, and in a form provided or approved by the District. If such bond is required, no payment will be made to Contractor until it has been received and approved by the District.

3.2.13.2 Payment Bond. If required by law or otherwise specifically requested by District in Exhibit "D" attached hereto and incorporated herein by reference, Contractor shall execute and provide to District concurrently with this Agreement a Payment Bond in the amount of the total, not-to-exceed compensation indicated in this Agreement, and in a form provided or approved by the District. If such bond is required, no payment will be made to Contractor until it has been received and approved by the District.

3.2.13.3 Bond Provisions. Should, in District's sole opinion, any bond become insufficient or any surety be found to be unsatisfactory, Contractor shall renew or replace the affected bond within 10 days of receiving notice from District. In the event the surety or Contractor intends to reduce or cancel any required bond, at least thirty (30) days prior written notice shall be given to the District, and Contractor shall post acceptable replacement bonds at least ten (10) days prior to expiration of the original bonds. No further payments shall be deemed due or will be made under this Agreement until any replacement bonds required by this Section are accepted by the District. To the extent, if any, that the total compensation is increased in accordance with the Agreement, the Contractor shall, upon request of the District, cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the District. To the extent available, the bonds shall further provide that no change or alteration of the Agreement (including, without limitation, an increase in the total compensation, as referred to above), extensions of time, or modifications of the time, terms, or conditions of payment to the Contractor, will release the surety. If the Contractor fails to furnish any required bond, the District may terminate this Agreement for cause.

3.2.13.4 Surety Qualifications. Only bonds executed by an admitted surety insurer, as defined in Code of Civil Procedure Section 995.120, shall be accepted. The surety must be a California-admitted surety with a current A.M. Best's rating no less than A:VIII and satisfactory to the District. If a California-admitted surety insurer issuing bonds does not meet these requirements, the insurer will be considered qualified if it is in conformance with Section 995.660 of the California Code of Civil Procedure, and proof of such is provided to the District.

3.2.14 Accounting Records. Contractor shall maintain complete and accurate records with respect to all costs and expenses incurred under this Agreement. All such records shall be clearly identifiable. Contractor shall allow a representative of District during normal business hours to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement. Contractor shall allow inspection of all work, data, documents, proceedings, and activities related to the Agreement for a period of three (3) years from the date of final payment under this Agreement.

3.3 Fees and Payments.

3.3.1 Compensation. Contractor shall receive compensation, including authorized reimbursements, for all Services rendered under this Agreement at the rates set forth in Exhibit "B" attached hereto and incorporated herein by reference. The total compensation shall not exceed Fifteen Thousand Dollars ($15,000) without written approval of District's Director of Operations. Extra Work may be authorized, as described below, and if authorized, will be compensated at the rates and manner set forth in this Agreement.

3.3.2 Payment of Compensation. Contractor shall submit to District a monthly itemized statement which indicates work completed and hours of Services rendered by Contractor. The statement shall describe the amount of Services and supplies provided since the initial commencement date, or since the start of the subsequent billing periods, as appropriate, through the date of the statement. District shall, within 45 days of receiving such statement, review the statement and pay all approved charges thereon.

3.3.3 Reimbursement for Expenses. Contractor shall not be reimbursed for any expenses unless authorized in writing by District.

3.3.4 Extra Work. At any time during the term of this Agreement, District may request that Contractor perform Extra Work. As used herein, "Extra Work" means any work which is determined by District to be necessary for the proper completion of the Project, but which the parties did not reasonably anticipate would be necessary at the execution of this Agreement. Contractor shall not perform, nor be compensated for, Extra Work without written authorization from District's Representative.

3.3.5 Prevailing Wages. Contractor is aware of the requirements of California Labor Code Section 1720, et seq., and 1770, et seq., as well as California Code of Regulations, Title 8, Section 16000, et seq., ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. Since the Services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is $1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. District shall provide Contractor with a copy of the prevailing rates of per diem wages in effect at the commencement of this Agreement. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to execute the Services available to interested parties upon request, and shall post copies at the Contractor's principal place of business and at the project site. Contractor shall defend, indemnify and hold the District, its officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws. It shall be mandatory upon the Contractor and all subcontractors to comply with all California Labor Code provisions, which include but are not limited to prevailing wages (Labor Code Sections 1771, 1774 and 1775), employment of apprentices (Labor Code Section 1777.5), certified payroll records (Labor Code Section 1776), hours of labor (Labor Code Sections 1813 and 1815) and debarment of contractors and subcontractors (Labor Code Sections 1777.1).

3.3.6 Registration. Since the Services are being performed as part of an applicable "public works" or "maintenance" project, then pursuant to Labor Code Sections 1725.5 and 1771.1, the Contractor and all subcontractors must be registered with the Department of Industrial Relations. Contractor shall maintain registration for the duration of the Project and require the same of any subcontractor. This Project may also be subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be Contractor's sole responsibility to comply with all applicable registration and labor compliance requirements.

3.4 Termination of Agreement.

3.4.1 Grounds for Termination. District may, by written notice to Contractor, terminate the whole or any part of this Agreement at any time and without cause by giving written notice to Contractor of such termination, and specifying the effective date thereof, at least seven (7) days before the effective date of such termination. Upon termination, Contractor shall be compensated only for those services which have been adequately rendered to District, and Contractor shall be entitled to no further compensation. Contractor may not terminate this Agreement except for cause.

3.4.2 Effect of Termination. If this Agreement is terminated as provided herein, District may require Contractor to provide all finished or unfinished Documents and Data and other information of any kind prepared by Contractor in connection with the performance of Services under this Agreement. Contractor shall be required to provide such document and other information within fifteen (15) days of the request.

3.4.3 Additional Services. In the event this Agreement is terminated in whole or in part as provided herein, District may procure, upon such terms and in such manner as it may determine appropriate, services similar to those terminated.

3.5 General Provisions.

3.5.1 Delivery of Notices. All notices permitted or required under this Agreement shall be given to the respective parties at the following address, or at such other address as the respective parties may provide in writing for this purpose:

Contractor:

B&M Builders, Inc.
11330 Sunrise Park Dr., Ste. C,
Rancho Cordova, CA 95742
Attn: Patrick Mullen

District:

Citrus Heights Water District
6230 Sylvan Road
Citrus Heights, California 95610
Attn: Rebecca Scott, Director of Operations

Such notice shall be deemed made when personally delivered or when mailed, forty-eight (48) hours after deposit in the U.S. Mail, first class postage prepaid and addressed to the party at its applicable address. Actual notice shall be deemed adequate notice on the date actual notice occurred, regardless of the method of service.

3.5.2 Indemnification.

3.5.2.1 Scope of Indemnity**.** To the fullest extent permitted by law, Contractor shall defend, indemnify and hold the District, its officials, officers, employees, volunteers and agents free and harmless from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, in any manner arising out of, pertaining to, or incident to any alleged acts, errors or omissions of Contractor, its officials, officers, employees, subcontractors, consultants or agents in connection with the performance of the Contractor's Services, the Project or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys' fees and other related costs and expenses. Notwithstanding the foregoing, to the extent Contractor's Services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Contractor.

3.5.2.2 Additional Indemnity Obligations. Contractor shall defend, with Counsel of District's choosing and at Contractor's own cost, expense and risk, any and all claims, suits, actions or other proceedings of every kind covered by Section 3.5.2.1 that may be brought or instituted against District or its officials, officers, employees, volunteers and agents. Contractor shall pay and satisfy any judgment, award or decree that may be rendered against District or its officials, officers, employees, volunteers and agents as part of any such claim, suit, action or other proceeding. Contractor shall also reimburse District for the cost of any settlement paid by District or its officials, officers, employees, agents or volunteers as part of any such claim, suit, action or other proceeding. Such reimbursement shall include payment for District's attorneys' fees and costs, including expert witness fees. Contractor shall reimburse District and its officials, officers, employees, agents, and/or volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Contractor's obligation to indemnify shall survive expiration or termination of this Agreement, and shall not be restricted to insurance proceeds, if any, received by the District, its officials officers, employees, agents, or volunteers.

3.5.3 Governing Law; Government Code Claim Compliance. This Agreement shall be governed by the laws of the State of California. Venue shall be in Sacramento County, California. In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra work, disputed work, claims and/or changed conditions, Contractor must comply with the claim procedures set forth in Government Code sections 900 et seq. prior to filing any lawsuit against the District. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to extra work, disputed work, claims, and/or changed conditions have been followed by Contractor. If no such Government Code claim is submitted, or if any prerequisite contractual requirements are not otherwise satisfied as specified herein, Contractor shall be barred from bringing and maintaining a valid lawsuit against the District.

3.5.4 Time of Essence. Time is of the essence for each and every provision of this Agreement.

3.5.5 District's Right to Employ Other Contractors. District reserves right to employ other contractors in connection with this Project.

3.5.6 Successors and Assigns. This Agreement shall be binding on the successors and assigns of the parties.

3.5.7 Assignment or Transfer. Contractor shall not assign, hypothecate or transfer, either directly or by operation of law, this Agreement or any interest herein without the prior written consent of the District. Any attempt to do so shall be null and void, and any assignees, hypothecates or transferees shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer.

3.5.8 Construction; References; Captions. Since the Parties or their agents have participated fully in the preparation of this Agreement, the language of this Agreement shall be construed simply, according to its fair meaning, and not strictly for or against any Party. Any term

referencing time, days or period for performance shall be deemed calendar days and not work days. All references to Contractor include all personnel, employees, agents, and subcontractors of Contractor, except as otherwise specified in this Agreement. All references to District include its officials, officers, employees, agents, and volunteers except as otherwise specified in this Agreement. The captions of the various articles and paragraphs are for convenience and ease of reference only, and do not define, limit, augment, or describe the scope, content or intent of this Agreement.

3.5.9 Amendment; Modification. No supplement, modification or amendment of this Agreement shall be binding unless executed in writing and signed by both Parties.

3.5.10 Waiver. No waiver of any default shall constitute a waiver of any other default or breach, whether of the same or other covenant or condition. No waiver, benefit, privilege, or service voluntarily given or performed by a Party shall give the other Party any contractual rights by custom, estoppel or otherwise.

3.5.11 No Third Party Beneficiaries. Except to the extent expressly provided for in Section 3.5.7, there are no intended third party beneficiaries of any right or obligation assumed by the Parties.

3.5.12 Invalidity; Severability. If any portion of this Agreement is declared invalid, illegal, or otherwise unenforceable by a court of competent jurisdiction, the remaining provisions shall continue in full force and effect.

3.5.13 Prohibited Interests. Contractor maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Contractor, to solicit or secure this Agreement. Further, Contractor warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Contractor, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. Contractor further agrees to file, or shall cause its employees or subcontractors to file, a Statement of Economic Interest with the District's Filing Officer as required under state law in the performance of the Services. For breach or violation of this warranty, District shall have the right to rescind this Agreement without liability. For the term of this Agreement, no official, officer or employee of District, during the term of his or her service with District, shall have any direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

3.5.14 Cooperation; Further Acts. The Parties shall fully cooperate with one another, and shall take any additional acts or sign any additional documents as may be necessary, appropriate or convenient to attain the purposes of this Agreement.

3.5.15 Attorneys' Fees and Costs. If any action in law or equity, including an action for declaratory relief, is brought to enforce or interpret the provisions of this Agreement, the prevailing Party shall be entitled to recover from the losing party attorney's fees and costs in an amount determined to be reasonable by a court of competent jurisdiction.

3.5.16 Authority to Enter Agreement. Contractor has all requisite power and authority to conduct its business and to execute, deliver, and perform the Agreement. Each Party

warrants that the individuals who have signed this Agreement have the legal power, right, and authority to make this Agreement and bind each respective Party.

3.5.17 Counterparts. This Agreement may be signed in counterparts, each of which shall constitute an original.

3.5.18 Entire Agreement. This Agreement contains the entire Agreement of the parties with respect to the subject matter hereof, and supersedes all prior negotiations, understandings or agreements. This Agreement may only be modified by a writing signed by both parties.

[SIGNATURES ON NEXT PAGE]

SIGNATURE PAGE FOR MAINTENANCE SERVICES AGREEMENT BETWEEN THE CITRUS HEIGHTS WATER DISTRICT AND B&M BUILDERS, INC.

IN WITNESS WHEREOF, the Parties have entered into this Agreement as of the _____ day of _____, 2021.

CITRUS HEIGHTS WATER DISTRICT

By: _____
Hilary M. Straus
General Manager

B&M BUILDERS, Inc.

By: _____

Its: _____

Printed Name:_____

Federal ID No. _____
Business License Number _____ (City of _____)

Exhibit "A"

SCOPE OF SERVICES FOR
HVAC MAINTENANCE AND REPAIR SERVICES

SECTION A: GENERAL SPECIFICATIONS

SERVICES TO BE PROVIDED
It is the Proposer's responsibility to provide an appropriate level of on-site staffing as needed, provide appropriate tools and vehicles necessary to support all District HVAC maintenance functions, as well as HVAC improvement projects during business hours and for response after normal working hours. Proposer's services are to be compliant with all Federal, State, CARB, AQMD, OSHA, and all other applicable regulatory requirements.

PRICING TABULATION SHEETS
Prices, as stated on the Payment Rates Sheet (Exhibit B), shall be all-inclusive for HVAC maintenance services specified in this Proposal.

HVAC MAINTENANCE STAFFING LEVELS
The contractor shall provide a staffing level that will provide the desired level of customer service, program support, HVAC maintenance, and repair at designated District facilities.

Staffing levels should include staff that is certified and proficient in the complete maintenance and repair of a variety of package HVAC units and associated equipment. Additionally, service levels shall provide the ability to respond within three (3) hours to situations involving the health and safety of employees and/or the public; comfort and operational capability of any public meeting space. Routine repairs, service requests, or other non-urgent tasks shall be completed by journey-level staff within three (3) working days from the date of the request.

The journey-level worker(s) shall have a comprehensive understanding of HVAC control systems and be proficient in the following trades:

- Package HVAC units.
- All mechanical and electronic aspects of HVAC systems.
- Multi-zone air handling systems

TOOLS AND EQUIPMENT
The contractor shall furnish and maintain all equipment necessary for properly maintaining HVAC systems.

INSPECTIONS AND REMEDIES
To ensure consistent quality of the work being performed, the Director of Operations, or designee, shall inspect any work performed by the contractor to ensure that the materials and workmanship are in accordance with the specifications before accepting and approving an invoice for payment of work performed.

EMERGENCY CALL-OUT SERVICE
The contractor shall provide 24-hour emergency service as needed in all aspects of HVAC emergency repair for Citrus Heights Water District (District) facilities included in this specification.

Hours shall be Monday through Thursday 5:30 p.m. to 7:00 a.m. and 24 hours each day on Fridays, weekends, and Holidays. The contractor shall have working personnel on-site within three (3) hours of the call-out. Labor rates for emergency call-out work and overtime shall be paid at 1½ times the fixed rate shown on the Bid.

REPAIR WORK
The contractor shall be expected to be capable of repairing or replacing failed or worn moving parts (such as bearings, motor rotors, motor starters, seals, gears, burners, actuators, controls, and switches). Before beginning any repair or replacement, the contractor will troubleshoot the system to diagnose the system's problems and provide a written analysis of such troubleshooting. The District shall not incur any extra charge for this analysis which will include an itemized listing of the equipment/parts that are proposed to be repaired or replaced. All work beyond and in addition to the routine maintenance scope of the contract shall require an estimate for proposed work to be provided to the Director of Operations or designee for consideration. Repairs to the District HVAC units may include units located at remote facilities shown on the HVAC Equipment List and not subject to Annual Maintenance.

All written estimates shall include labor costs as shown on the bid sheet and costs for parts, materials, and equipment. Final invoices shall contain original estimates and actual receipts for parts, materials, and equipment. Mileage will not be reimbursable. The District reserves the right to go out to bid for any repairs exceeding $10,000.

ADDITIONAL CONTRACTOR REQUIREMENTS

- The contractor shall show evidence of having served commercial customers in similar contracts.
- The contractor shall hold a current C20 license.
- The contractor shall have full-time journeyman-level mechanical personnel.
- Service Automation specialists shall demonstrate familiarity with a variety of generic HVAC control systems.
- The contractor shall supply their staff with their company uniform and photo identification tags that will be worn at all times. Uniforms shall display the contractor logo and the employee's first or last name shall be visible.

SECTION B: ROUTINE MAINTENANCE SPECIFICATIONS

The contractor shall retain qualified personnel who have successfully and competently provided commercial facility HVAC maintenance and repair services on projects of similar scope and complexity. It shall be the contractor's responsibility to develop and implement a routine maintenance program to effectively maintain, to the satisfaction of the Director of Operations or designee, all aspects of HVAC systems in District facilities. For this contract, routine preventative HVAC maintenance shall be defined as scheduled routine inspection and proactive servicing of

HVAC systems to facilitate heating/cooling with minimal downtime. The routine maintenance and all repairs shall be provided following the highest standards of the industry, skill, workmanship, applicable trade practices, meet warranties, and in conformance to all applicable laws, codes, and regulations. The successful Proposer's maintenance program and repairs shall, at a minimum, include but are not limited to the specifications outlined herein.

DAMAGES

The contractor will be responsible for all damages to the facility or contents caused by the contractor, their staff, or subcontractors during the performance of their duties.

HEATING-VENTILATION-AIR CONDITIONING (HVAC)
MAINTENANCE AND MONITORING

The contractor shall provide expeditious correction and record complaints and corrections at District facilities. The contractor shall inspect all HVAC systems quarterly each year, with start-up and run inspections performed and documented.

- The contractor shall inspect all moving parts or components, investigate noises: belts; bearings; drives; and fans, and lubricate and adjust as recommended per manufacturer's specifications.
- The contractor shall perform air-handling unit maintenance which includes but is not limited to; all services recommended by the manufacturer and replacing air filters as needed at District facilities.
- The contractor shall inspect and provide documentation that all District facilities under contract with the Contractor are receiving required work.
- The contractor shall perform quarterly inspections of HVAC systems for preventative maintenance work requests.

Proof of Work Documentation

The contractor will provide standard proof of work documentation following completion of all work. The document must include sufficient information to identify the facility where work was performed, equipment and/or components on which work was performed, the purpose of work, date and time work was performed, parts used, type and amount of chemicals/refrigerants, and the name/cert # of technician(s) executing the work.

For the following maintenance and service specifications, equipment is itemized in the

HVAC Equipment Inventory List

Annual Maintenance

The contractor will perform scheduled annual preventive maintenance during one of the quarterly inspections under a program of standard routines as determined by your experience, equipment application, and equipment operating hours that are recommended by each equipment manufacturer and location. This service is designed to optimize the reliability and efficiency of the equipment, extend the useful life of the District's equipment, and provide proactive indications of excessive wear and damage to HVAC systems before a catastrophic failure occurs during the next operating season. The contractor will also provide recommendations for additional service(s) that will better enhance equipment performance.

HVAC Air Filter Changing Service

This service will maintain indoor air quality by changing filters as needed and minimizing dust

and particles from collecting on ductwork. This service will ensure proper flow through the cooling and heating coils, thus preventing restrictions in airflow, leading to higher system and energy efficiency.

HVAC Belt Inspection & Changing Service

This service will maintain the reliability and functionality of the units by inspecting drive belts quarterly and replacing belts that are worn or damaged. This service will ensure proper tension and friction on the belts, maintaining the efficiency and reliability of the equipment. In the event a belt fails between maintenance periods, it will be assumed the contractor failed to inspect/replace it properly and the contractor will be required to replace it at no extra cost to the District.

Air Cooled Condenser Coil Cleaning

This service will improve airflow across condenser coils, improve heat transfer and extend the life of the compressors. Coil cleaning consists of cleaning the outside surface of the condensing unit coils to remove any airborne particles or dirt build-up by using a brush, high-pressure air, chemical with a low-pressure wash, or chemical with high-pressure wash based on the condition of the outside environment and coil accessibility.

Evaporator Coil and Cleaning

The proposer will clean air handling unit evaporator coils to help improve air circulation in the air distribution system and reduce dust and dirt that is in the system. Coils will be cleaned annually or more if needed. Coil cleaning consists of cleaning the surface of the evaporator coil to remove dust and dirt particles that have collected on the evaporator coil. Coils will be cleaned using a vacuum cleaner and or other devices that allow the proper cleaning of the coil.

Citrus Heights Water District HVAC Inventory

(Shaded Units receive Quarterly and Annual Maintenance Services; all other units receive maintenance as-requested)

On-site

6230 Sylvan Road - Administration Building

Air Handler Units

Manufacturer	Model	Serves
Trane	GAF2A0A36s	Boardroom
Trane	TWE090	Main Office
Trane	GAF2A0A36s	East Offices

Heat Pump Units

Manufacturer	Model	Serves
Trane	4TWB4036	Boardroom
Trane	TWA073	Main Office
Trane	4TWB4036	East Offices

Mini Split Units

Manufacturer	Model	Serves
Daikin	FTX36NVJU	Server Room
Carrier	40GJC	GM's Office

6230 Sylvan Road - Operations Building

Packaged Units

Manufacturer	Model	Serves
Trane	4YCC3060A3096AA	Main Office
Trane	4YCC3060A3096AA	East Offices

6230 Sylvan Road - Sylvan Well

Panel Mount Unit

Manufacturer	Model	Serves
Kooltronic	DP-50	Motor Control

Off-site

5640 Southgrove Drive - Skycrest Well

Wall-Mount Unit

Manufacturer	Model	Serves
Bard	W24-A2C	Building

7117 Bonita Way - Bonita Well

Wall-Mount Unit

Manufacturer	Model	Serves
Bard	W484	Building

12625 Fair Oaks Blvd - Mitchell Well

Wall-Mount Unit

Manufacturer	Model	Serves
Bard	W484	Building

EXHIBIT "B"

COMPENSATION

SECTION 00300
SERVICES AVAILABLE AND FINANCIAL WORKSHEET

COMPANY NAME: B&M Builders, Inc. DATE: 10/21/21

COMPANY ADDRESS: 11330 Sunrise Park Dr. Suite C

CITY: Rancho Cordova STATE: California ZIP CODE: 95742

PHONE: 916-638-8626 EMAIL: Dclark@bm-builders.com

Be sure to fill out this form completely, it will become "Exhibit B – Payment Rates" of the Agreement for Services. Please add a separate TIME & LABOR RATES table for each job classification (Technician, Laborer-Helper, etc.) Use the "Conditions for Payment Rate" column to describe in detail the schedules and conditions which may merit any variance from the Standard Time payment rate. Examples of alternative rates may include As Needed Emergency Services, Weekend Rates, Holiday Rates, Double-Time, work over a certain threshold of hours, etc.

TIME & LABOR RATES Time & Labor Rates Type of Pay	**Conditions for Payment Rate**	**Hourly Rate**
Standard Time (*Required)	(Example: "Up to X hours per day, up to Y days per week").	$ / hour $105.00
Overtime, if applicable	Overtime	$ / hour $157.50
Alternative Rate #A, if applicable	Emergency	$ / hour $157.00
Alternative Rate #B, if applicable	Weekend	$ / hour $210.00
Alternative Rate #C, if applicable	Holiday	$ / hour $210.00
Alternative Rate #D, if applicable		$ / hour

NON- LABOR RATES

Minimum Service Call Duration (in hours)	= 2 hours	
Mileage Reimbursement Rate (in $ per mile)	NOT REIMBURSABLE	
Rental Equipment Markup	= Cost + 20 %	
Material Markup	= Cost + 20 %	
All Other Rates	=	
Truck Charge (if applicable)	(Contract Maintenance) = $40.00 per visit	(All other repairs) = $40.00 per visit

COMPANY REPRESENTATIVE

Signature: Date: 10/21/21

Name: Patrick Mullen

Title: President

END OF SERVICES AVAILABLE AND FINANCIAL WORKSHEET

EXHIBIT "C"

SCHEDULE OF SERVICES

RESPONSE TIME FOR MAINTENANCE-REPAIR SERVICES SHALL BE "WITHIN THREE (3) BUSINESS DAYS OF REQUEST BY DISTRICT." ALL WORK SHALL BE PERFORMED DURING NORMAL WORKING HOURS UNLESS OTHERWISE REQUESTED AND APPROVED BY DISTRICT IN ADVANCE. NORMAL WORKING HOURS ARE AS FOLLOWS: 7:00 A.M. – 5:30 P.M., MONDAY THROUGH THURSDAY, EXCLUDING DISTRICT OBSERVED HOLIDAYS.

EMERGENCY SERVICES: EMERGENCY SERVICES SHALL BE PROVIDED ON AN "AS NEEDED" BASIS. THE DISTRICT WILL NOTIFY THE CONTRACTOR WHEN EMERGENCY SERVICES ARE REQUIRED. THE CONTRACTOR SHALL BE AVAILABLE TO PROVIDE EMERGENCY SERVICES 24 HOURS/DAY, 7 DAYS/WEEK, 365 DAYS/YEAR, AND HAVE THE ABILITY TO RESPOND WITHIN THREE (3) HOURS OF REQUEST BY DISTRICT OR THE CONTRACTOR SHALL DEMONSTRATE THAT CONDITIONS WERE SUCH THAT TRAVEL TO THE SITE WOULD BE EXTREMELY HAZARDOUS, OR THERE WAS SOME OTHER EXTENUATING CIRCUMSTANCE. SHOULD THIS BE THE CASE, THE CONTRACTOR SHALL BE REQUIRED TO IMMEDIATELY CONTACT THE APPROPRIATE DISTRICT STAFF AND COMMUNICATE THE PROBLEM WITH TRAVEL AND A REVISED TIME MAY BE APPROVED.

ALL EMERGENCY SERVICES SHALL BE PERFORMED ON A TIME AND MATERIALS BASIS UNLESS IT IS DETERMINED THE CAUSE OF THE FAILURE OR MALFUNCTION WAS DUE TO THE CONTRACTOR'S FAILURE TO PROPERLY PERFORM REPAIR AND/OR EMERGENCY SERVICES APPROPRIATELY, IN WHICH CASE, SUCH EMERGENCY REPAIRS SHALL BE MADE AT NO ADDITIONAL COST TO THE DISTRICT.

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 REGULAR MEETING

SUBJECT	:	Resolution Commending Christopher Boyd for Service to the Citrus Heights community
STATUS	:	Action Item
REPORT DATE	:	November 8, 2021
PREPARED BY	:	Brittney Moore, Senior Management Analyst

OBJECTIVE:
Consider adoption of Resolution 11-2021 Commending Christopher Boyd for service to the Citrus Heights community.

BACKGROUND AND ANALYSIS:
A resolution commending Christopher Boyd on the occasion of his retirement as the City Manager for the City of Citrus Heights, having served as the City Manager for five years and as the City's first Police Chief for more than ten years prior to his tenure as City Manager.

RECOMMENDATION:
Approve the accompanying Resolution 11-2021 commending Christopher Boyd for his service to the Citrus Heights community.

ATTACHMENT:
Resolution R11-2021 Commending Christopher Boyd for Service to the Citrus Heights community

ACTION:

Moved by Director _____, Seconded by Director _____, Carried _____

CITRUS HEIGHTS WATER DISTRICT
RESOLUTION NO. 11-2021

RESOLUTION OF THE BOARD OF DIRECTORS
COMMENDING CHRISTOPHER BOYD FOR SERVICE TO THE
CITRUS HEIGHTS COMMUNITY

WHEREAS, Christopher Boyd began serving the City of Citrus Heights as Chief of Police in January 2006; and

WHEREAS, Christopher Boyd was appointed as City Manager for the City of Citrus Heights in October 2016; and

WHEREAS, during his tenure, Christopher Boyd served as the first Chief of Police for the City of Citrus Heights, and worked to develop a new fully, functioning police department, and created innovative approaches for community policing; and

WHEREAS, Christopher Boyd was recognized for development of a domestic violence response team, and integrating strong community partnerships with the police department to revitalize troubled neighborhoods; under Mr. Boyd's leadership the City of Citrus Heights Police Department became the first agency to receive the prestigious James Q. Wilson Award for two consecutive years in 2012 and 2013; and

WHEREAS, Christopher Boyd's tenure as City Manager has led to sizable economic development projects and more efficient operations for the City of Citrus Heights; and

WHEREAS, Christopher Boyd worked to foster collaborative relationships with surrounding agencies including Citrus Heights Water District; and

WHEREAS, Christopher Boyd's service to the Citrus Heights community is appreciated and the Citrus Heights Water District wishes him well in his future endeavors.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE CITRUS HEIGHTS WATER DISTRICT DOES RESOLVE that the Citrus Heights Water District hereby commends Christopher Boyd for his dedication and outstanding service to the City of Citrus Heights, and extends best wishes for many years filled with happiness and good health.

ADOPTED this 17th day of November, 2021

AYES: Board Members-
NOES: Board Members-
ABSTAIN: Board Members-
ABSENT: Board Members-

_____
DAVID C. WHEATON, President
Board of Directors
Citrus Heights Water District

I HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution 11-2021 adopted by the Board of Directors of Citrus Heights Water District at its regular meeting held November 17, 2021.

_____
BRITTNEY MOORE, Deputy Board Clerk
Citrus Heights Water District

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 MEETING

SUBJECT	:	REVIEW AND CONSIDERATION OF THE STRATEGIC PLAN FOR ASR IMPLEMENTATION
STATUS	:	Study Session
REPORT DATE	:	November 1, 2021
PREPARED BY	:	Brian Hensley, Water Resources Supervisor Rebecca Scott, Director of Operations

Objective:

Receive the Strategic Plan for ASR Implementation Groundwater Planning Report.

Background and analysis:

In September 2019, the District retained GEI Consultants, Inc. to analyze the potential for theimplementation of Aquifer Storage and Recovery (ASR) activities within the Citrus Heights Water District (District) service area.

ASR is a water management technique whereby drinking water is injected into the ground during times of surplus supply and stored for extraction in dry periods or to meet peak demand. ASR would have a beneficial quality impact on District groundwater by creating a mound shielding/deflecting the flow of groundwater in the area impacted by Perchloroethylene (PCE) in the Northwest portion of the District. Injected water is generally surface water, but can be any water supply treated under a California Division of Drinking Water (DDW) domestic water supply permit. ASR wells are dual-purpose wells capable of both injection and extraction of water at the same location. By integrating ASR wells into a drinking water supply system, potable water can be easily transported to the well site for injection and later extracted at the same location for public supply.

The objective of the work conducted by GEI was to build on the Regional ASR Information Study recently completed by the Regional Water Authority (RWA) with a local focus on ASR feasibility for the specific facilities and groundwater conditions of the District. In addition, the District was interested in the potential to generate revenue through the operation of a future ASR program to not only offset the cost to implement ASR but also to help stabilize rates for District customers. As part of the District's Report, GEI evaluated well and aquifer conditions in the District, summarized costs to modify existing wells for ASR operations, and included communications with RWA and City of Roseville staff to better understand the feasibility of the District partnering on a local groundwater banking and exchange program involving ASR. The compiled information was used to develop a District-specific ASR Implementation Plan.

Suitability of Local Groundwater Conditions for ASR

To assess the suitability of the local groundwater conditions for ASR suitability, GEI considered the following factors:

- Depth to groundwater

- Estimates of groundwater mounding potential
- Aquifer thickness and hydraulic conductivity
- Surface water and groundwater quality
- Estimated injection rates at existing wells
- Groundwater flow direction and rate, and
- Proximity of injection wells and water stored in aquifer to potential contaminant sources

GEI concluded that the conditions for ASR are favorable in the District for both retrofitting existing wells and constructing new wells to operate with ASR.

Well Condition Assessment and Cost to Retrofit

GEI conducted a site visit to each of the District's existing groundwater production wells to identify ASR equipment modifications to inject drinking water through these wells. If the District were to retrofit its existing wells, GEI recommends only retrofitting the newer wells constructed with stainless steel (due to its strength and corrosion resistance), which include Mitchell, Bonita, and Skycrest. GEI concluded that the use of existing wells for injection is feasible and the average estimated cost to retrofit for ASR operation is $202,000 per well. This estimate is also valid for the additional costs in outfitting a new well with ASR capability, due to the District's current well design specifications which already require stainless steel construction of the well casing below the waterline.

Regional Assessment

RWA member agencies have shown a lot of interest in developing ASR in recent years. GEI provided a listing of local agencies either studying or developing ASR projects for the District's consideration. GEI suggests collaborating and partnering with neighboring agencies in the development and implementation of ASR within the District. The District will need to partner with a surface water provider in a potential future District-led ASR project. The table below summarizes potential surface water providers and considerations for future evaluation in pursuing partnerships with these agencies.

Potential Surface Water Partners in a District Lead ASR Project

Agency	Partnership Considerations
City of Roseville and Placer County Water Agency (PCWA)	The District has multiple interties with Roseville. Roseville fluoridates its drinking water, but the District does not. Roseville is developing its ASR program in part to participate in regional groundwater banking and exchange as future opportunities arise. Roseville's charter prohibits the provision of water on a retail basis outside the City limit. It may not prevent wholesale delivery and it does not impact the wheeling agreement with PCWA for moving its Middle Fork water through the system. This wheeled water is for Cal Am and any other entities west of Roseville. Wheeling water from PCWA to Citrus Heights is allowed, but it's something that requires further evaluation if the District elects to pursue a partnership with PCWA.

Agency	Partnership Considerations
	Roseville also has lower pressure (would need PRV/system-wide pressure reduction) and a potential place of use issue (only able to be used in Placer County in dry years).
PCWA	PCWA would likely need to modify its wheeling agreement with Roseville to allow the sale of PCWA water to the District for ASR. This is likely not an obstacle but rather an administrative action. The timing and duration of the volume of water to be delivered to the District should be determined so that PCWA and Roseville can assess the impact on existing customers.
Carmichael Water District (CWD)	The district has an intertie with CWD; however, the District's system operates at higher pressures so booster pumping would be required, and this is likely cost-prohibitive in the near future.
San Juan Water District (SJWD)	SJWD evaluated the alternative of partnering with the District as part of its Water Reliability Study completed in 2017. An initial meeting was held, in which CHWD requested a proposal. SJWD's current Wholesale Water Masterplan update is an opportunity for the District to explore equitable partnering opportunities with SJWD for District ASR pilot testing and program development. Currently, discussions with SJWD are on-going concerning the possibility to partner on ASR.

Sacramento Regional Water Bank

Water providers in the Sacramento region are developing the Sacramento Regional Water Bank (Water Bank). The Water Bank is an innovative groundwater storage program that will improve regional water supply reliability in the near term and into the future. The Sacramento region's unique setting at the confluence of the Sacramento and American rivers near Folsom Reservoir and overlying the North American and South American groundwater sub-basins is ideal for the Water Bank's development.

The District is situated in the southeastern corner of the North American Sub-basin, which is an underground reservoir with available space to store an estimated 1.8 million acre-feet of water (almost twice the volume of Folsom Lake). During a wet year, local water providers could store up to 60,000 acre-feet of water in the Water Bank using existing facilities. During a dry year, much of that stored groundwater could be recovered to serve more than 150,000 households in the region for a year.

Local water providers are developing the Water Bank in two phases, and have secured funding for Phase 1, which is now nearly complete. Local water providers have also identified infrastructure improvements that, if implemented, would extend the Water Bank well beyond its initial capacity. Phase 2 work will be largely complete by 2022, paving the way for a working Water Bank. Once operational, the Water Bank will improve local water supplies, but importantly will also be a supply source for agencies outside of the region through transfers and exchanges.

Program Funding

ASR is a component of Managed Aquifer Recharge, which is being supported by the State through Proposition 68. Round 2 funding grants will be accepted in 2022 and the District's ASR program could be eligible for funding, perhaps as a regional grant submitted with a package of projects through the Sacramento Groundwater Authority (SGA). Funding for ASR may also be available through the Integrated Regional Water Management (IRWM) Program, which is currently funding the construction of the Ella Well. The expansion of the District's wellfield, including the addition of observation wells, could be possible through the IRWM Program. Future state and federal programs may be available to assist the District in developing ASR.

Timing for Implementation

Key factors driving the regional implementation of ASR are the Sustainable Groundwater Management Act of 2014, which has identified ASR as a mitigation action against decreasing groundwater levels; an uncertain climate future that requires a need to build resiliency in the form of increased water storage in wet years; and the potential for revenue generation once the Regional Water Bank is operational in 2022.

ASR Implementation Plan

This section presents the general phases of ASR implementation for a successful District ASR program and provides a District-specific plan for further evaluation and development of ASR.

Phased Approach to ASR Program Implementation

Consistent with the recommendations of the Regional ASR Information Study, GEI recommends a phased approach for the District's ASR implementation as summarized below.

Phase I – Feasibility Assessment and Conceptual Design

This phase involves the development of a detailed project plan accounting for technical and non-technical issues, including:

- Assessing surface water and groundwater quality and mixing compatibility, which may include initial geochemical modeling **(Completed)**
- Evaluating local aquifer characteristics, including storage potential, groundwater flow direction and rate, depth to groundwater, and estimated injection rate **(Completed)**
- Completing a conceptual design of an ASR program, including a project description with details of the initial pilot program to comply with the California Environmental Quality Act (CEQA) **(Completed)**
- Assessing surface water supply for injection, including characterization of timing and volume of available supply for injection
- Selecting a well or wells for pilot testing, including use of existing wells or new wells
- Engaging with Central Valley Regional Water Quality Control Board (RWQCB), SWRCB, and local and regional stakeholders in the program

- Performing financial analysis, including objective evaluation of costs and benefits
- Complete and submit a Technical Report to support the submittal of a Notice of Intent (NOI) in compliance with requirements in the Statewide ASR General Order. The information required in the technical report has been compiled and used in the development of this ASR Strategic Plan.

Phase II – Field Testing Program and Evaluation

This phase begins after receipt of the Notice of Applicability (NOA) from the RWQCB for implementation of ASR activities. The NOA acknowledges an applicant's submittal of the NOI and Technical Report and establishes monitoring requirements for the ASR activities. This phase typically includes ASR pilot testing and analysis of the pilot testing results as follows:

- Conducting an ASR pilot test, which usually involves multiple cycles and progressively longer periods of injection, storage, and recovery. At least three cycles are recommended.
- Collecting data during the pilot test, including injection rate and volumes, system pressure, water levels (WLs) in the injection well and monitoring well(s) close to the injection well, water quality monitoring of the potable water before injection and the groundwater in the nearby observation well(s) and the injection well (before ASR and during storage and recovery)
- Evaluating optimal injection rate based on pilot test results.
- Designing an expanded program based on pilot test results. To improve the program design, utilize the pilot test data to develop/update a numerical groundwater model for use in determining the optimal number, location, and spacing of wells in the ASR program. Water quality modeling informed by pilot test data will help forecast future groundwater quality during longer storage periods in the aquifer and provide insights on the potential for long-term well plugging and backwash frequencies, potential for corrosion, and precipitation or dissolution of metals.
- Revise the NOI for long-term ASR program operation and meet with RWQCB to discuss information requirements.
- Completing CEQA documentation for a full-scale program

Deliverables from this phase would include Facility Design and Expanded Program Description, CEQA Documentation, a Technical Addendum to the Technical Report developed in Phase I, and a revised NOI for Long Term ASR Operations.

Phase III – ASR Well Field Expansion, Operation, and Financial Considerations

This phase begins after receipt of the NOA for long term injection operation and includes:

- Construction of new wells, including ASR wells and observation wells
- Conversion of existing wells for ASR operation
- Injection operations, including the development of optimal backwash procedures for each well in the program informed by measured parameters during injection (system pressure, depth to water in injection well, injection flow rate). Backwash is necessary after each injection period, at least weekly (and possibly more often), to remove fine particles that could block flow from the well into the aquifer.

- Maintaining a trickle flow injection and chlorine residual in wells during non-operational periods.
- Quarterly reporting to RWQCB during the first year of injection and annual reporting thereafter.
- Annual assessment of costs and benefits with consideration given to local agency use of stored water and transfer opportunities in coordination with other agencies in the region and the state.

Next Steps:

The District has completed several of the Phase I activities listed above. With Board approval, staff intends to complete the following tasks to implement the District's ASR Program:

- Meet with the RWQCB to discuss the potential District ASR project and permitting requirements.
- Complete the required technical report to proceed with ASR pilot testing under an RWQCB permit.
- Add ASR facilities to new wells going forward. Staff intends to install ASR technology at the Ella Well, which will be completed in 2023.
- Add ASR facilities to the District's financial model for lifecycle replacement.
- Retrofit existing wells for ASR, likely several years out and depending on the following factors: regional drought concerns/GSP implementation (ASR is a mitigation action); partnerships with local agencies for groundwater banking; and grant funding opportunities.

Recommendation:

1. Receive the Strategic Plan for ASR Implementation Groundwater Planning Report.
2. Authorize Staff to implement a phased plan for the District's ASR Program.
3. Authorize Staff to seek grant funding for ASR implementation as needed.

Attachment:

Strategic Plan for ASR Implementation Groundwater Planning Report

ACTION:

Moved by Director _____, Seconded by Director _____, Carried _____

GEI Consultants

Consulting
Engineers and
Scientists

Groundwater Planning Report

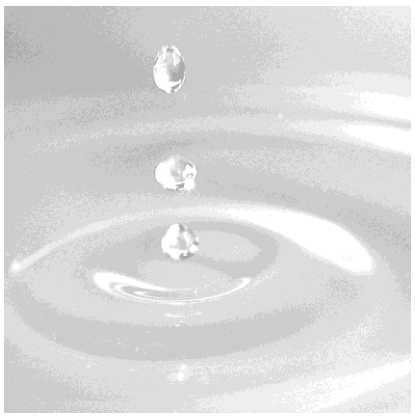
Strategic Plan for ASR Implementation

Citrus Heights, CA

Submitted to:
Citrus Heights Water District
6230 Sylvan Road
Citrus Heights, CA 95610-5610

Submitted by:
GEI Consultants, Inc.
2868 Prospect Park Drive, Suite 400
Rancho Cordova, CA 95670
916.631.4500

October 18, 2021
Project 1905246



Christian E. Petersen, PG, CHg
Principal Hydrogeologist

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List of Acronyms

AF	Acre feet
AFY	Acre feet per year
ASR	Aquifer Storage and Recovery
BFV	Butterfly Valve
CASGEM	California Statewide Groundwater Elevation Monitoring
CEQA	California Environmental Quality Act
CHWD or District	Citrus Heights Water District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
GEI	GEI Consultants, Inc.
IRWM	Integrated Regional Water Management
LUST	Leaky underground storage tank
mg/l	Milligrams per liter, which is a measure of chemical concentration
NOA	Notice of Applicability
NOI	Notice of Intent
PCE	Perchloroethylene
PCWA	PCWA
RWA	Regional Water Authority
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory control and data acquisition
SJWD	San Juan Water District
SSWD	Sacramento Suburban Water District
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
ug/l	Micrograms per liter, which is a measure of chemical concentration
uS	Microsiemens, which is a measure of electrical conductivity
UST	Underground Storage Tank
WL	Groundwater levels
WTP	Water Treatment Plant

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Executive Summary

The objective of this plan was to build on the Regional ASR Information Study[1] recently completed by the Regional Water Authority (RWA) with a local focus on ASR feasibility for the specific facilities and groundwater conditions of Citrus Heights Water District (District). In addition, the District was interested in the potential to generate revenue through the operation of a future ASR program to not only offset the cost to implement ASR but also to help stabilize rates for District customers. This study evaluated well and aquifer conditions in the District, summarizes costs to modify existing wells for ASR operations, and includes communications with RWA and City of Roseville staff to better understand the feasibility of the District partnering on a local groundwater banking and exchange program involving ASR. A District-specific ASR Implementation plan is provided at the end of the document.

Suitability of Local Groundwater Conditions for ASR

To assess the suitability of the local groundwater conditions for ASR suitability, GEI considered:

- Depth to groundwater
- Estimates of groundwater mounding potential
- Aquifer thickness and hydraulic conductivity
- Surface water and groundwater quality
- Estimated injection rates at existing wells
- Groundwater flow direction and rate, and
- Proximity of injection wells and water stored in aquifer to potential contaminant sources

GEI concludes that the conditions for ASR are favorable in the District for both retrofitting existing wells and constructing new wells to operate with ASR.

Well Condition Assessment and Cost to Retrofit

GEI conducted a site visit to each of the District's existing groundwater production wells to identify ASR equipment modifications to inject drinking water through these wells. GEI concluded that the use of existing wells for injection is feasible and the average estimated cost to retrofit for ASR operation is $202,000 per well. However, GEI recommends ASR pilot testing before retrofitting any wells to refine the estimates for the characteristics listed above.

[1] Aquifer Storage and Recovery Information Study Report, Regional Water Authority, July 2020.

If the District were to retrofit its existing wells, GEI recommends only retrofitting the newer wells constructed with stainless steel which include Mitchell, Bonita, and Skycrest. Retrofitting these three wells would be approximately $606,000.

Alternative Assessment

RWA member agencies have shown a lot of interest in developing ASR in recent years. GEI provided a listing of local agencies either studying or developing ASR projects for the District's consideration. The District should consider collaborating and partnering with neighboring agencies in the development and implementation of ASR within the District. Key factors driving the interest in ASR are the Sustainable Groundwater Management Act of 2014, an uncertain climate future that requires a need to build resiliency, and the potential for revenue generation once the Regional Water Bank is operational in 2022. GEI also assessed the potential for power generation during injection at District wells and found that the depth to groundwater is likely too shallow to be economically feasible at this time, but above-ground generation may be feasible. GEI recommends further evaluation of the power generation alternative if the District decides to develop an ASR program.

ASR Implementation Plan

GEI prepared a District-specific ASR implementation plan which includes a phased approach to development, beginning with pilot testing as the next step. If pilot testing results are favorable and the District decides to move forward with ASR, GEI recommends that a system-wide CEQA document be completed to provide coverage for the ASR program specifying the number of wells and operations at build-out. GEI further recommends that a public outreach and engagement plan be developed and implemented during the pilot testing phase and continued through buildout. State and federal grant funds are available for the development of managed aquifer recharge projects, including ASR. GEI recommends that the District continue to partner with RWA in the pursuit of funding for future wells and to help cover the planning and design costs.

1. Background and Plan Objective

1.1 Background

Citrus Heights Water District (CHWD or District) serves potable water to mostly residential customers within a 12-square-mile area in northeastern Sacramento County along the boundary with Placer County. During the last 5 calendar years (2016-2020), the volume of delivered water has ranged from 10,800 acre-feet per year (AFY) to 12,400 AFY (average: 11,600 AFY). Most of the water (84 to 97%, average: 90%) is obtained from the American River via the San Juan Water District (SJWD) and its treatment facility. Groundwater is produced from six municipal wells and this production has varied from 359 to 1,842 AFY during the last 5 years. The proportion of groundwater has varied from nearly zero to 84 percent of total monthly production but is 10% on average. The quality of the potable surface water is excellent – dilute, calcium bicarbonate character, while the potable groundwater is quite good but noticeably different with a higher total dissolved solids content (5 to 7 times greater than surface water) and a mixed-cation bicarbonate character. Three of the wells, which are relatively new and constructed with stainless steel screens, are probably more amenable to Aquifer Storage and Recovery (ASR) than the older three wells that were constructed with mild steel. GEI Consultants, Inc. (GEI) found that the CHWD distribution system is adequately sized to support the delivery of potable surface water to these three wells for injection.

ASR is a water management technique whereby drinking water is injected into the ground during times of surplus supply and stored for extraction in dry periods or to meet peak demand. Injected water is generally surface water but can be any water supply if it meets drinking water standards as defined by the State Board. ASR wells are dual-purpose wells capable of both injection and extraction of water at the same location. By integrating ASR wells into a drinking water supply system, potable water can be easily transported to the well site for injection and later extracted at the same location for public supply. The illustration below, shown as **Figure 1-1**, was taken from a short video developed by the City of Roseville (Roseville) to highlight its ASR program. The image shows a series of ASR wells within Roseville's water supply network. Surface water is treated at Roseville's water treatment facility and transported through the municipal supply system at system pressure and injected at the ASR wells. This water is stored in the region's primary production aquifer, in the Mehrten Formation, and can then be extracted and supplied directly to Roseville's system.

Figure 1-1. Roseville ASR illustration (Source: City of Roseville).

1.2 Plan Objective

The objective of this plan was to build on the regional ASR Information Study,[2] recently completed by the Regional Water Authority (RWA), with a local focus on ASR feasibility given the District-specific facilities and groundwater conditions. Also, the District was interested in the potential to generate revenue through the operation of a future ASR program to not only offset the cost to implement ASR but also to help stabilize rates for District customers. This study included communications with RWA and Roseville staff to better understand the feasibility of the District partnering with them on a groundwater banking and exchange program involving the development of a local ASR Program.

[2] Aquifer Storage and Recovery Information Study Report, Regional Water Authority, July 2020.

2. Groundwater Conditions and Suitability for ASR

This section includes an assessment of the local groundwater conditions including aquifer properties and water quality to develop ASR in the District. The assessment included completion of the following activities:

- Evaluate local aquifer and well conditions
- Evaluate surface and groundwater quality and compatibility of mixing
- Evaluate impacts of injection on known local and regional contaminant plumes
- Estimate the cost to modify existing wells for ASR
- Estimate the cost to build new ASR wells

Described below is an assessment of the six production wells and associated data on flow, groundwater levels (WL), and water quality relative to the implementation of an ASR program within the District. Five of the six wells are generally aligned along a north-northeast trend while one well (Mitchell Farms) is located east of the trend line, as shown by **Figure 2-1**.

This section is organized as follows: Introduction; Well Assessment; Aquifer Transmissivity; and Hydraulic Conductivity; Groundwater Mounding Potential; Area of Impact During Injection; Groundwater Flow Direction and Rate; General Groundwater Quality; Contaminant Impacts to Groundwater; and Summary of Key Findings and Recommendations.

2.1 Well Assessment

The District delivers a combination of surface and groundwater to customers in approximately two-thirds of the City of Citrus Heights and portions of Fair Oaks, Orangevale, Carmichael, and Placer County. **Figure 2-2** shows an overall decrease in total water usage during the past 11 years and the split between surface and groundwater supply over the last 6 years[3]. Surface water is by far the largest fraction of supply when compared to groundwater (3 to 16%, average: 10%).

A review of production records for 2018 through 2020 shows that only four wells are utilized for supply (Sylvan, Mitchell, Bonita, and Skycrest) and that supply totaled over 3,600 acre-feet (AF) during the 3-year period. Most of the production (66%) occurred during 2018, which was a below-normal water year between two wet years. On average, 40% of the production occurred from Well #13 (Skycrest) while Wells #15 and #8 (Bonita, Sylvan) produced 27 and 26%, respectively, and Well #11 (Mitchell) produced 8% of the total.

[3] Tables of "Water Supply – Purchased & Produced" from Agenda Item CC-15 (or equivalent) from agenda packets for meetings of the Board of Directors

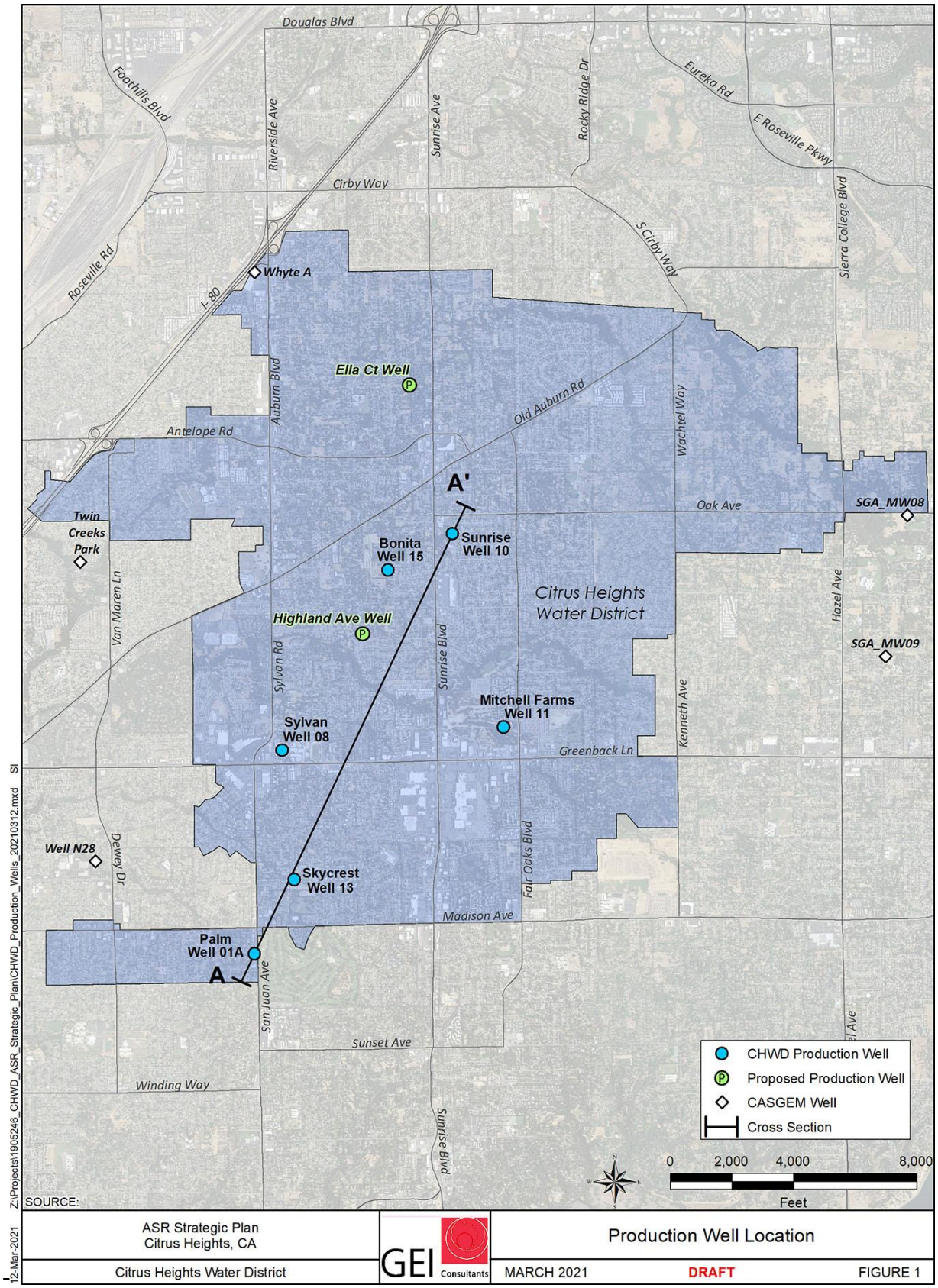

Figure 2-1. Production Well Locations.

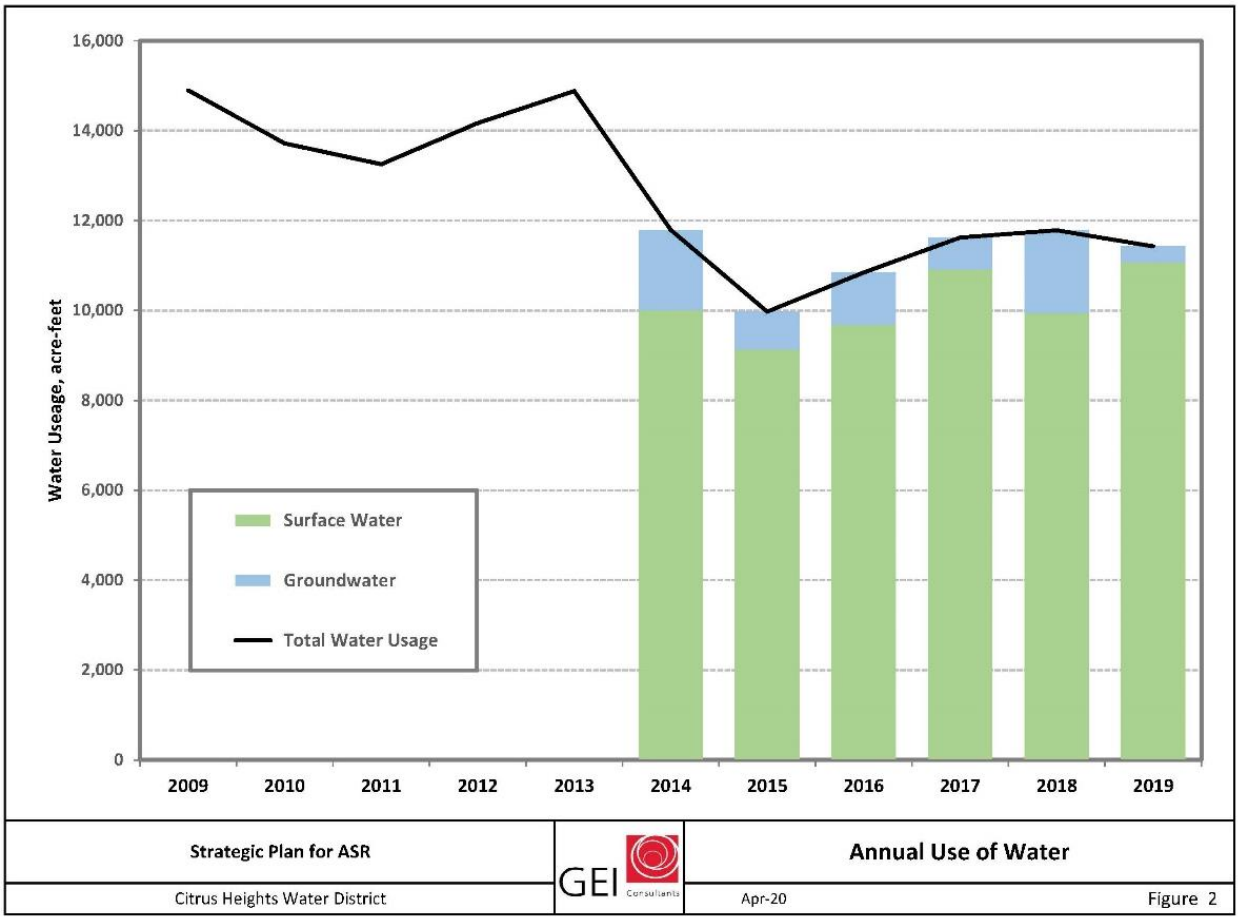

Figure 2-2. Annual District-Wide Water Use.

The wells produce water from relatively consistent zones within the aquifer system. Well depths vary from 331 to 479 feet (median: 400 feet). Screen lengths (total) per well vary from 65 to 138 feet (median: 112 feet) and between two and five screen sections are installed in the wells, consistent with water-producing zones. **Figure 2-3** illustrates the construction of each well in a south-southwest-trending section along with average 2019 static water levels (blue dashed line) for all six wells, the two proposed future wells (Ella and Highland), and a partial average for 2019 pumping water levels (red bar symbol) for the four active wells plus estimated injection water levels (gray bar symbol), as discussed below. The difference between static and pumping levels yield average drawdowns between 20 and 23 feet for three wells and 37 feet for the Mitchell Well, which has the smallest length of screen.

2.2 Aquifer Transmissivity and Hydraulic Conductivity

Aquifer transmissivity and hydraulic conductivity govern the pore velocity and volumetric flow rate of groundwater. Quantification of these parameters is required to estimate groundwater mounding and groundwater flow rate and is usually derived by performing field aquifer tests. These parameters are important in planning an ASR program to ensure the groundwater does not mound above the ground surface and to properly manage the stored volume in the aquifer. As

measured transmissivity and hydraulic conductivity values were not available in District records, GEI used specific capacity information to estimate these aquifer parameters. Specific capacity is the quotient of pumping rate and drawdown in gallons per minute per foot of drawdown and values are typically provided on a well completion report and from electrical motor efficiency tests. Specific capacity is indicative of the well and aquifer productivity and can be used to estimate two aquifer characteristics: transmissivity and hydraulic conductivity. Transmissivity can be estimated[4] by multiplying specific capacity by 2,000 and an estimate of hydraulic conductivity can be derived by dividing screen length into transmissivity, as summarized in **Table 2-1** below.

Table 2-1. Summary of Estimated Transmissivity and Hydraulic Conductivity at District Wells.

Well	Screen, total feet	Transmissivity, gpd/ft	Hydraulic Conductivity, ft/d
Sylvan	114	111,100	130
Bonita	134	140,700	140
Skycrest	110	163,000	198
Mitchell	65	39,700	82

These conductivity values are indicative of coarse sand[5] which is generally consistent with the well logs which identified various layers of sand and some gravel.

[4] Driscoll, F.G., 1986. *Groundwater and Wells (2nd ed.)*, Johnson Filtration Systems, Inc., St. Paul, Minnesota, 1089p. 1986.
[5] Heath, R.C., 1983. Basic Ground-Water Hydrology. U.S. Geological Survey Water-Supply Paper 2220.

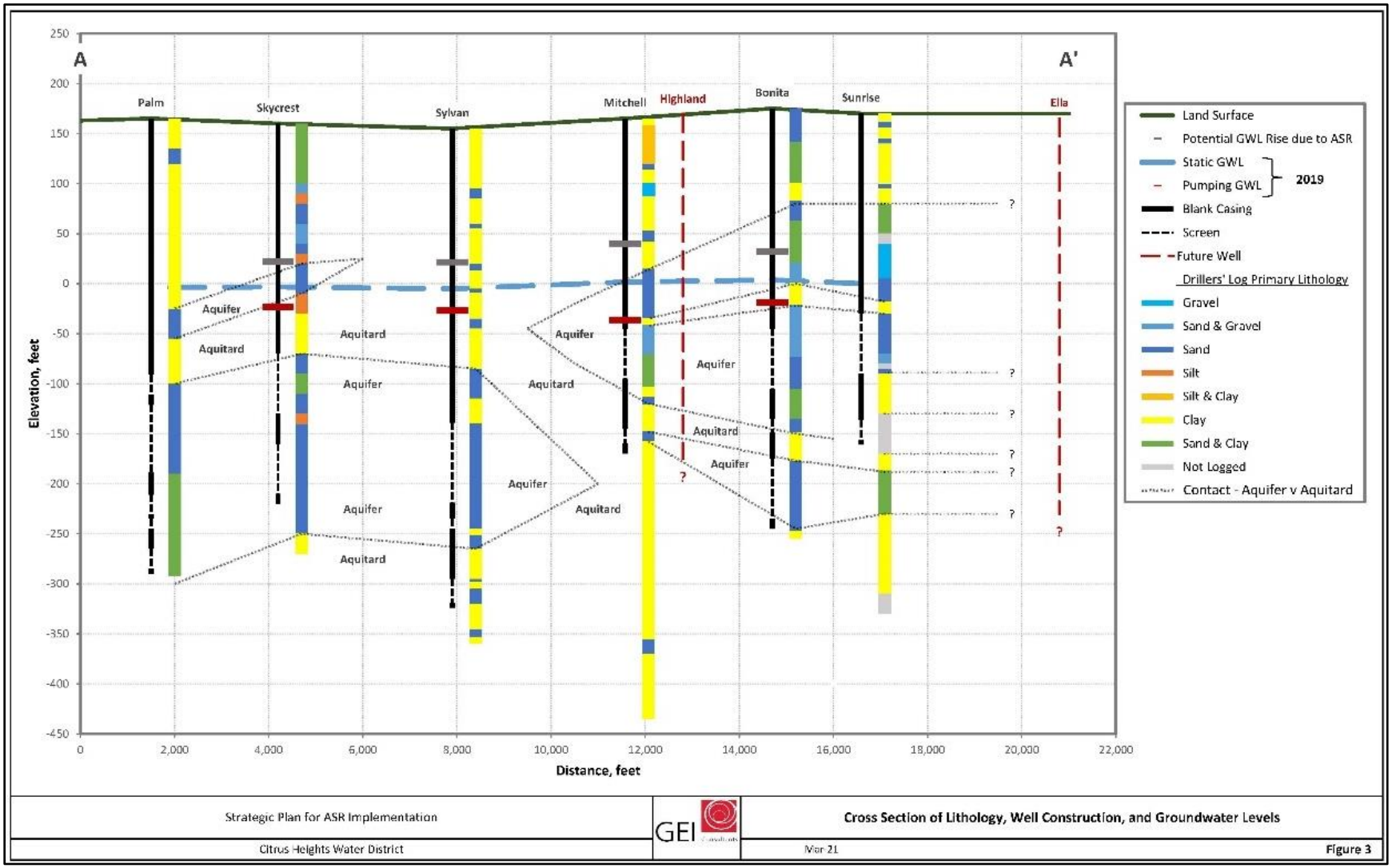

Figure 2-3. Hydrogeologic Conditions in Vicinity of District Wells.

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2.3 Groundwater Mounding Potential

The aquifer parameters summarized in **Table 2-1** were used in the GEI Theis calculator to estimate the volume of water per well that might be injected during a 180-day period during the wet season along with the associated rise in water level (draw-up). Based on our experience with numerous ASR projects and having surveyed operators throughout the state for previous investigations, ASR injection rates are typically in the range of 50 to 75 percent of extraction rates. For this evaluation, we assumed an injection rate of 67 percent of the extraction rates. **Table 2-2** shows that Bonita and Skycrest exhibit the greatest potential for ASR, followed by Sylvan and lastly Mitchell. Draw-up might vary up to 30 feet at the three longer-screen wells and could approach 40 feet at Mitchell. **Figure 2-3** shows the estimated draw-up as a gray bar. With depths to water greater than 150 feet, these wells have plenty of potential draw-up for ASR if these theoretical calculations don't account for actual conditions at each well.

2.4 Area of Impact During Injection

Storativity or an aquifer's ability to accept, store, and release water is an important characteristic, and the following **Table 2-2** provides contrast for two values of the storage coefficient, including 0.0001 for moderately confined groundwater conditions and 0.001 for mildly confined conditions. GEI believes that the actual aquifer conditions within the District fall within this range. WL data are required from an observation well near a pumping well to determine the storage coefficient of an aquifer.

Table 2-2 provides estimates of the impact areas. The first calculation (moderate confinement) found that 5 feet of draw-up (pressure) would likely occur at distances between 4 and 6 miles while the second calculation (mild confinement) showed smaller distances between one and 2 miles for the increase in water levels due to pressure (confinement). A 10-fold variation in the storage coefficient changed the radius of the effect (pressure) by a factor of three. The injected water will expand outward from each well and displace native groundwater to estimated distances of 800 feet. This cylinder of water will migrate and elongate slowly to the west. Note that the pressure of this additional water may be noticeable at distances beyond the District and could manifest as increases in WLs, depending on the degree of confinement, in wells of similar depths. ASR pilot testing would allow the quantification of aquifer conditions.

Table 2-2. Summary of Estimated Injection Rates, Mounding, and Radius of Aquifer Storage

Injection for 180 days						
Well	Rate, gpm	Volume, Mgal	Diameter of Injected Water Cylinder, feet	Storage Coefficient (S) = 0.0001		S = 0.001 Distance, miles, Draw-up[a] = 5 feet
				Draw-up, feet, at well	Distance, miles, Draw-up[a] = 5 feet	
Sylvan	1,000	259	1,400	26	4.2	1.3
Bonita	1,350	350	1,500	28	5.5	1.7
Skycrest	1,400	363	1,700	25	4.5	1.4

Injection for 180 days						
Well	Rate, gpm	Volume, Mgal	Diameter of Injected Water Cylinder, feet	Storage Coefficient (S) = 0.0001		S = 0.001 Distance, miles, Draw-up[a] = 5 feet
				Draw-up, feet, at well	Distance, miles, Draw-up[a] = 5 feet	
Mitchell	540	140	1,400	39	5.7	1.8

[a] Increased pressure causes water level rise (draw-up)

Groundwater flow was estimated from 2018 and 2019 monthly static WL data from three supply wells (Mitchell, Skycrest, Sunrise) because these wells were screened at relatively similar depths compared to the other wells. A plane is defined by three points, so groundwater elevation measurements at three wells can be used to define the groundwater surface including orientation and slope. A three-point calculator was used to define the orientation of the groundwater surface between these three wells where the gradients and directions of flow (degrees) are the respective values for dip and dip directions. In addition, this method was applied to four sets of semi-annual groundwater data (2018 and 2019) from five California Statewide Groundwater Elevation Monitoring (CASGEM) wells that are located to the east, west, and northwest of the CHWD well field (**Figure 2-1**).

2.5 Groundwater Flow Direction and Rate

Once injected into the groundwater aquifer at a given well, the drinking water displaces groundwater in the surrounding aquifer and then begins to migrate under the control of the regional groundwater flow direction and gradient. Understanding groundwater flow direction(s) and rates is useful in planning the volume and duration of subsurface storage. **Figure 2-4** is a hydrograph of static water level elevations from the three supply wells and total groundwater production for 2018 and 2019. The hydrograph shows relatively consistent behavior – higher levels during the wet season and lower levels during the dry season. The wells show significant declines during summer 2018 (below normal year), particularly at Skycrest and Sunrise, to a lesser extent, and reflect the use of mostly Skycrest and Bonita to meet demand. (Bonita is located near Sunrise and provided 36% of demand while Skycrest provided 36% and Sylvan 26%). Skycrest shows a WL decline during spring and early summer 2019 that is not consistent with the other two wells and may be related to the relatively high use of Bonita during May 2019.

Figure 2-5 illustrates the direction[6] and gradient[7] of groundwater flow for 24 monthly measurements of static WLs (2018 and 2019) and shows a relatively consistent westward direction, which would be expected from the hydrograph as each well maintained its relative position to the other. The CASGEM wells also show a westward direction of flow. The gradient of flow is more variable for the three supply wells and increased as WLs fell during the higher production months.

[6] The upper portion of the figure uses the Y-axis (left) for compass bearings, where north is represented by zero (0) and 360 degrees, east by 90 degrees, south by 180 degrees, and west by 270 degrees.
[7] The bottom of the figures uses the Y-axis (right) for change in WL slope (gradient) – feet per mile in the direction of flow.

Nevertheless, the gradient does not vary significantly at 4.7 feet per mile (median) over a range of 2.2 to 9.0 feet per mile, compared to the CASGEM median value of 24 feet per mile. This five-fold gradient difference is likely due to differences in depths to groundwater, which varied between 160 and 170 feet below ground in the supply wells but were shallower in the CASGEM wells, as discussed below. **Figure 2-6** shows the median direction of flow within the area of the three supply wells.

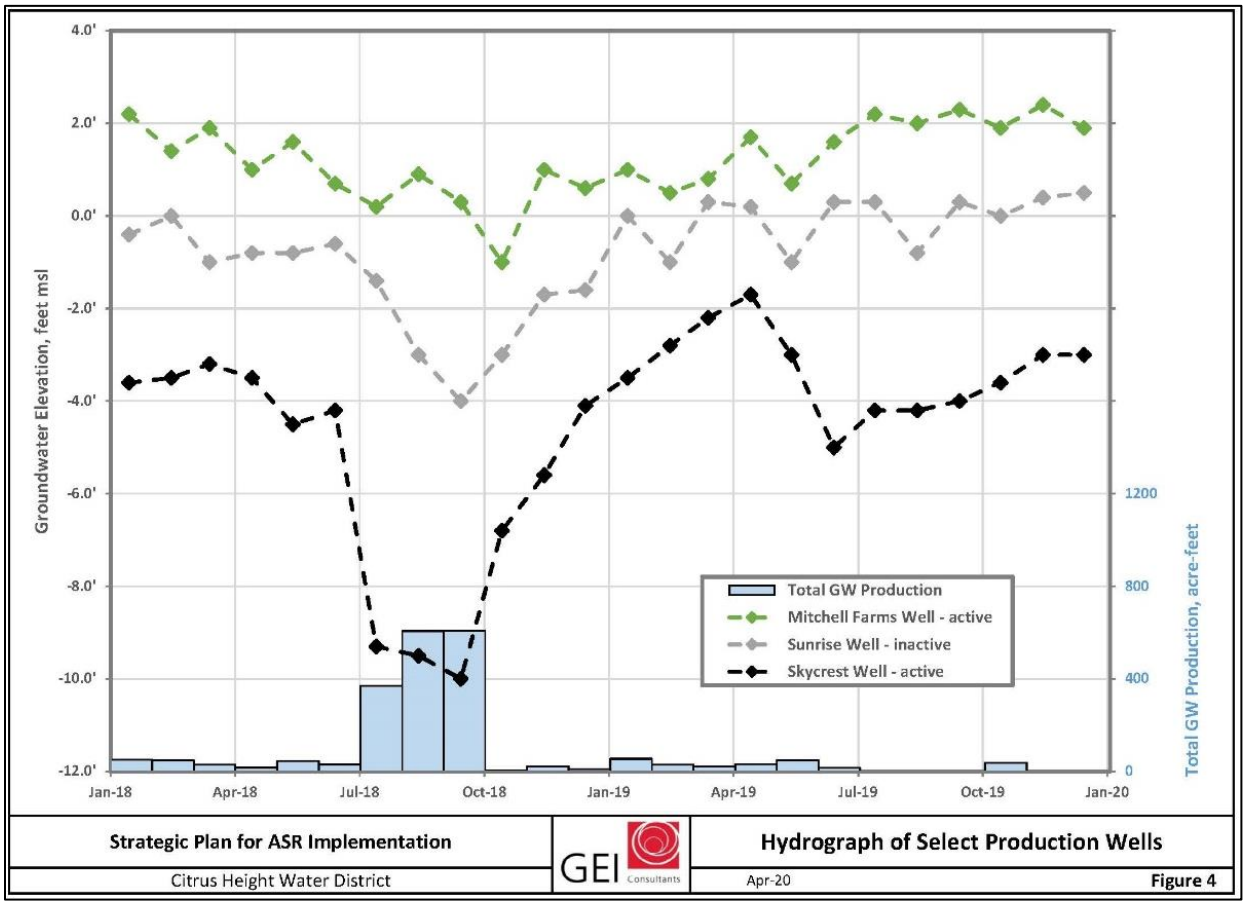

Figure 2-4. Groundwater Level Trends in District Wells.

Four of the five CASGEM wells were installed to total depths of 140, 160, 193, and 220 feet with the median WLs progressively deeper at 111, 121, 131, and 160 feet. This relationship is indicative of a recharge area where deeper wells have deeper WLs, and the CHWD wellfield is located within this recharge area. The fifth CASGEM well was screened over a long interval: 170 to 452 feet and showed a median WL of 133 feet, which was likely produced by the shallower portion of the aquifer system.

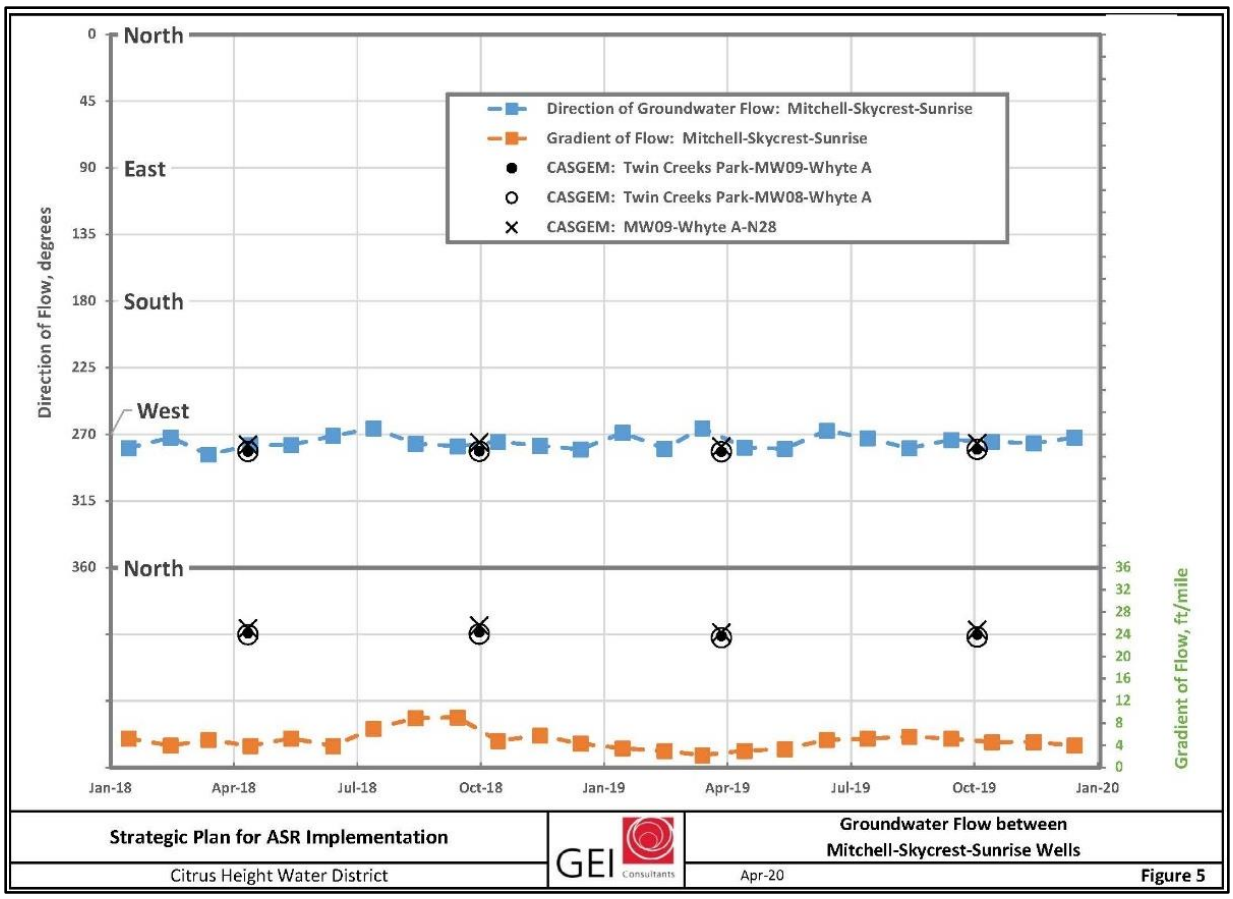

Figure 2-5. Groundwater Flow Direction and Gradient Between Select District Wells.

The migration of the injected water can be estimated by the following equation: **V = K * i / n**
where V = velocity

K = hydraulic conductivity, range: 82 to 198 feet per day, median: 135 feet per day

i = hydraulic gradient, range: 0.0004 to 0.0017 foot per foot,
median: 0.0009 foot/foot

n = effective porosity, 15% *vs*. 25% total value (typical) for sand

The 'natural' velocity of groundwater is estimated to be about 1 foot per day within a range between 0.2 and 2.3 feet per day, or perhaps 400 to 800 feet per year. This estimate is based on the above values for hydraulic conductivity and gradient in nine variable calculations of minimums, maximums, and medians. If the effective porosity is reduced by .5 to 8%, the velocity would double because all of the water would have to flow through a smaller array of pore channels. The operation of ASR wells would increase the gradient locally and groundwater velocity would be faster in the vicinity of an active well.

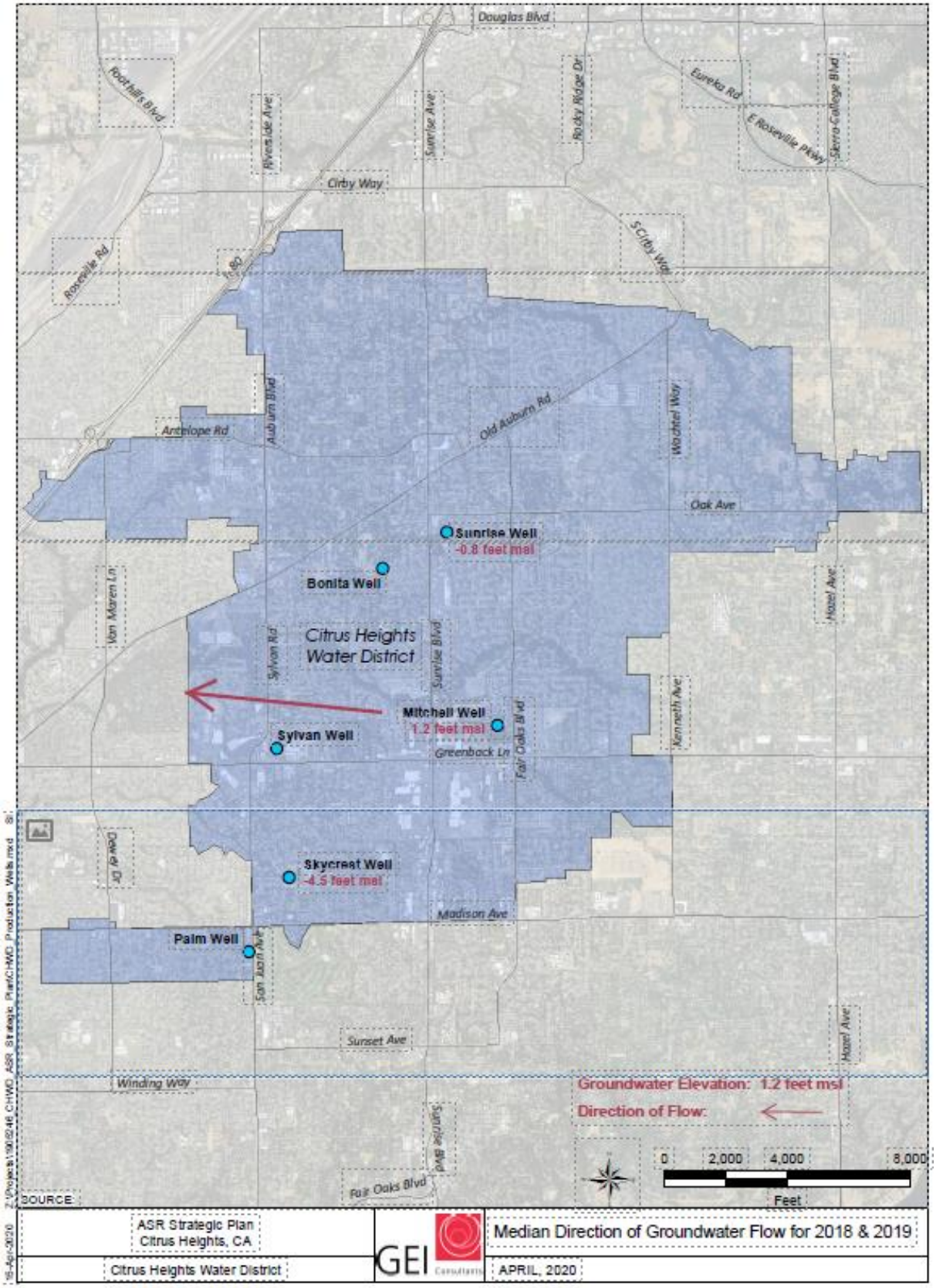

Figure 2-6. Groundwater Flow Direction in Vicinity of District Wells.

2.6 General Groundwater Quality

Water quality is an important consideration for ASR operations because incompatible waters can create mineral precipitates that could block the openings of the screen, filter pack, and/or aquifer. As discussed below, the quality of the groundwater and surface water are compatible, based on the general mineral quality of the most recent sample of groundwater from each well and recent samples of treated surface water from the Hinkle clear well, which is the point at which surface water enters the District's distribution system. **Table 2-3** tabulates the general mineral constituents plus arsenic, chromium VI, iron, manganese, and total trihalomethanes[8].

[8] Source of data: Safe Drinking Water Information System website by the State Water Resources Control Board

Table 2-3. Summary of Water Quality

Complete Analysis

ND = Not detected NA = Not applicable	Units	Well: Date:	Palm Well 1A 20-Feb-13	Sylvan Well 08 20-Feb-13	Sunrise Well 10 20-Feb-13	Mitchell Well 11 20-Feb-13	Bonita Well 15 20-Feb-13	Skycrest Well 17 [a] 30-Jan-19	Average for Wells	SJWD Treated 20-Oct-16	SJWD Treated 02-Oct-19
General											
pH	units	pH	7.9	8.0	7.8	7.7	7.9	7.7	7.8	7.2	6.6
Specific Conductance	uS	SC	260	350	270	310	280	350	303	56	37
Total Dissolved Solids	mg/L	TDS	190	260	220	250	220	250	232	39	30
Cations											
Calcium	mg/L	Ca	26	33	23	29	24	31	28	5.4	3.3
Magnesium	mg/L	Mg	12	16	9.4	14	12	15	13	1.5	1.0
Sodium	mg/L	Na	11	20	23	18	22	16	18	2.3	1.6
Potassium	mg/L	K	4.2	4.2	2.0	3.0	2.4	4.7	3.4	ND	ND
Anions											
Alkalinity (HCO_3, CO_3, OH)	mg/L	as $CaCO_3$	110	140	110	120	120	130	122	11	11
Bicarbonate	mg/L	HCO_3	140	180	140	150	140	160	152	14	13
Sulfate	mg/L	SO_4	9.4	11	7.8	12	8.4	11	9.9	7.5	3.8
Chloride	mg/L	Cl	10	18	15	17	15	12	15	2.8	1.8
Fluoride	mg/L	F	ND	0.12	0.14	0.15	0.18	ND		ND	ND
Nitrate	mg/L	as NO_3	5.7	13	4.9	11	6.3	12	8.8	ND	ND
Other											
Arsenic	ug/L	As	ND	ND	3.7	2.2	ND	ND		ND	ND
Chromium VI	ug/l	Cr	ND	1.6	2.0	2.1	2.9	1.6		ND	ND
			17-Aug-16	24-Aug-16	17-Aug-16	31-Aug-16	16-Aug-16	30-Jan-19		23-Oct-16	02-Oct-19
Iron - total	ug/l	Fe	ND	ND	ND	ND	ND	ND		ND	ND
Manganese - total	ug/l	Mn	ND	ND	ND	ND	ND	ND		ND	ND
Total Trihalomethanes	ug/L	THM	ND	ND	ND	ND	ND	ND		12	
								[a] SDWIS shows label as Well 13		chloroform (11) & bromodichloro-methane (1)	

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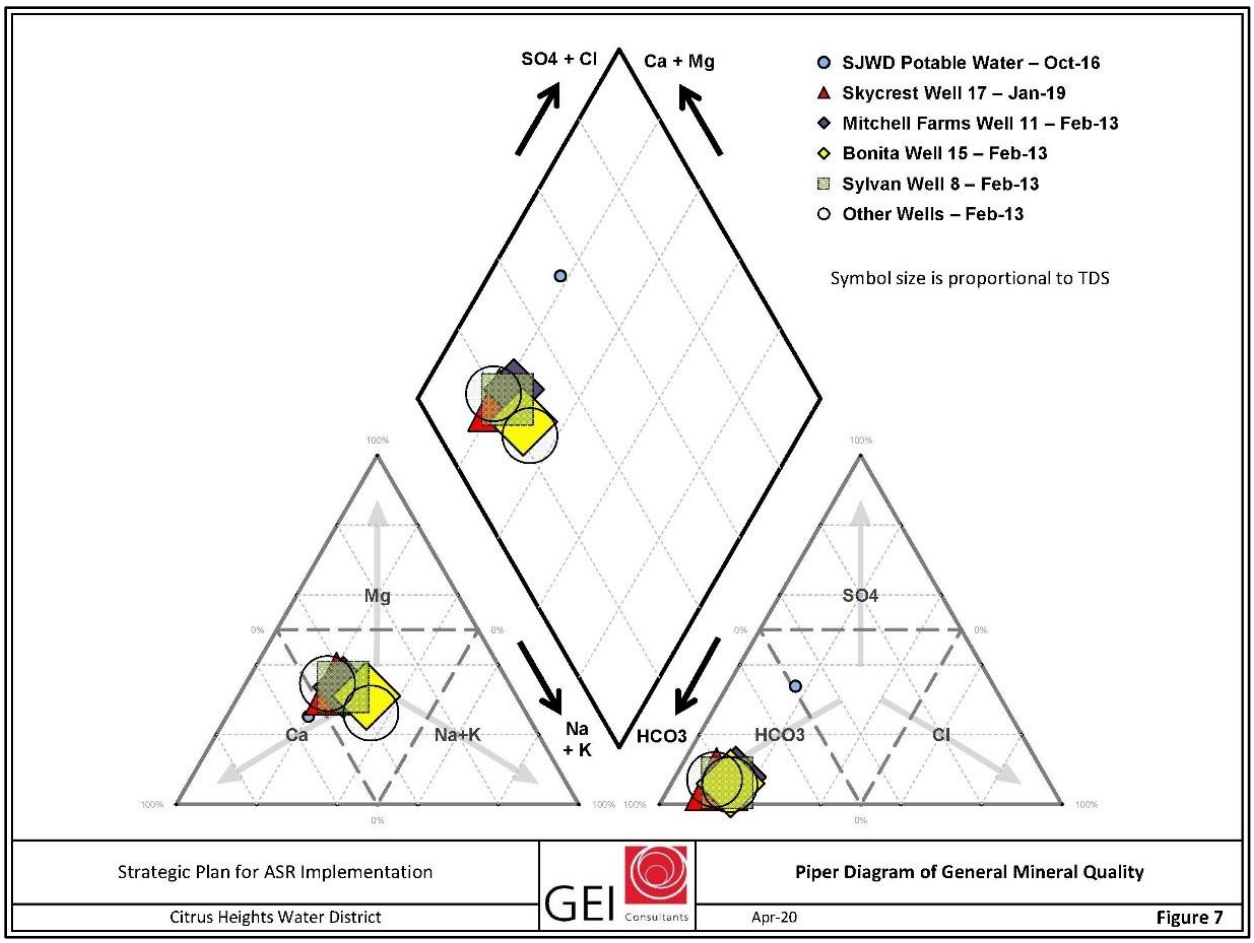


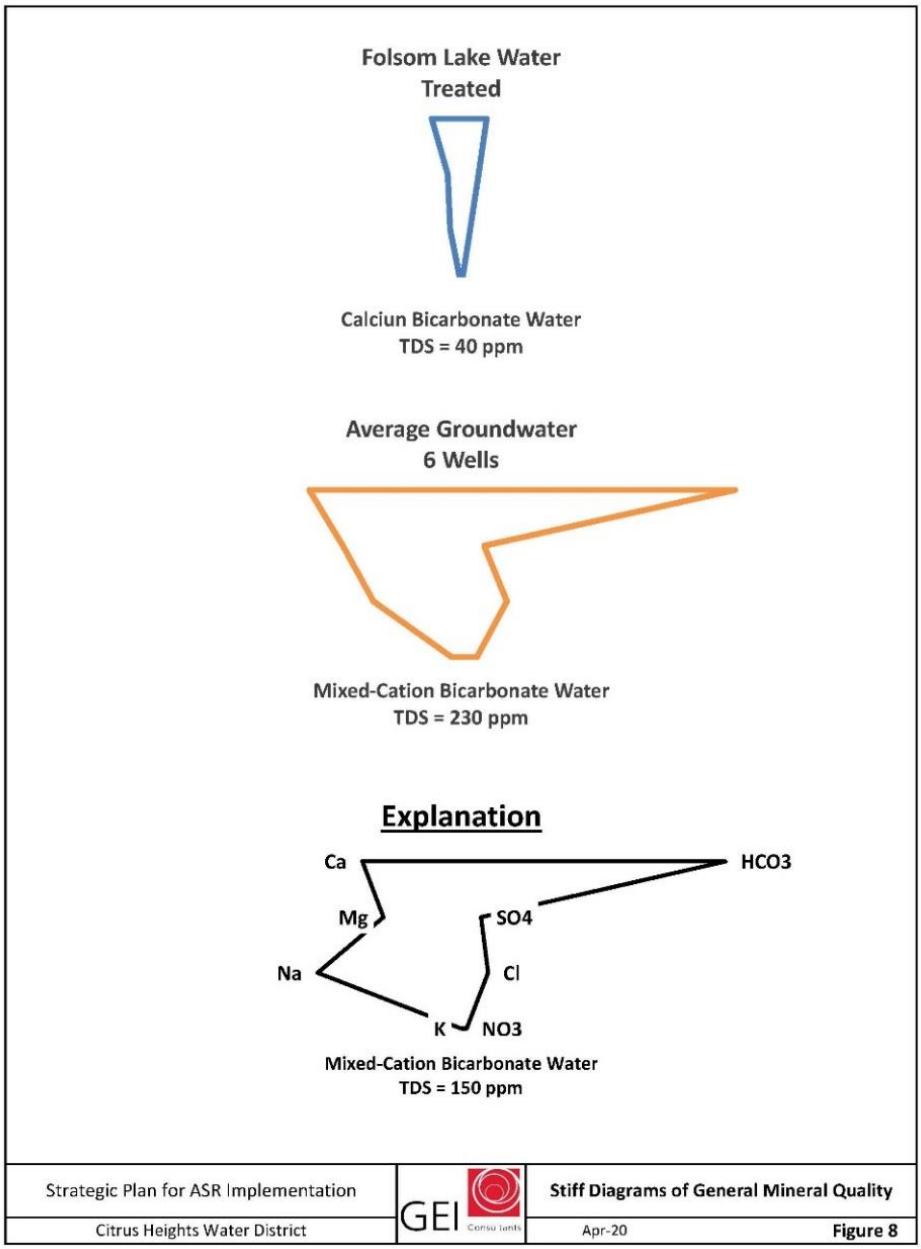
Figure 2-7. Piper Diagram of General Mineral Quality.

Figure 2-7 is a Piper Diagram[9] of the major cations and the major anions (left and right triangles[10], respectively). These data are combined within the diamond. The size of each symbol is roughly proportional to the concentration of total dissolved solids (TDS). As shown by **Figure 2-7**, the groundwater from the five wells (large symbols) is very similar and more concentrated than treated surface water (small symbol). The wells produce calcium-dominated mixed-cation bicarbonate groundwater whereas the surface water shows a calcium bicarbonate-dominated mixed anion character (a small symbol falls along the boundaries of the central mixed character sub-triangles). The locations of the symbols within the diamond represent the limits of the combined character of the two, and a mixture of the waters would plot between these two limits.

9 A Piper diagram is a graphical representation of the chemistry of a water sample or samples developed by Arthur M. Piper in 1944.

10 Cation and anion triangles are subdivided into four large sub-triangles, including three apex sub-triangles that represent one of the dominant ions and a large central sub-triangle that represents a mixture of the ions. For example, the lower left, large sub-triangle is an area of calcium dominance while the lower right, large sub-triangle is an area of chloride dominance. The triangles are also comprised of 25 smaller sub-triangles which provide scaling.

Figure 2-8 illustrates the difference in the quality of groundwater and surface water via Stiff diagrams[11] which produce a distinctive pattern for each type of water and the size is directly proportional to the overall total ionic concentration of the water. An average diagram was prepared for groundwater because the wells plotted closely on the Piper Diagram. **Figure 2-8** shows that surface water is quite dilute in comparison to the groundwater and is very similar in composition. As such, the injection of treated surface water will not likely have an adverse effect on the aquifer.



[11] A Stiff diagram, or Stiff pattern, is a graphical representation of chemical analyses, first developed by H.A. Stiff in 1951.

Figure 2-8. Stiff Diagrams of General Water Quality.

2.7 Potential Contaminant Impacts to Groundwater

Land use can impact groundwater quality and an ASR program should evaluate this potential before implementation or siting new wells. The State Water Resources Control Board maintains the GeoTracker website which identifies contaminated sites throughout the state, mostly underground storage tank (UST) sites along with other sites. The website provides the status of the regulatory process, including closed versus open, as well as permitted sites (active), and links to more detailed information. Note that the website seems to provide some contradictory information as discussed below.

Figure 2-9 shows that over 40 sites are located within the boundaries of CHWD, excluding two sites to the south of the intersection of Madison Avenue and Sunrise Boulevard. Some UST symbols represent multiple, adjacent sites. In addition, over 20 permitted service stations are located within the District (not shown). Most of the sites in **Figure 2-9** have been closed in accordance with County and state requirements. Five sites are noteworthy due to their status and/or potential impact.

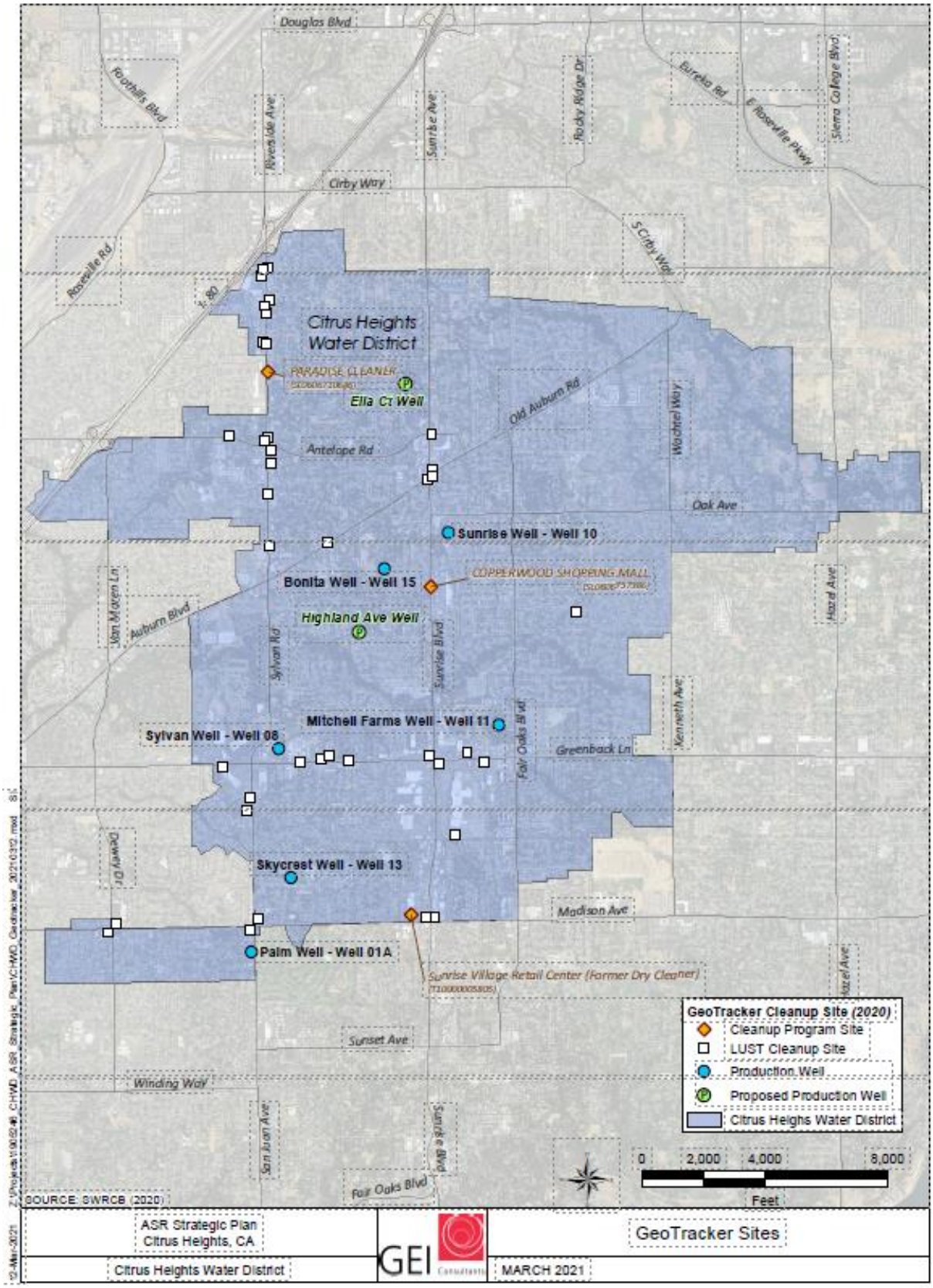


Figure 2-9. Potential Contamination in Vicinity of District Wells.

Sunrise Village Retail Center is located east (up-gradient) of the Skycrest and Palm Wells and included a dry cleaner site where the cleanup project was closed with land-use restrictions (August 2017). The site closure was based on the operation of soil vapor extraction technology to remove perchloroethylene (PCE) or tetrachloroethylene in the soil to acceptable levels. Significant PCE concentrations were not found in deep soils or the groundwater.

Sears Auto Center is located east (up-gradient) of the Skycrest Well and is an active site due to the release of petroleum hydrocarbons. The County of Sacramento is pursuing action from the responsible party, based on various correspondence during 2019. Hydrocarbons do not typically migrate far from their origin because they are subject to degradation by indigenous bacteria (as opposed to PCE, which is not removed by biodegradation), and are not a likely threat to ASR.

Copperwood Shopping Mall is located southeast (up/cross-gradient: 1,700 feet) of the Bonita Well and has an active investigation of two dry cleaners (PCE), including soil vapor and indoor air sampling, soil sampling, and groundwater sampling. The last correspondence occurred in April 2019. In addition, the proposed Highland Well is located southwest (downgradient: 3,000 feet) of these dry cleaner sites. Implementation of ASR at Bonita or Highland should be further evaluated in conjunction with the results of the ongoing investigation to determine if the PCE has impacted the Bonita groundwater zone. The operation of an ASR well would likely deflect and push contaminated groundwater away from the ASR well, but ideally not toward another supply well.

The Roseville Telephone Company Site is located along Old Auburn Road, to the west (downgradient: 1,900 feet) of the Bonita Well, and the soils are impacted by hydrocarbons. The site is under consideration for closure, although the records indicate that some submittals are still required by the County of Sacramento/Placer. The last entry is dated June 2018.

Paradise Cleaner is located in the northwestern portion of the District, over 7,000 feet northwest (downgradient) of the Bonita Well. Investigation work has been started but additional work is necessary at this site, which is located in a region of impacted wells in adjacent water districts. Moreover, this impacted area is south of the Roseville rail yard, a large, impacted facility, and downgradient of other dry cleaner sites to the northeast. Fortunately, CHWD does not have wells in the vicinity of this area.

In 2016, Brown and Caldwell[12] completed a contaminant fate and transport analysis for the Lincoln Oaks Service Area just west and north of the District. This study was prepared for the Sacramento Groundwater Authority and focused on sampling numerous wells for PCE analysis. The study concluded that PCE contamination is present in the northeast area of the Lincoln Oaks Service Area, the detections are low and the potential for increased levels is greatest for wells located in paleochannels present in the areas. This study showed the presence of paleochannels in the District area, but all documented PCE impacts in groundwater were located north of the District boundary. The study documented the regional direction of groundwater flow to be parallel with Auburn

[12] Brown and Caldwell, 2016. Fate and Transport Analysis, Lincoln Oaks Service Area. Prepared for Sacramento Groundwater Authority. October 2016.

Boulevard in the area impacted by PCE, so the regional flow of PCE impacted groundwater into the District area is not expected. Because ASR raises WLs locally, it is more likely that ASR would have a beneficial quality impact on District groundwater by creating a mound shielding/deflecting the flow of PCE-laden groundwater away from District wells. That being said, any hydraulic impact to groundwater flow direction and gradient by ASR injection in the District would likely be minimal in Lincoln Oaks and the impact may not be measurable (this could be verified by ASR pilot testing). Finally, the Brown and Caldwell study included lithologic cross-sections which are very consistent with the findings of this study and shown in **Figure 2-3**.

2.8 Summary of Key Findings and Recommendations

- Well and aquifer conditions in the District are favorable for the development of ASR.
- Depth to groundwater ranges from 159 to 173 feet in the District wells based on depths to groundwater data collected monthly during 2019, several feet higher than the drier 2018. Given the existing system pressure of 85 to 100 psi and this depth to groundwater, downhole flow control is required to limit injection flow rates.
- Estimated injection rates vary from 540 to 1,400 gpm at District wells.
- Estimated injection mounds range from 25 to 39 feet above static WL measured pre-injection.
- Surface and groundwater quality appears to be compatible and impacts to regional contaminant plumes are very improbable.
- GEI concludes that the conditions for ASR are favorable in the District for either retrofitting existing wells or constructing new ASR wells.
- A pumping test would be the next step in evaluating aquifer characteristics at one of the four primary wells and to estimate injection rates. Bonita is recommended as the first well because Sunrise is located nearby and could serve as an observation for the testing, which would allow the definition of storativity. Skycrest would be an alternative with Palm as the observation well.
- ASR pilot testing is recommended after the pumping test(s) and would allow quantification of aquifer conditions – a single cycle of injection, storage, and recovery pumping over the term of a month or multiple cycles (3) for a longer period. The pilot test would verify heights of injection mounding, optimize injection flow rates, and evaluate surface and groundwater quality compatibility.

3. Well Considerations – Overview of Compatibility of Existing and Proposed New Wells for ASR

This section addresses the adequacy of the existing District wells to be operated as ASR Wells, identifies additional equipment required for ASR, and provides an estimate of cost for these equipment modifications.

3.1 Well Compatibility Assessment

A District well site visit was completed by GEI staff on February 11, 2020, to assess the potential for these existing wells to accommodate the storage of drinking water in the underlying aquifer. A robust ASR program consists of four separate operational modes: Pump to Waste mode, Production/Recovery mode, Recharge mode, and an effective Backwash mode to periodically remove solids that would otherwise clog the well, which keeps the recharge mode effective and efficient. GEI concluded that these wells can operate in all four modes with some relatively minor modifications to existing equipment and the addition of downhole flow control. GEI prepared a List of Well Modifications to Enable ASR Memorandum (Well Modification Memo) that is included as **Appendix A.** The Well Modification Memo includes a well by well itemization of valve positions and new equipment required to operate District wells for ASR.

3.2 Cost Evaluation to Retrofit Existing Wells

Cost estimates to retrofit existing District production wells for ASR capabilities were developed for all six CHWD production wells. Estimates and line item costs were based on the recommendations in the Well Modification Memo (**Appendix A**), including specific aboveground components (valving, flow meters, programming) along with downhole flow control. The cost estimates address only individual component costs and do not include costs associated with installation and contractor fees. While all wells were evaluated, only wells suitable for ASR based on higher-grade materials used for well screen, casing, and filter pack are recommended for retrofit. Unit prices are based on direct quotes from suppliers and previous well construction projects. **Table 3-1** shows line item and total costs to retrofit all suitable production wells and the total cost to retrofit all suitable wells. GEI recommends only retrofitting wells with stainless steel screens and casings, which include Skycrest (casing and screens), Mitchell (screens), and Bonita (screens).

The average cost to retrofit an existing District well to ASR capabilities is approximately $200,000. The largest cost items are the programming for SCADA integration ($104,000) and the flow control system ($90,000). Variable cost items, the bi-directional flow meter, and flow control apparatus, were estimated using similar components employed by ASR operators in the region. The cost basis for retrofit cost estimates, including supplier quotes, is included in **Appendix B**

(Cost Justification**)**. Additionally, replacement of the pump column pipe is not estimated but should be considered if epoxy coated or stainless-steel column pipe is not already in use.

In comparison to retrofit costs, costs for constructing a new ASR well are estimated at approximately $2.2 million (in 2020). This estimate is based on results of the Regional Water Authority (RWA) ASR Feasibility Study (Feasibility Study)[13]. This cost estimate does not include site-specific costs such as landscaping, demolition, and well house. While construction of new ASR wells is significantly higher than retrofitting existing wells, newer ASR wells can significantly outperform existing wells with a longer lifespan and operational capacity. New ASR wells tend to require less maintenance and rehab while operating at higher flow rates. Cost estimates developed for the RWA ASR Feasibility Study are also included in **Appendix B.**

Table 3-1. Production Well Retrofit Cost Estimates.

Well Name	Recommended Component	Quantity	Unit Cost	Total Cost
Bonita Way (Well 15)	12" Gate Valve or Butterfly Valve (BFV)	2	$1,720	$3,440
	Bi-directional flow meter (12")	1	$6,060	$6,060
	SCADA Integration/Programming	1	$104,000	$104,000
	Flow Control Apparatus	1	$90,000	$90,000
			Bonita Way Total Costs	**$203,500**
Mitchell Farms (Well 11)	Bi-directional flow meter	1	$6,060	$6,060
	SCADA Integration/Programming	1	$104,000	$104,000
	Flow Control Apparatus	1	$90,000	$90,000
			Mitchell Farms Total Costs	**$200,060**
Skycrest (Well 17)	12" Gate Valve or BFV	1	$1,720	$1,720
	Bi-directional flow meter (12")	1	$6,060	$6,060
	SCADA Integration/Programming	1	$104,000	$104,000
	Flow Control Apparatus	1	$90,000	$90,000
			Skycrest Well Total Costs	**$201,780**
			Cost to Retrofit All Wells	**$605,340**

[13] GEI, 2020. Regional ASR Feasibility Assessment. Prepared for the Regional Water Authority and contributing partners. November 2020.

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4. Alternatives Assessment

The District requested that GEI assess a few alternatives as part of this ASR Feasibility Study and be included in this Implementation Plan, including:

- Identification of potential teaming partners in the region to assist in advancing ASR in the District. This section provides a summary of other agencies within the District's sphere of influence that have shown an interest in ASR in the recent past or are currently developing ASR programs.
- The Sacramento Groundwater Authority's efforts to develop a Regional Groundwater Bank (Water Bank) and status of the Water Bank.
- The District also asked GEI to evaluate the potential for power generation during injection as a potential revenue stream if ASR were to be implemented.

The section briefly summarizes our findings in assessing these alternatives.

4.1 Identification of ASR Partners and Collaborators in the Region

In developing ASR within the City of Citrus Heights, the District would benefit by collaborating with other agencies in the region that are developing ASR capabilities. The agencies in the region that have either studied ASR or are currently developing projects are listed in **Table 4-1**.

Table 4-1. Agencies within the Region Studying or Pursuing Development of ASR Projects.

Agency	Summary of ASR Activities (as of July 2021)
City of Roseville	• Source of surface water is American River treated at Roseville's surface water treatment plant (WTP). • 2002 - ASR well construction began, • 2004-2007 - Pilot and demonstration-scale testing, • 2013 - Permit obtained from Central Valley Regional Water Quality Control Board for Full-Scale Operation, • 2018 to present - Completed several seasons of injection and aquifer storage, • 4 ASR wells in operation today with approved monitoring and reporting plan, • 2019-2020 - exploration for new ASR well locations within City which involved drilling and construction of monitoring wells, • Plans to add 4-6 new wells within the next 5-10 years.
Sacramento Suburban Water District	Has been equipping new wells with injection capability for the past 15 to 20 years, has not pursued permit to operate wells for ASR, currently evaluating the economics of ASR within SSWD area.
San Juan Water District	During the development of their Water Reliability Study in 2016-2017, evaluated ASR alternative to partner with Fair Oaks Water District and Citrus Heights Water District. Not currently pursuing ASR alternative. SJWD

Agency	Summary of ASR Activities (as of July 2021)
	is currently updating their Wholesale Water Masterplan and is planning to discuss expanded conjunctive use alternatives with their wholesale water customers.
Fair Oaks Water District	Equipping new wells with injection capability but is not currently pursuing a permit to operate ASR.
City of Sacramento	Evaluated ASR feasibility during the development of Groundwater Master Plan. Not currently pursuing ASR.
Sacramento County Water Agency	Currently conducting a Phase 1 ASR Feasibility Study, scheduled to be completed in September 2021 with recommendations regarding future phases of development. Source of recharge water is potable drinking water from Vineyard WTP.
City of Davis	Currently conducting a Feasibility Study which includes pilot testing at 1 well location. Study is scheduled to be completed in fall of 2021.
City of Woodland	Conducted ASR pilot testing in 2013, obtained an ASR permit in 2016, currently have 3 wells capable of injecting, and plan to build 2-3 additional wells within the next 5 years. Source of recharge water for injection is Sacramento River with treatment at Woodland Davis Clean Water Project WTP in Woodland.

The District will need to partner with a surface water provider in a potential future District-led ASR project. **Table 4-2** summarizes potential surface water providers and considerations for future evaluation in pursuing partnerships with these agencies.

Table 4-2. Potential Surface Water Partners in a District Lead ASR Project.

Agency	Partnership Considerations
City of Roseville and Placer County Water Agency (PCWA)	The district has multiple interties with Roseville. Roseville fluoridates their drinking water, but the District does not. Roseville is developing its ASR program in part to participate in regional groundwater banking and exchange as future opportunities arise. Measure Q was passed by voters and took effect on January 1, 2021. Measure Q changes Roseville's charter by prohibiting Roseville from providing water on a retail basis outside the City limit. It may not prevent wholesale delivery and it does not impact the wheeling agreement with PCWA for moving their Middle Fork water through the system. This wheeled water is for Cal Am and any other entities west of Roseville. Wheeling water from PCWA to Citrus Heights is allowed, but it's something that requires further evaluation if the District elected to pursue a partnership with PCWA. Add Roseville lower pressure issue (would need PRV/system-wide pressure reduction), potential place of use issue (only able to be used in Placer County in dry years), no room for a pressure reduction station/pumps in that area
PCWA	PCWA would likely need to modify their wheeling agreement with the City of Roseville to allow the sale of PCWA water to the District for the purpose of ASR. This is likely not an obstacle but rather an administrative action. Timing, duration of the volume of water to be delivered to the District should be determined so that PCWA and Roseville can assess the impact to existing customers.
Carmichael Water District (CWD)	The district has an intertie with CWD; however, the District's system operates at higher pressures so booster pumping would be required, and this is likely cost-prohibitive in the near future.

Agency	Partnership Considerations
San Juan Water District (SJWD)	SJWD has evaluated the alternative of partnering with the District as part of their Water Reliability Study completed in 2017. An initial meeting was held, in which CHWD requested a proposal. Their current Wholesale Water Masterplan update is an opportunity for the District to explore equitable partnering opportunities with SJWD for District ASR pilot testing and program development.

4.2 Status of Sacramento Regional Water Bank

Water providers in the Sacramento region are developing the Sacramento Regional Water Bank (Water Bank)[14]. The Water Bank is an innovative groundwater storage program that will improve regional water supply reliability in the near term and into the future. The Sacramento region's unique setting—at the confluence of the Sacramento and American rivers near Folsom Reservoir and overlying the North American and South American groundwater subbasins—is ideal for the Water Bank's development.

The District is situated in the southeastern corner of the North American Subbasin, which is an underground reservoir with available space to store an estimated 1.8 million acre-feet of water, which is almost twice the volume of Folsom Lake! During a wet year, local water providers could store up to about 60,000 acre-feet of water in the Water Bank using existing facilities. During a dry year, much of that stored groundwater could be recovered and could serve more than 150,000 households in the region for a year.

Local water providers are developing the Water Bank in two phases, and have secured funding for Phase 1, which is now nearly complete. But this effort is not a small undertaking – getting to an operational Water Bank requires an additional $2.12 million in total funding to complete Phase 2. Local water providers have also identified infrastructure improvements that, if implemented, would extend the Water Bank well beyond its initial capacity. Investing an estimated $288 million in facility improvements over the next 10 years could increase both storage and recovery opportunities by more than 50 percent.

In late 2020, RWA and its member water agencies were successful in getting $870,000 in grant funding from the Water Infrastructure Improvement for the Nation Act for the environmental and technical work to be completed in Phase 2. RWA is in the process of circulating the Phase II teaming agreement to Banking partners to complete Phase 2. Phase 2 work will be largely complete by 2022, paving the way for a working Water Bank. Once operational, the Water Bank will improve local water supplies, but importantly will also be a supply source for other GSAs through transfers and exchanges.

[14] For more information on the Water Bank, please visit this website: https://rwah2o.org/sacramento-regional-water-bank/

4.3 Potential for Electrical Power Generation

Electrical generation is possible in hydraulic systems when water is directed to flow from a state of high to low pressure. This potential applies to an ASR well where water falling from distribution system pressure to aquifer pressure during the injection period can generate electricity, as illustrated in **Figure 4-1**.

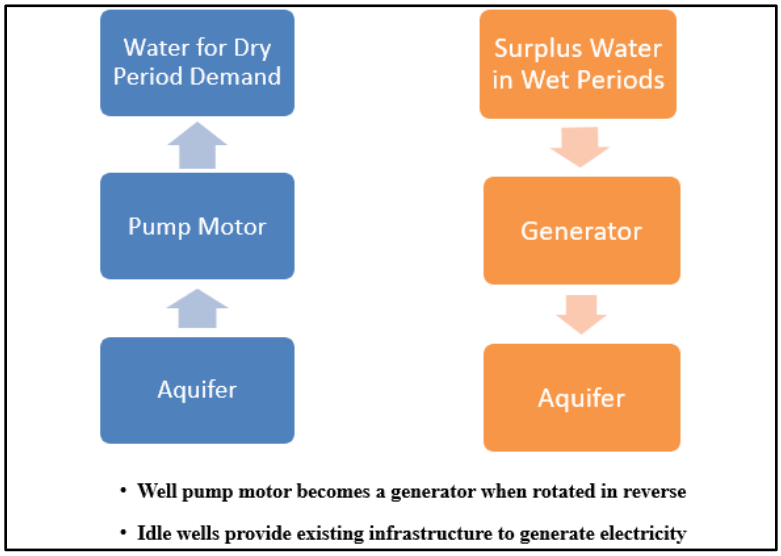

Figure 4-1. Power Generation During Injection.

As shown in **Figure 4-1**, the pump motor becomes a generator when rotated in reverse. This requires the removal of equipment that may prevent the motor from spinning in reverse; the installation of a pressure regulating valve at the bottom of the pump column; and then modification of the electrical control panel.

To further investigate the benefit of electrical generation to the District if they move forward with ASR, GEI contacted the recipient of a recent California Energy Commission (CEC) Grant, Willow Springs Water Bank[15]. The CEC grant-funded project is scheduled to be complete in 2024 and will include a comprehensive analysis of power generation during injection. Key findings, based on this limited research, include the following:

- The required investment to generate power from a well could range between $300,000 and $400,000.
- The emerging technology and the investment required may prove economical when the head difference is 300' or more.
- Case study knowledge for this technology is limited.

Because the depth to water in the District area is 170 feet and the system pressure provides an additional 230 feet of head, the potential for power generation during ASR with the District wells

[15] Personal communication with Mark Beuhler at Willow Springs Water Bank, Mbeuhler@wswaterbank.com.

shows promise. Frictional losses and mounding that would occur during injection will diminishing the head difference and should be further studies if power generation is pursued. The District could realize potential benefit if they are planning to retrofit existing production wells for ASR by installing a downhole control valve since this component is also the largest line-item cost for power generation. The District could also use a standalone generator utilizing pipe flow. Information in the form of a grant application on the ongoing CEC study at Willow Springs Water Bank is provided in **Appendix C**.

5. ASR Implementation Plan

This section presents the general phases of ASR implementation for successful ASR programs and also provides a District specific plan for further evaluation and development of ASR.

5.1 Phased Approach to ASR Program Implementation

Consistent with the recommendations of the Regional ASR Information Study, GEI recommends a phased approach to ASR implementation as summarized below. A few of these items have been completed as part of this plan and are marked accordingly.

Phase I – Feasibility Assessment and Conceptual Design

This phase involves the development of a detailed project plan accounting for technical and non-technical issues, including:

- Assessing surface water supply for injection, including characterization of timing and volume of available supply for injection
- Assessing surface water and groundwater quality and mixing compatibility, which may include initial geochemical modeling (Completed) -
- Evaluating local aquifer characteristics, including storage potential, groundwater flow direction and rate, depth to groundwater, and estimated injection rate (Completed)
- Selecting a well or wells for pilot testing, including use of existing wells or new wells
- Completing a conceptual design of an ASR program, including a project description with details of the initial pilot program to comply with the California Environmental Quality Act (CEQA) (Completed)
- Engaging with Central Valley Regional Water Quality Control Board (RWQCB), SWRCB, and local and regional stakeholders in the program
- Performing a financial analysis, including objective evaluation of costs and benefits (Completed)
- Complete and submit a Technical Report to support the submittal of a Notice of Intent (NOI) in compliance with requirements in the Statewide ASR General Order, **Appendix D.** The information required in the technical report has been compiled and used in the development of this ASR Strategic Plan. The majority of the technical report can be completed by condensing and reorganizing the technical information in this Plan.

Phase II – Field Testing Program and Evaluation

This phase begins after receipt of the Notice of Applicability (NOA) from the RWQCB for implementation of ASR activities. The NOA acknowledges an applicant's submittal of the NOI

and Technical Report and establishes monitoring requirements for the ASR activities. This phase typically includes ASR pilot testing and analysis of the pilot testing results as follows:

- Conducting ASR pilot test, which usually involves multiple cycles and progressively longer periods of injection, storage, and recovery. At least three cycles are recommended.
- Collecting data during a pilot test, including injection rate and volumes, system pressure, WLs in the injection well and monitoring well(s) close to the injection well, water quality monitoring of the potable water before injection and groundwater in the nearby observation well(s) and the injection well (before ASR, during storage and recovery)
- Evaluating optimal injection rate based on pilot test results.
- Designing an expanded program based on pilot test results. To improve the program design, utilize the pilot test data to develop/update a numerical groundwater model for use in determining the optimal number, location, and spacing of wells in the ASR program. Water quality modeling informed by pilot test data will help forecast future groundwater quality during longer storage periods in the aquifer and provides insights on the potential for long-term well plugging and backwash frequencies, potential for corrosion, and precipitation or dissolution of metals.
- Revise the Notice of Intent (NOI) for long-term ASR program operation. Meet with RWQCB to discuss information requirements.
- Completing CEQA documentation for a full-scale program

Deliverables from this phase would include Facility Design and Expanded Program Description, CEQA Documentation, a Technical Addendum to the Technical Report developed in Phase I, and a revised NOI for Long Term ASR Operations.

<u>Phase III – ASR Well Field Expansion, Operation, and Financial Considerations</u>

This phase begins after receipt of the NOA for long term injection operation and includes:

- Construction of new wells, including ASR wells and observation wells
- Conversion of existing wells for ASR operation
- Injection operations, including the development of optimal backwash procedures for each well in the program informed by measured parameters during injection (system pressure, depth to water in injection well, injection flow rate). Backwash is necessary after each injection period, at least weekly (and possibly more often), to remove fine particles that could block flow from the well into the aquifer
- Maintaining a trickle flow injection and chlorine residual in wells during non-operational periods
- Quarterly reporting to RWQCB during the first year of injection and annual reporting thereafter

- Annual assessment of costs and benefits with consideration given to local agency use of stored water and transfer opportunities in coordination with other agencies in the region and the state.

5.2 Recommended Next Steps for the District

The District has completed most of the Phase I activities listed above except meeting with the RWQCB to discuss the potential project and permitting requirement and then completing the required technical report to proceed to pilot testing under a permit with the RWQCB.

5.2.1 Technical Report and ASR Pilot Testing

Attachment C of the Statewide ASR General Order, included in Appendix D, contains the Technical Report Requirements to accompany a NOI to inject drinking water into the ground. Much of the information requirements in the technical report have been developed as part of this ASR study. Listed below are those additional items that would need to be developed to complete the technical report so that the District could submit the NOI to perform pilot testing:

1. The Applicant's statement of intent to comply with the terms and conditions of the Order
2. A copy of the CDPH domestic water supply permit for the injected source water
3. Selection of well or wells to be included in the pilot test and providing well construction details and soil boring logs for these wells
4. Description of the pilot test, including the injection well, the volume of water to be injected, duration of storage in the aquifer, and volume to be recovered for each ASR cycle; if multiple cycles are proposed, details for each cycle are required
5. Type and extent of land use within the area of influence
6. Registration of the injection well(s) with USEPA as a Class V injection well
7. Any proposed changes to the monitoring and reporting program in the ASR General Order in Appendix D
8. Documentation of CEQA compliance for Pilot Testing which would be a categorical exemption
9. Groundwater Degradation Analysis

ASR Pilot Testing

Following submission of the NOI package, the RWQCB will review the Technical Report and other information, which could take 2 to 4 months. Following review, the RWQCB will issue a NOA which is a permit to inject drinking water for aquifer storage in compliance with the monitoring and reporting requirements of the NOA. A pilot testing program can include a single well or multiple wells operated in injection mode. GEI recommends beginning with a single well and running it through at least three cycles of injection, storage, and recovery. Baseline water

quality samples should be collected from both the injection wells and aquifer monitoring wells before the commencement of cycle testing.

Cycle 1 – Short Term Testing for Equipment Verification

The purpose of Cycle 1 of the pilot test is to verify that all equipment is operating properly, and the operators have control of injection flow rate and that all monitoring systems are responding properly. Parameters to be monitored are system pressure, injection flow rate, WLs in the injection well and nearby observation wells, and extraction flow rate. Monitoring these parameters allows the District to verify that the aquifer is receiving injected water and that injection rates and mounding are behaving as predicted. Water quality parameters should be measured in the field during both injection and extraction periods. Water quality sampling will be required for laboratory analysis of a variety of constituents. The specific details of Cycle 1 will be established with input from District staff, but will generally proceed as follows:

- Injection: 5 days
- Storage: 5 days
- Extraction: 3 days
- Injection Flow Rate: To be determined

Cycle 2 – Intermediate-Term Testing for Characterization of Aquifer Response

Assuming equipment operates properly and water quality in both the injection stream and extraction stream are acceptable, testing should proceed to Cycle 2. During this cycle of pilot testing, larger volumes of water are injected for storage while monitoring system parameters for any unforeseen changes. This cycle is important in establishing optimum long-term injection rates and durations. The same parameters will be monitored as described in Cycle 1, however, the frequency of monitoring will be adjusted for the longer duration of each period. The specific details of Cycle 2 will be established with input from District staff, but will generally proceed as follows:

- Injection: 10 days
- Storage: 30 days
- Extraction: 5 days
- Injection Flow Rate: To be determined, but the injection volume will be considerably higher than Cycle 1

Cycle 3 – Long Term Testing To Mimic Actual Conditions during ASR Program Operation

Assuming equipment and aquifer conditions remain favorable after completion of Cycles 1 and 2, the District should proceed with Cycle 3 of the pilot test to mimic conditions anticipated during a full-scale ASR operation. The optimal injection rate for Cycle 3 will be based on the well and aquifer responses during Cycles 1 and 2 to maximize the injection rate while monitoring aquifer

and system response. This cycle is important for planning a full-scale ASR project to better understand the capacity of the well for injection and the total volume of water that likely could be injected over a wet season when surface water is available for injection. The same parameters will be monitored as described in Cycle 1 and 2, however, the frequency of monitoring will be adjusted for the longer duration of each period. Specific details of Cycle 3 will be established with input from District staff, but will generally proceed as follows:

- Injection: 75 days
- Storage: 140 days
- Extraction: 60 days
- Injection Flow Rate: To be determined, but injection volume will be considerably higher than Cycles 1 and 2.

Because the injection duration is much longer during Cycle 3 of the pilot test, well plugging will likely occur, which will require backwashing by pumping some water to waste during the injection cycle to remove the clogging material from the filter pack. An important outcome of Cycle 3 from an operations perspective is to identify the frequency and duration of backwash events to maintain long-term injection performance. Cycle 3 also provides important information on water quality changes that will occur and may be perceived by customers during ASR operations. **Table 5-1** summarizes the estimated cost and schedule for completion of pilot testing.

Table 5-1. Cost and Schedule Summary for ASR Pilot Testing

Cycle	Labor Cost ($)	Laboratory Costs ($)	Equipment Costs ($)	Duration (Days/Months)
1	16,000	11,400	600	13 days
2	25,000	20,500	1,200	1.5 months
3	42,700	49,400	3,500	9 months
Totals	**83,700**	**81,300**	**5,300**	**12 months**

Following pilot testing, the results, analysis, and interpretation should be documented and submitted to the RWQCB as a technical addendum to the technical report originally submitted with the NOI. This technical addendum may include an operations plan for either a single or multiple well ASR program in the District. The cost to prepare the technical addendum is $30,000 to $40,000.

5.2.2 Addition of Observation Wells

The District lacks dedicated observation wells to monitor WL change and groundwater quality conditions in the aquifer at various distances away from the injection wells. GEI recommends that if the District decides to pursue ASR, the District should add dedicated aquifer monitoring wells.

The cost to construct an observation well various between $50,000 and $100,000 per well depending on the depth, diameter, and type of well (single versus nested: three well completions in a single boring), and number of piezometers in a nest (single grouping including a shallow, mid-depth and deep monitoring well at a single location). GEI recommends at least one nested observation per injection well with completions in the target injection aquifer and the aquifers just above and just below the target aquifer.

5.2.3 Environmental Compliance and Permitting for ASR Program

The pilot test described above can proceed under a CEQA categorical exemption since it is required testing for a larger project or program. Once the pilot testing is complete and if the District decides to move forward with a long-term operational ASR program, a new CEQA action will be required for the processing of an operation permit with the RWQCB. The CEQA action recommended would be either an Initial Study and Mitigated Negative Declaration or an Environmental Impact Report (EIR). If federal funding is used in the development of the ASR program, an Environmental Impact Statement (EIS) would also be required to comply with the National Environmental Protection Act. The groundwater elements that would need to be addressed in an EIR or EIS include:

- Detailed project description including ASR operations plan
- Impacts to WLs supported by groundwater modeling of all operational wells in the program, both now and at build-out
- Impacts to groundwater quality supported by groundwater modeling of all operational wells in the program, both now and at build-out

Once completed, including responses to comments from stakeholders and the public in the final environmental document, the District could apply for a long-term operation permit from the RWQCB per the conditions of the ASR General Order (**Appendix D**). CEQA and the permit may require updates during implementation if more wells are added than described in the initial documents, well locations change, or well operations change significantly.

The estimated cost to complete environmental documentation and CEQA is $200,000.

5.2.4 Building Support – Customer Education and Engagement

Public education and engagement are important components of a successful ASR program and the District should build public support for ASR beginning in Phase I and continuing forward into implementation. GEI recommends that a public engagement plan be developed by the District to guide outreach and engagement activities. The plan should include the following elements:

- Development of an ASR-specific page on the District's website with information on when and how the public can engage. The City of Roseville developed a webpage that serves as a good example:

https://www.roseville.ca.us/government/departments/environmental_utilities/at_your_service/water_supply/groundwater_program

- Schedule of informational meetings in each Phase of project development
- Process for receiving and addressing input from the public
- Development and distribution of ASR Fact Sheets
- Strategy for resolving conflicts with individuals or groups that may oppose the project

Developing a proactive outreach program and leading with positive messaging that emphasizes the benefits of ASR is strongly recommended so that the program enjoys strong local support while the District completes the permitting process and pursues funding for the project.

The estimated cost to develop a Public Education and Engagement Plan is $10,000 to $15,000 and the annual implementation costs are another $10,000-$15,000. GEI recommends that the program be funded for at least the first 3 years during development.

Program Funding

ASR is a component of Managed Aquifer Recharge, which is being supported by the State through Proposition 68. Round 2 funding grants will be accepted in 2022 and the District's ASR program could be eligible for funding, perhaps as a regional grant submitted with a package of projects through SGA. Funding for ASR may be available through the Integrated Regional Water Management (IRWM) Program and the District has been successful in receiving funding for future wells through this program. The expansion of the District's wellfield, including the addition of observation wells, could be possible through the IRWM program. A wide variety of other state and federal programs are available to assist the District in developing ASR. Most grant funding programs require a local cost share of up to 50 percent of total project costs.

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Appendix A – Equipment Modifications Memo

Memo

To: David Gordon, Operations Manager

From: Chris Petersen, Project Manager

cc: Brian Hensley, Rebecca Scott, Rodney Fricke, Trevor Kent, David Settles

Date: March 13, 2020

Re: Task 2 List of Well Modifications to Enable ASR
Strategic Plan for ASR Implementation Project
Citrus Heights Water District
GEI Project No. 1905246

A well site visit was completed by GEI staff on February 11, 2020. This technical memorandum (TM) is provided in fulfillment of Task 2, Field Assessment of Existing Wells and Future Well Sites. The following is a well by well summary of modifications required at each well location to enable operation of the wells for aquifer storage and recovery (ASR). In addition to the equipment listed below and shown schematically, GEI also recommends downhole injection flow control. More detail on the type and cost of injection flow control will be provide in the Task 3 TM. Although we are listing the equipment that would be required for ASR operation, GEI is not yet recommending that this work be implemented at all of these wells. Recommendations will follow in the draft Strategic Plan after evaluation of more local well data and groundwater conditions (Task 3) and evaluation of alternatives for ASR (Task 4) are completed.

A robust ASR program consists of four separate operational modes: Pump to Waste mode, Production mode, Recharge mode, and an effective Backwash mode to periodically remove solids that would otherwise clog the well, which keeps the recharge mode effective and efficient.

Provided below are the well site drawings of CHWD six wells showing flow paths for each well and each operation. The tables below show valve and equipment positions for each of the modes with flow paths. In addition, the well site plans and accompanying tables indicate what equipment (topside) will need to be installed and/or relocated to accommodate the ASR project. New equipment is highlighted in red font in the tables that follow.

Sylvan Well #8

Retrofits & Challenges

a) Welded pipe and some fittings.
b) The Check Valve needs to be relocated between Flow Meter and Pump to Waste Tee, to allow recharge water to travel through the Pump to Waste section and reach the well head. The flow meter will need to be moved upstream to minimize turbulence from the valve.
c) New 8” Gate Valve or Butterfly Valve installed on the downstream portion of the Pump to Waste tee, install new tee 8” x 8” x 8” with 8”x 6” reducer to tie back into the Pump to Waste line. This retrofit will accommodate the Recharge Mode.
d) New bi-directional flow meter on the Pump-to-Waste / Recharge piping to measure the flow and volume of recharge water.
e) Full integration and programing of the PLC and SCADA system.

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Rancho Cordova, CA 95670
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Figure 1 - Flow Path for Pump to Waste Operation at Sylvan Well #8

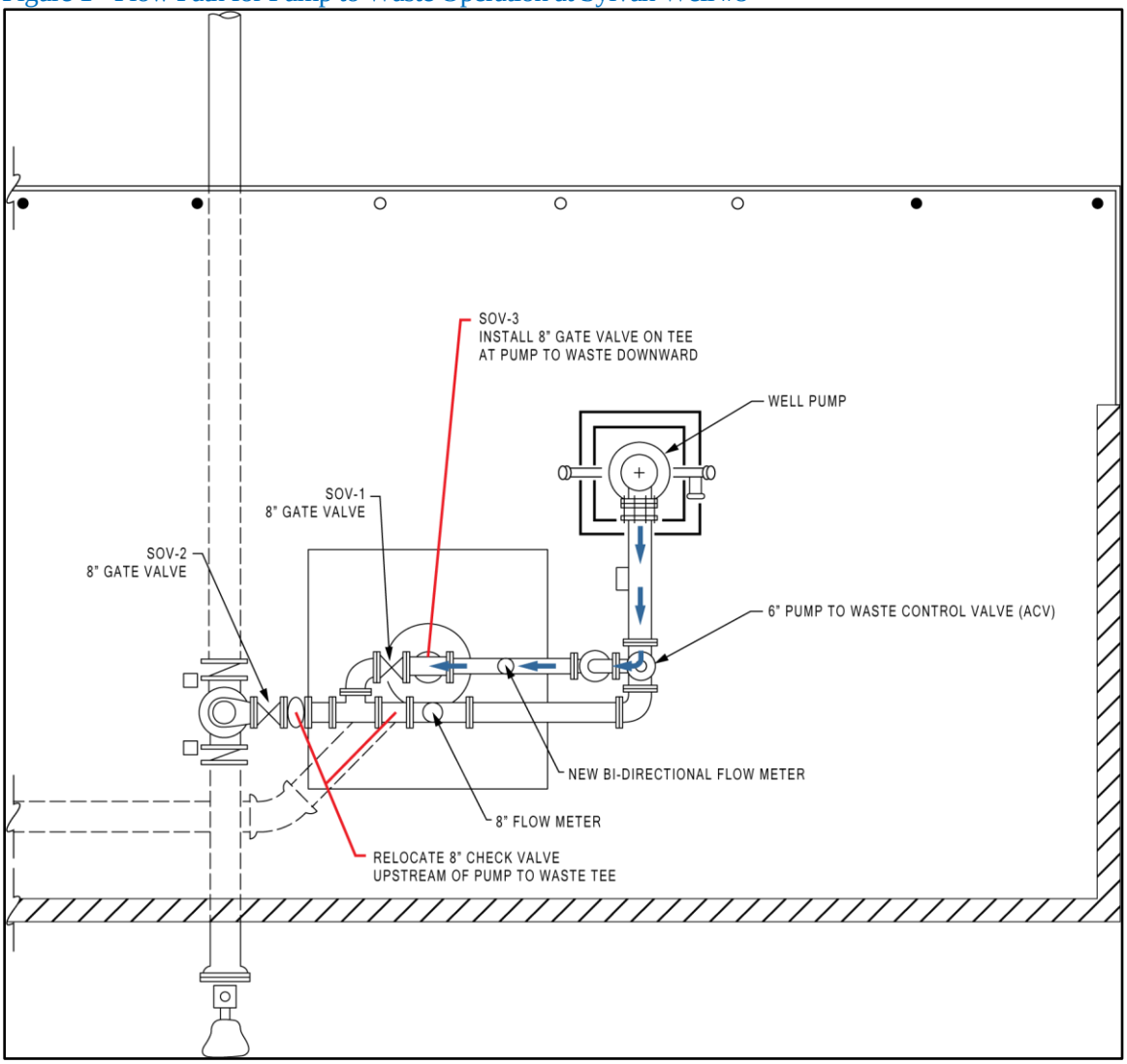

Table 1 - Pumping to Waste and Corresponding Valve Positions at Sylvan Well #8

Pump to Waste Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control Valve	Open	NA	NA
SOV-1	8" Gate Valve	Closed	NA	NA
SOV-2	8" Gate Valve	Open	NA	NA
SOV-3	8" Gate Valve or BFV (New)	Open	NA	NA
	New Bi-Directional Flow Meter	Operational	NA	NA

Figure 2 - Flow Path for Recharge Operation at Sylvan Well #8

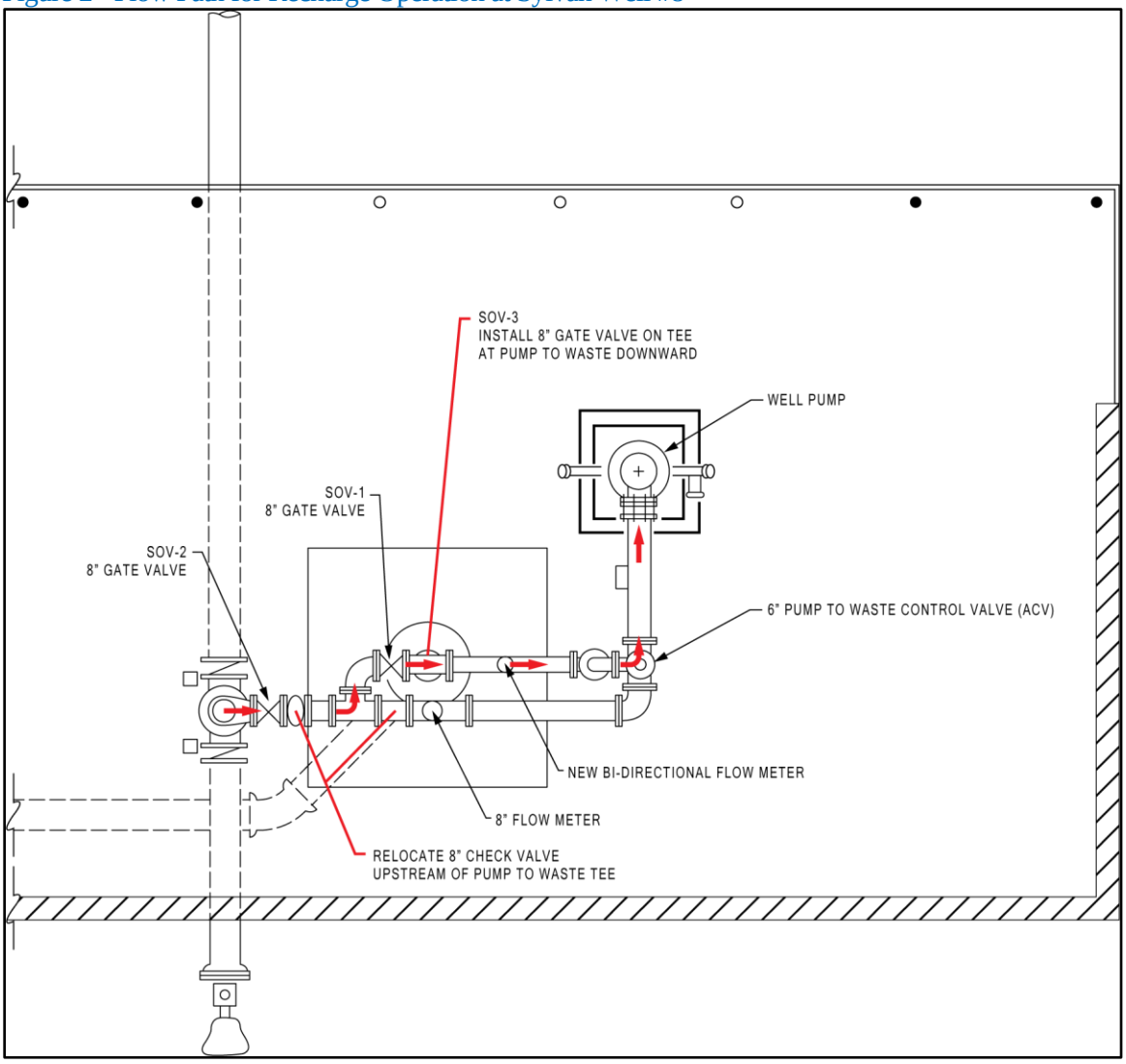

Table 2 - Recharge and Corresponding Valve Positions at Sylvan Well #8

Recharge Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control Valve	NA	Open	NA
SOV-1	8" Gate Valve	NA	Open	NA
SOV-2	8" Gate Valve	NA	Open	NA
SOV-3	8" Gate Valve or BFV (New)	NA	Closed	NA
	New Bi-Directional Flow Meter	NA	Operational	NA

Figure 3 - Flow Path for Production Operation at Sylvan Well #8

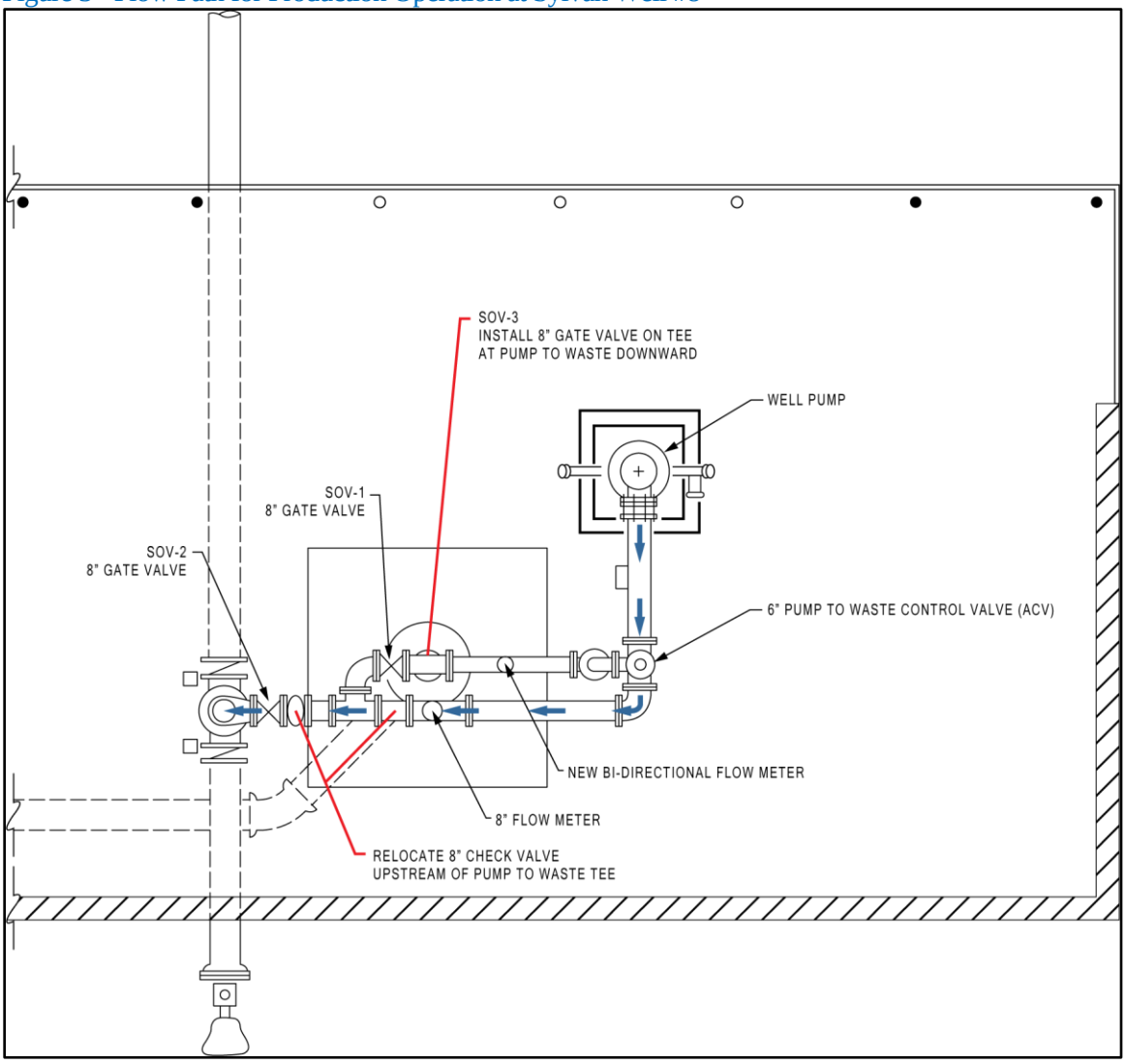

Table 3 - Pumping to the Distribution System and Corresponding Valve Positions at Sylvan Well #8

Production Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control Valve	NA	NA	Closed
SOV-1	8" Gate Valve	NA	NA	Closed
SOV-2	8" Gate Valve	NA	NA	Open
SOV-3	8" Gate Valve or BFV (New)	NA	NA	Open
	New Bi-Directional Flow Meter	NA	NA	NA

Skycrest Well #17

Retrofits & Challenges

a) Welded pipe and some fittings.
b) The Check Valve needs to be relocated between Flow Meter and Pump to Waste Tee, this will allow for the recharge water to travel through the pump to waste section and reach the well head. The flow meter will need to be moved upstream to minimize turbulence from the valve.
c) New 12" Gate Valve or Butterfly Valve installed.
d) New bi-directional flow meter on the Pump-to-Waste / Recharge piping to measure the flow and volume of recharge water.
e) Full integration and programing of the PLC and SCADA system.

Figure 4 - Flow Path for Pump to Waste Operation at Skycrest Well #17

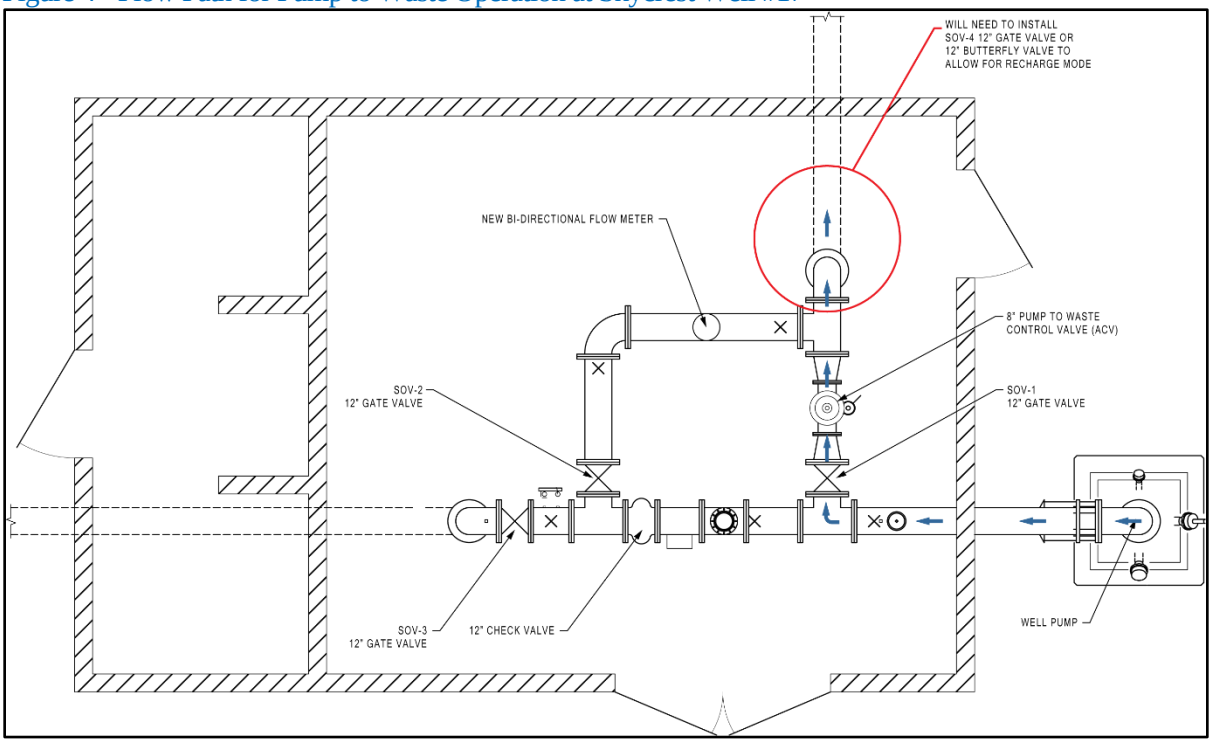

Table 4 - Pumping to Waste and Corresponding Valve Positions at Skycrest Well #17

Pump to Waste Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	8" Automatic Control Valve	Open	NA	NA
SOV-1	12" Gate Valve	Open	NA	NA
SOV-2	12" Gate Valve	Closed	NA	NA
SOV-3	12" Gate Valve	Open	NA	NA
SOV-4	12" Gate Valve (New)	Open	NA	NA

	New Bi-Directional Flow Meter	Operational	NA	NA

Figure 5 - Flow Path for Recharge Operation at Skycrest Well #17

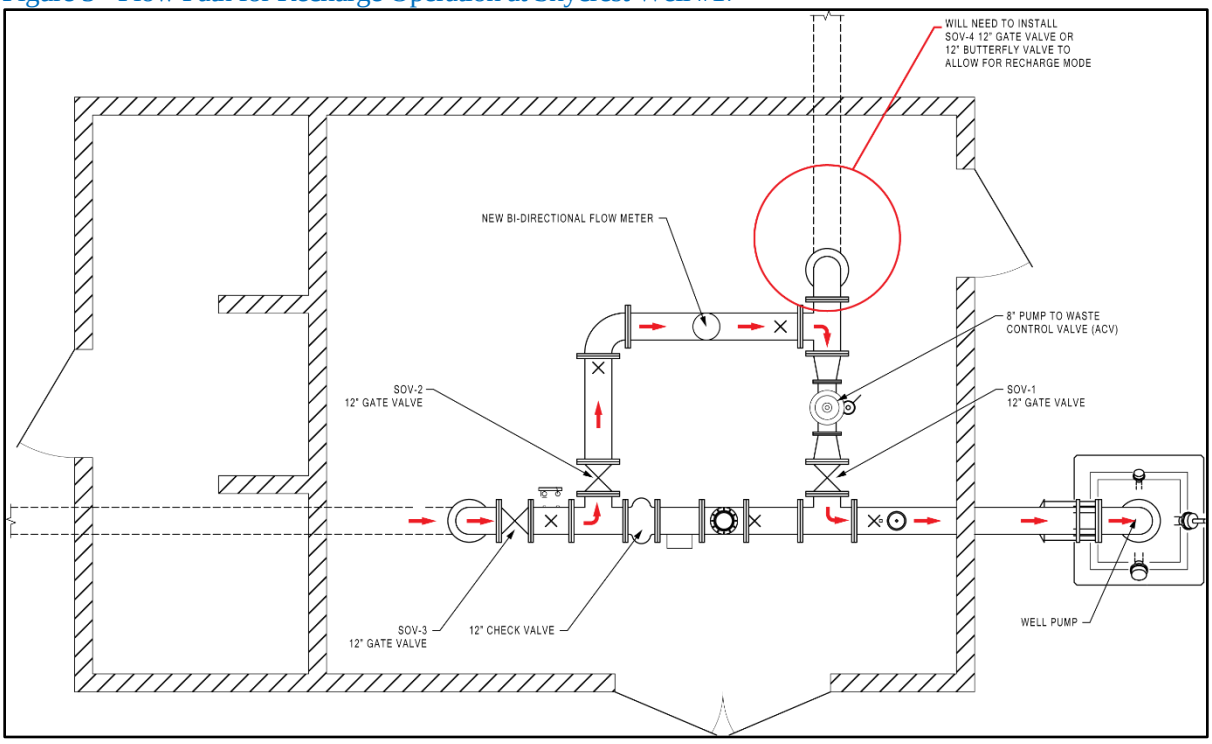

Table 5 - Recharge and Corresponding Valve Positions at Skycrest Well #17

Recharge Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	8” Automatic Control Valve	NA	Open	NA
SOV-1	12” Gate Valve	NA	Open	NA
SOV-2	12” Gate Valve	NA	Open	NA
SOV-3	12” Gate Valve	NA	Open	NA
SOV-4	12” Gate Valve (New)	NA	Closed	NA
	New Bi-Directional Flow Meter	NA	Operational	NA

Figure 6 - Flow Path for Production Operation at Skycrest Well #17

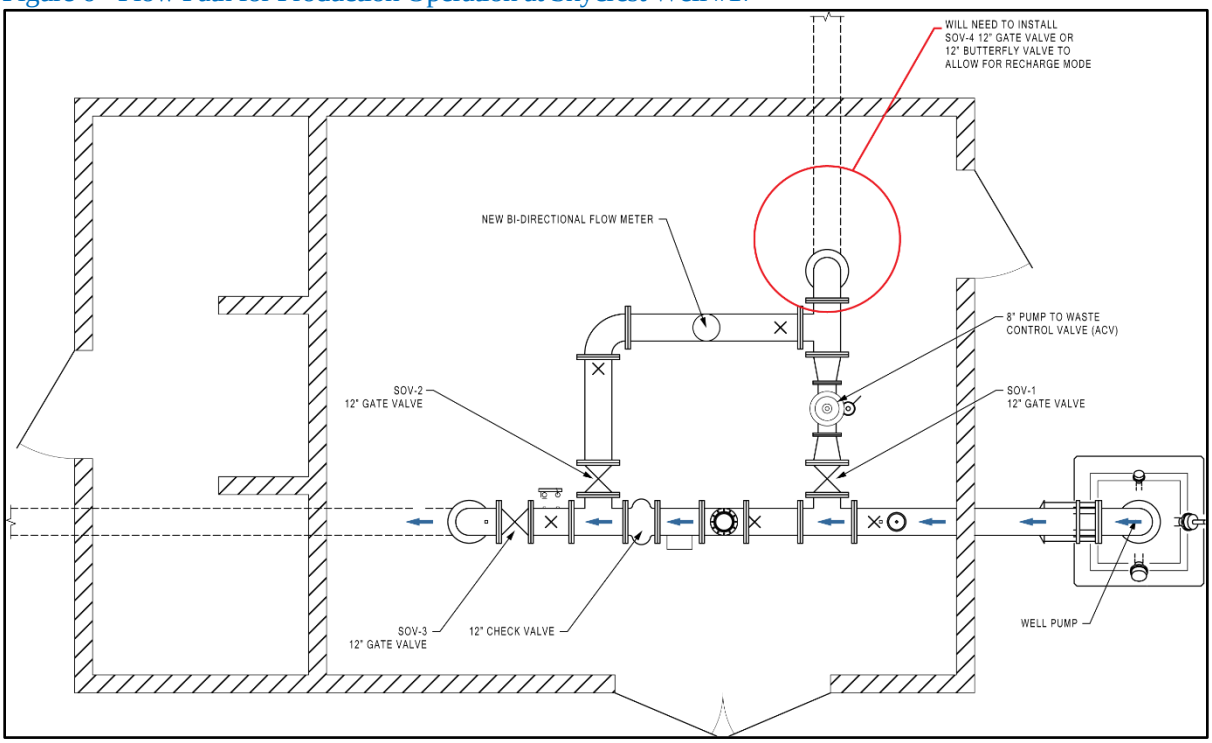

Table 6 - Pumping to the Distribution System and Corresponding Valve Positions at Skycrest Well #17

Production Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	8" Automatic Control Valve	NA	NA	Closed
SOV-1	12" Gate Valve	NA	NA	Open
SOV-2	12" Gate Valve	NA	NA	Closed
SOV-3	12" Gate Valve	NA	NA	Open
SOV-4	12" Gate Valve (New)	NA	NA	Open
	New Bi-Directional Flow Meter	NA	NA	NA

Bonita Way Well #15

Retrofits & Challenges

a) Welded pipe and some fittings.
b) Options will need to be explored to add valve for pump to waste due to well house close to pump to waste discharge line.
c) The Check Valve needs to be relocated between Flow Meter and Pump to Waste Tee, this will allow for the recharge water to travel through the pump to waste section and reach the well head. The flow meter will need to be moved upstream to minimize turbulence from the valve.
d) New 12" Gate Valve or Butterfly Valve installed.
e) New bi-directional flow meter on the Pump-to-Waste / Recharge piping to measure the flow and volume of recharge water.
f) Full integration and programing of the PLC and SCADA system.

Figure 7 - Flow Path for Pump to Waste Operation at Bonita Way Well #15

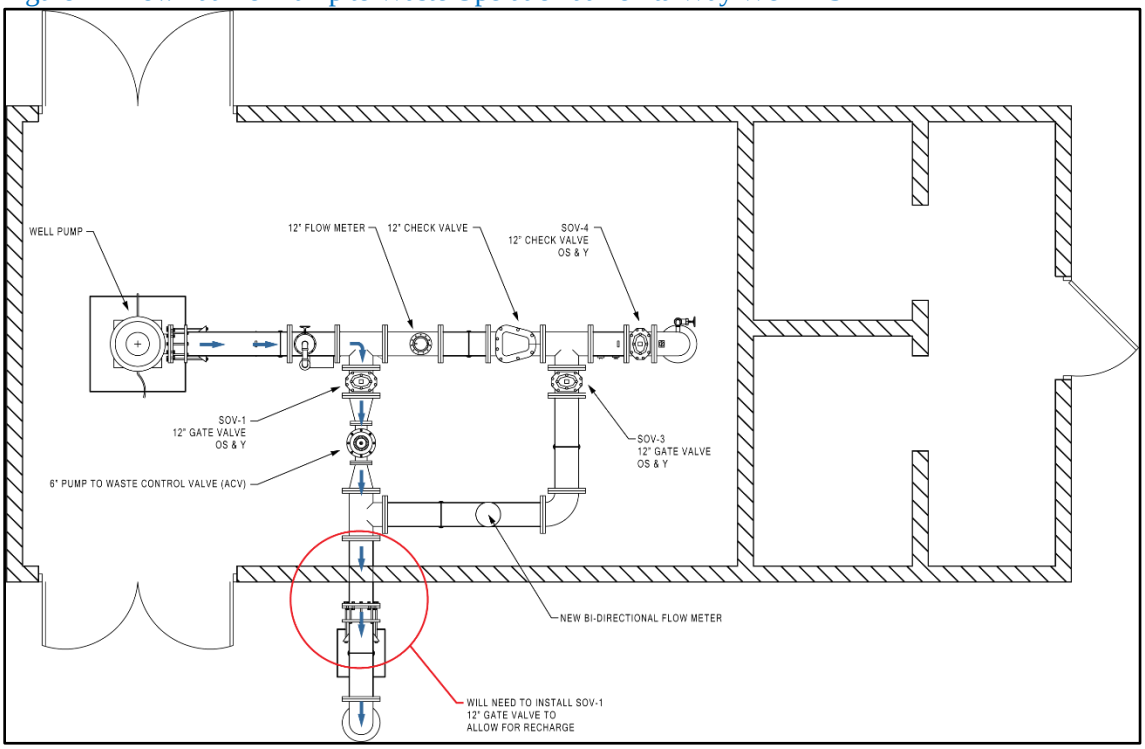

Table 7 - Pumping to Waste and Corresponding Valve Positions at Bonita Way Well #15

Pump to Waste Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control Valve	Open	NA	NA
SOV-1	12" Gate Valve, SO&Y	Open	NA	NA
SOV-2	12" Gate Valve (New)	Open	NA	NA

SOV-3	12” Gate Valve, OS&Y	Closed	NA	NA
SOV-4	12” Gate Valve, OS&Y	Open	NA	NA
	New Bi-Directional Flow Meter	Operational	NA	NA

Figure 8 - Recharge Operation at Bonita Way Well #15

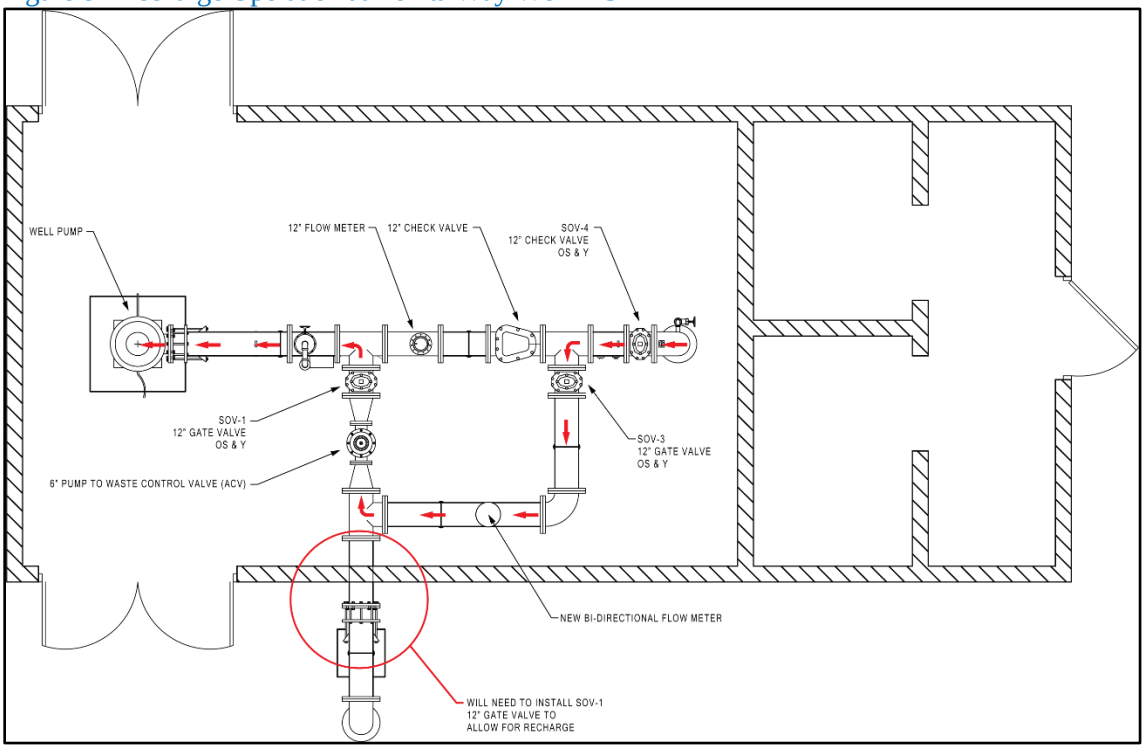

Table 8 - Flow Path for Recharge and Corresponding Valve Positions at Bonita Way Well #15

Recharge Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6” Automatic Control Valve	NA	Open	NA
SOV-1	12” Gate Valve, OS&Y	NA	Open	NA
SOV-2	12” Gate Valve (New)	NA	Closed	NA
SOV-3	12” Gate Valve, OS&Y	NA	Open	NA
SOV-4	12” GV/BF Valve, OS&Y	NA	Open	NA
	New Bi-Directional Flow Meter	NA	Operational	NA

Figure 9 - Flow Path for Production Operation at Bonita Way Well #15

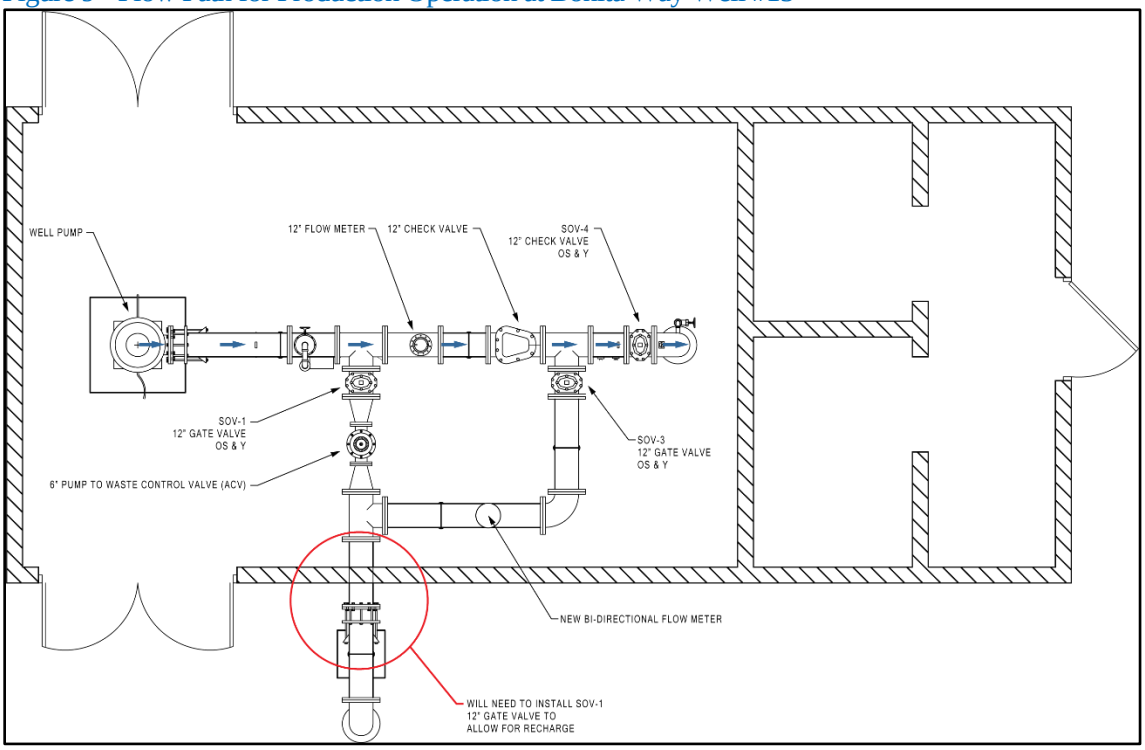

Table 9 - Pumping to the Distribution System and Corresponding Valve Positions at Bonita Way Well #15

Production Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control Valve	NA	NA	Closed
SOV-1	12" Gate Valve, OS&Y	NA	NA	Open
SOV-2	12" Gate Valve (New)	NA	NA	Open
SOV-3	12" Gate Valve, OS&Y	NA	NA	Closed
SOV-4	12" GV/BF Valve, OS&Y	NA	NA	Open
	New Bi-Directional Flow Meter	NA	NA	NA

Mitchell Farms Well # 11

Retrofits & Challenges

a) The Check Valve needs to be relocated between Flow Meter and Pump to Waste Tee, this will allow for the recharge water to travel through the pump to waste section and reach the well head. The flow meter will need to be moved upstream to minimize turbulence from the valve.
b) New bi-directional flow meter on the Pump-to-Waste / Recharge piping to measure the flow and volume of recharge water.
c) Full integration and programing of the PLC and SCADA system.

Figure 10 - Flow Path for Pump to Waste Operation at Mitchell Farms Well #11

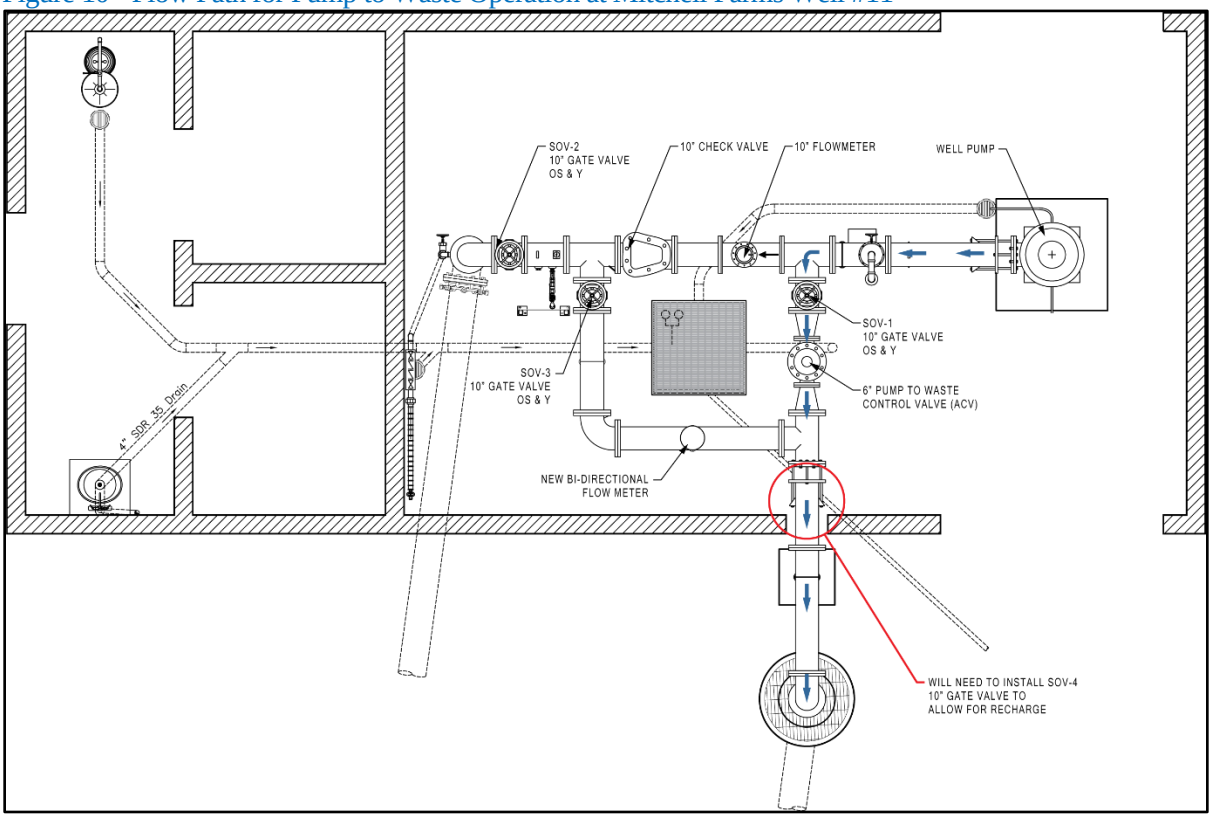

Table 10 - Pumping to Waste and Corresponding Valve Positions at Mitchell Farms Well #11

Pump to Waste Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control valve	Open	NA	NA
SOV-1	10" Gate valve, OS&Y	Open	NA	NA
SOV-2	10" Gate valve, OS&Y	Open	NA	NA
SOV-3	10" Gate Valve, OS&Y	Closed	NA	NA

SOV-4	10” Gate Valve (New)	Open	NA	NA
	New Bi-Directional Flow Meter	Operational	NA	NA

Figure 11 - Flow Path for Recharge Operation at Mitchell Farms Well #11

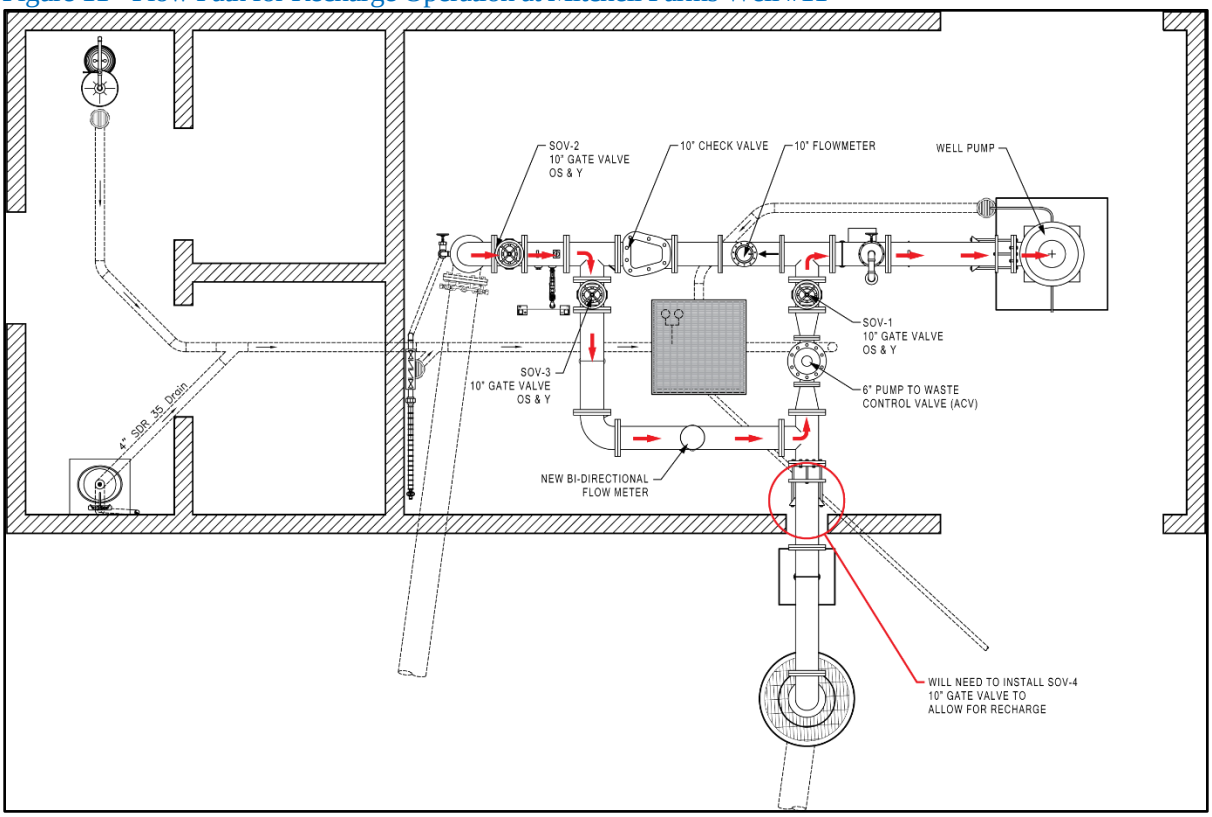

Table 11 - Recharge and Corresponding Valve Positions at Mitchell Farms Well #11

Recharge Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6” Automatic Control valve	NA	Open	NA
SOV-1	10” Gate valve, OS&Y	NA	Open	NA
SOV-2	10” Gate valve, OS&Y	NA	Open	NA
SOV-3	10” Gate Valve, OS&Y	NA	Open	NA
SOV-4	10” Gate Valve (New)	NA	Closed	NA
	New Bi-Directional Flow Meter	NA	Operational	NA

Figure 12 - Flow Path for Production Operation at Mitchell Farms Well #11

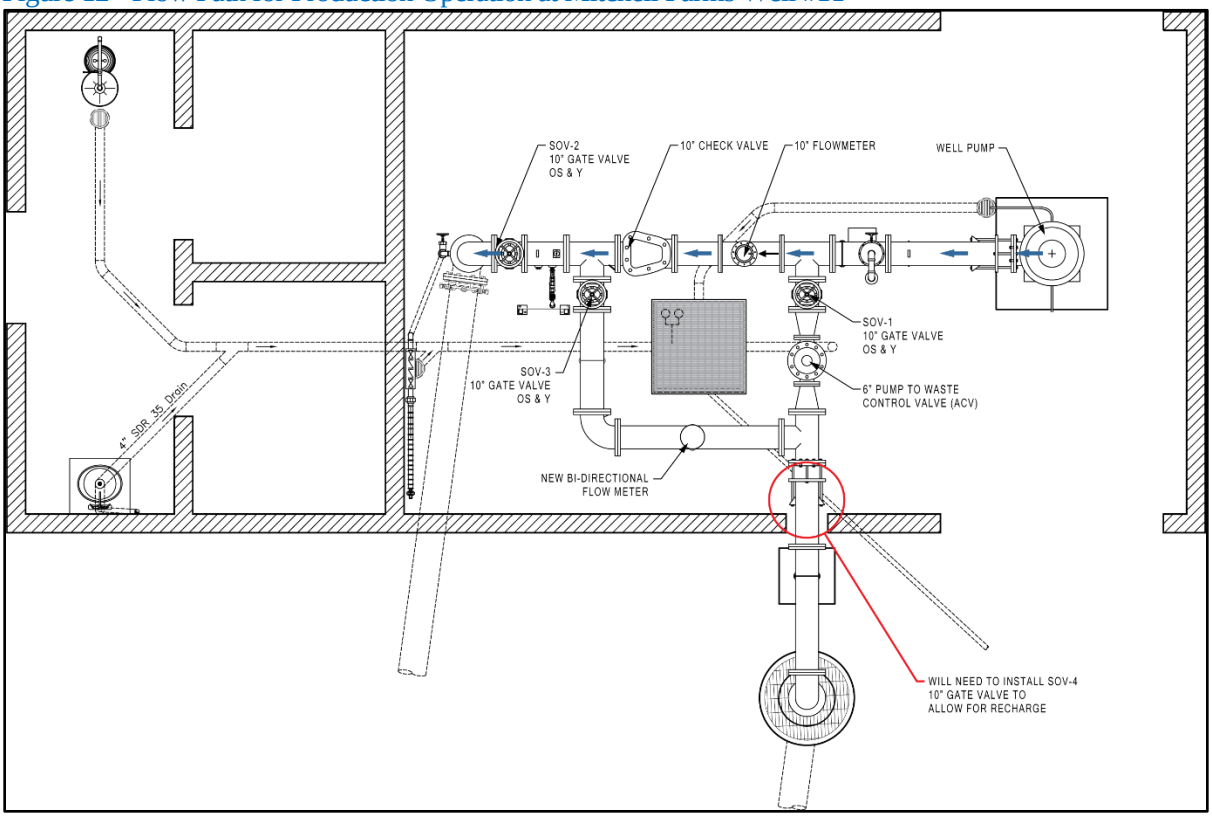

Table 12 - Pumping to the Distribution System and Corresponding Valve Positions at Mitchell Farms Well #11

Production Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control valve	NA	NA	Closed
SOV-1	10" Gate valve, OS&Y	NA	NA	Open
SOV-2	10" Gate valve, OS&Y	NA	NA	Open
SOV-3	10" Gate Valve, OS&Y	NA	NA	Closed
SOV-4	10" Gate Valve (New)	NA	NA	Open
	New Bi-Directional Flow Meter	NA	NA	NA

Palm Well 1A

Retrofits & Challenges

a) Welded pipe and fittings.
b) The Check Valve needs to be relocated between Flow Meter and Pump to Waste Tee, this will allow for the recharge water to travel through the pump to waste section and reach the well head. The flow meter will need to be moved upstream to minimize turbulence from the valve.
c) New 8" Gate Valve or Butterfly Valve installed on down spout portion of the Pump to Waste tee, install new 8" x 8" x 8" tee with 8"x 6" reducer to tie back into the pump to waste line. This retrofit will accommodate the Recharge Mode.
d) New bi-directional flow meter on the Pump-to-Waste / Recharge piping to measure the flow and volume of recharge water.
e) Full integration and programing of the PLC and SCADA system.

Figure 13 - Flow Path for Pump to Waste Operation at Palm Well #1A

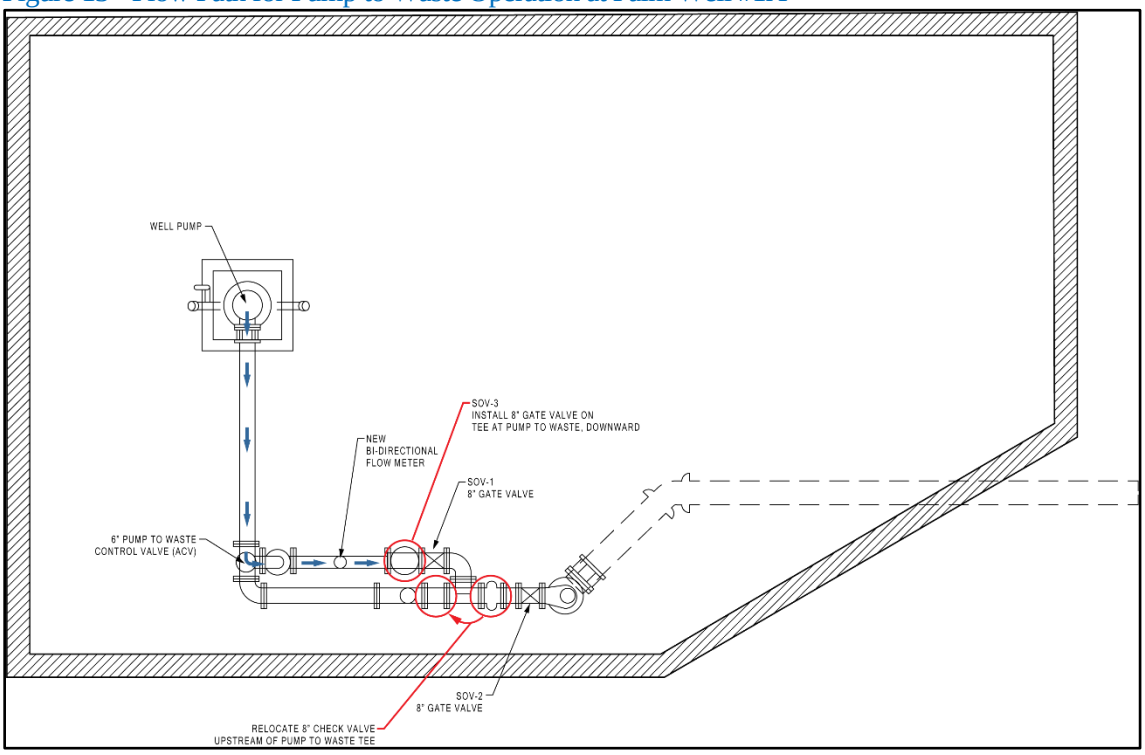

Table 13 - Pumping to Waste and Corresponding Valve Positions at Palm Well #1A

Pump to Waste Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control valve	Open	NA	NA
SOV-1	8" Gate Valve	Closed	NA	NA

SOV-2	8” Gate Valve	Open	NA	NA
SOV-3	8” Gate Valve or BFV (New)	Open	NA	NA
	New Bi-Directional Flow Meter	Operational	NA	NA

Figure 14 - Flow Path for Recharge Operation at Palm Well #1A

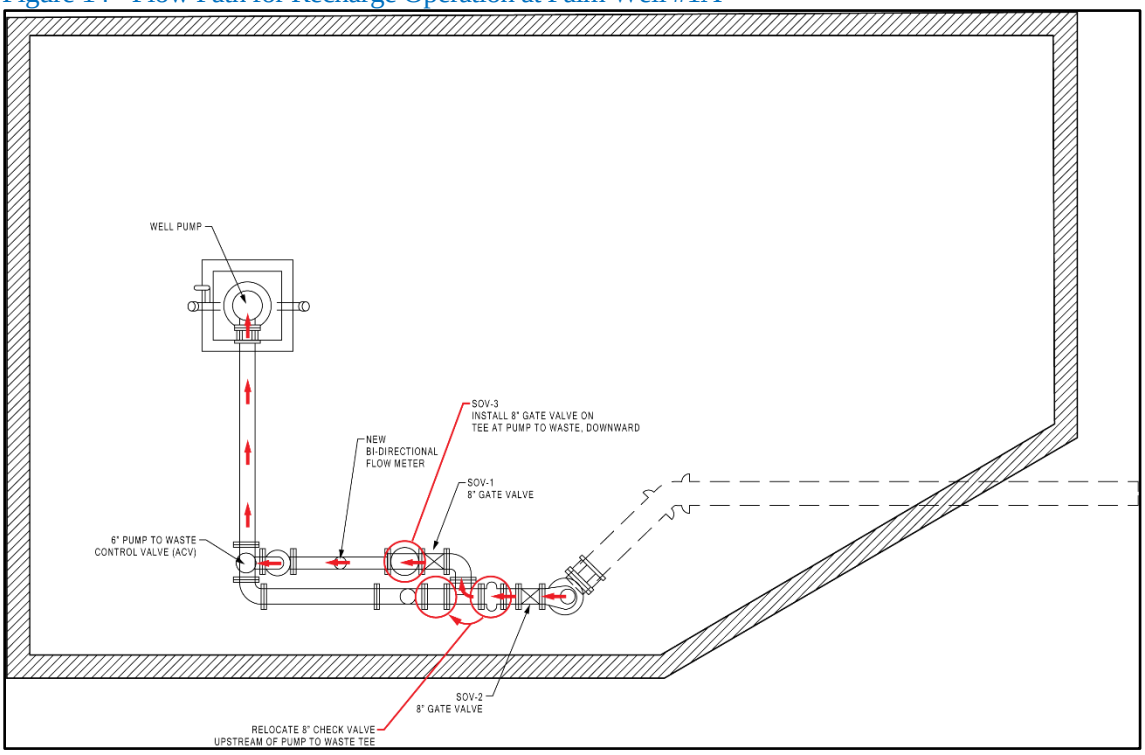

Table 14 - Recharge and Corresponding Valve Positions at Palm Well #1A

Recharge Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6” Automatic Control Valve	NA	Open	NA
SOV-1	8” Gate Valve	NA	Open	NA
SOV-2	8” Gate Valve	NA	Open	NA
SOV-3	8” Gate Valve or BFV (New)	NA	Closed	NA
	New Bi-Directional Flow Meter	NA	Operational	NA

Figure 15 - Flow Path for Production Operation at Palm Well #1A

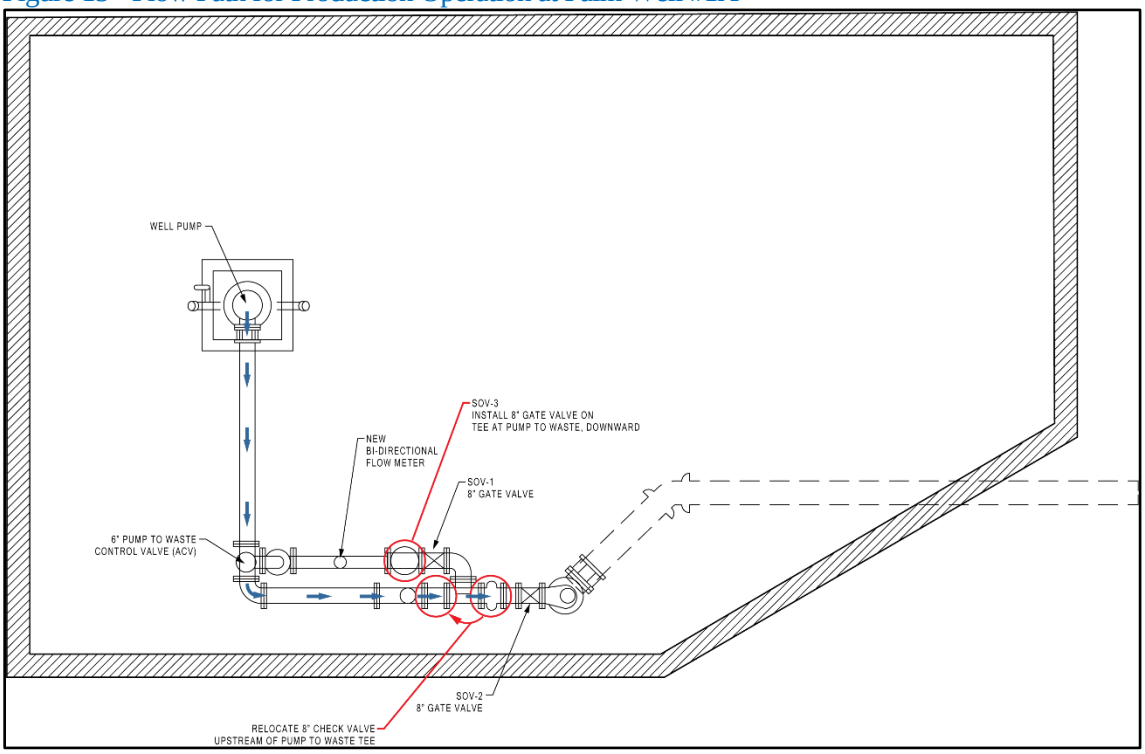

Table 15 - Pumping to the Distribution System and Corresponding Valve Positions at Palm Well #1A

Production Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6” Automatic Control Valve	NA	NA	Closed
SOV-1	8” Gate Valve	NA	NA	Closed
SOV-2	8” Gate Valve	NA	NA	Open
SOV-3	8” Gate Valve or BFV (New)	NA	NA	Open
	New Bi-Directional Flow Meter	NA	NA	NA

Sunrise Well # 10

Retrofits & Challenges

a) Welded pipe and fittings.
b) The Check Valve needs to be relocated between Flow Meter and Pump to Waste Tee, this will allow for the recharge water to travel through the pump to waste section and reach the well head. The flow meter will need to be moved upstream to minimize turbulence from the valve.
c) New 8" Gate Valve or Butterfly Valve installed on down spout portion of the Pump to Waste tee, install new 8" x 8" x 8" tee with 8"x 6" reducer to tie back into the pump to waste line. This retrofit will accommodate the Recharge Mode.
d) New bi-directional flow meter on the Pump-to-Waste / Recharge piping to measure the flow and volume of recharge water.
e) Full integration and programing of the PLC and SCADA system.

Figure 16 - Flow Path for Pump to Waste Operation at Sunrise Well #10

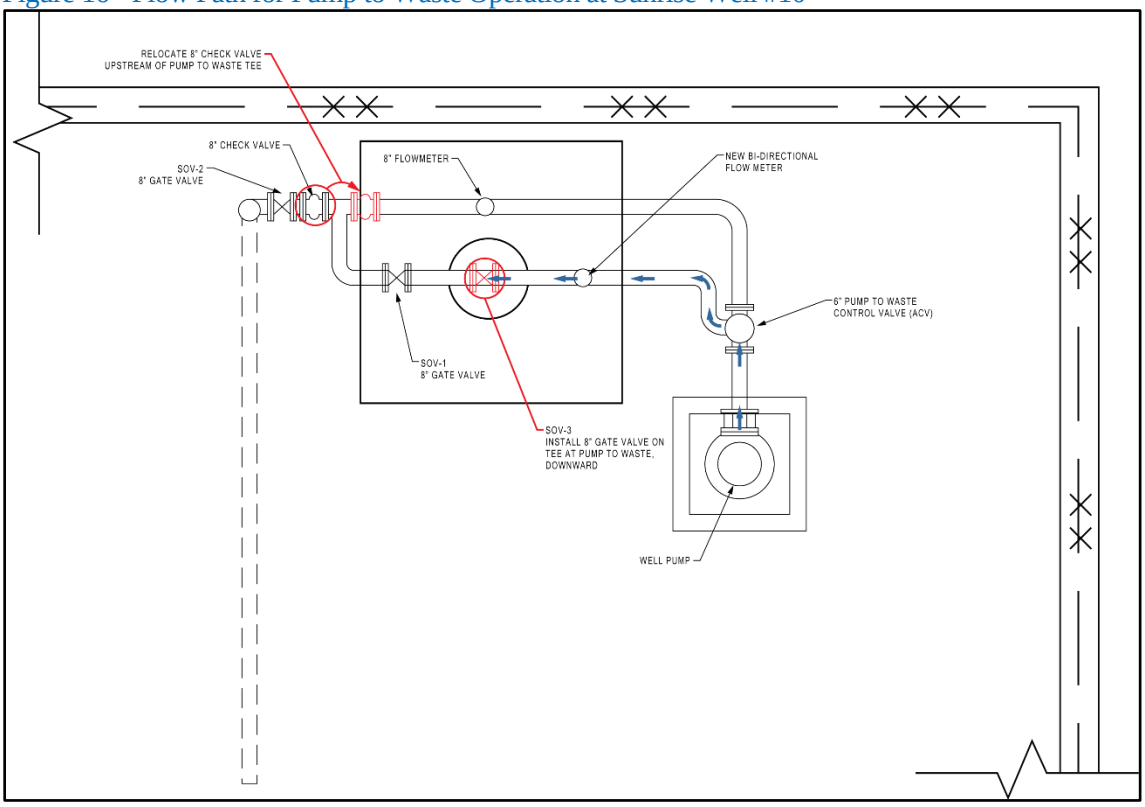

Table 16 - Pumping to Waste and Corresponding Valve Positions at Sunrise Well #10

Pump to Waste Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control valve	Open	NA	NA

SOV-1	8” Gate Valve	Closed	NA	NA
SOV-2	8” Gate Valve	Open	NA	NA
SOV-3	8” Gate Valve or BFV (New)	Open	NA	NA
	New Bi-Directional Flow Meter	Operational	NA	NA

Figure 17 - Flow Path for Recharge Operation at Sunrise Well #10

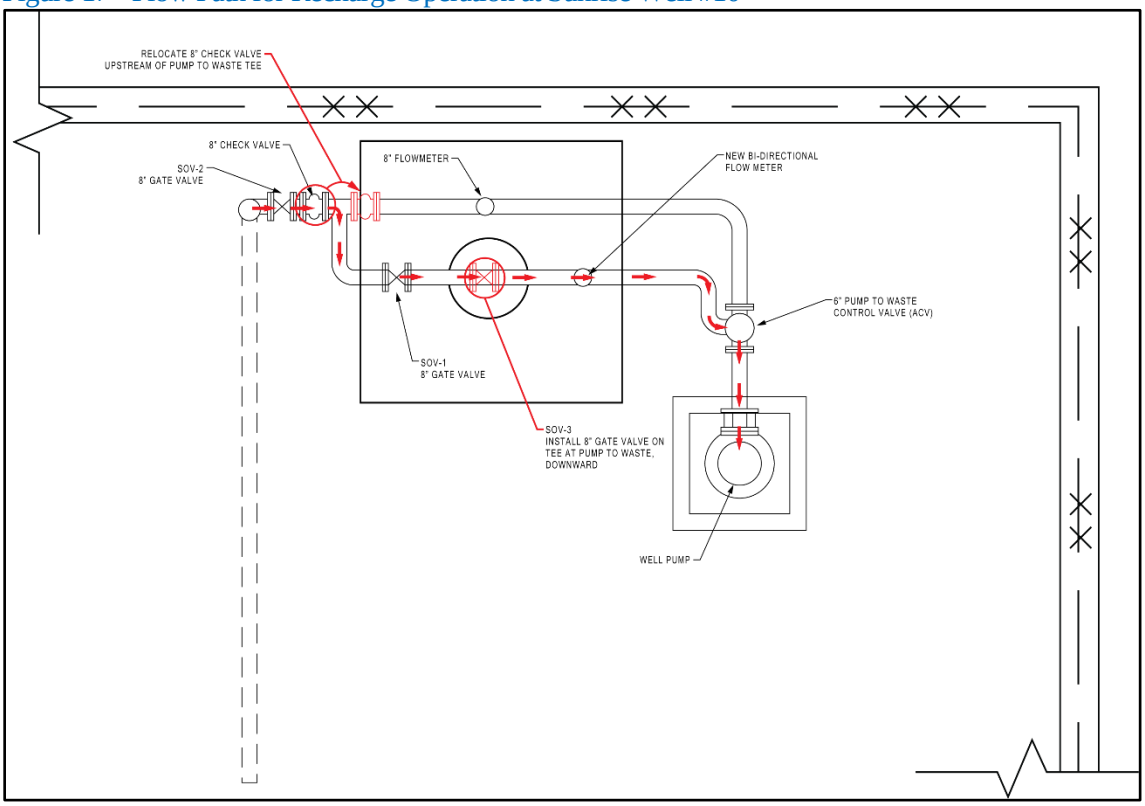

Table 17 - Recharge and Corresponding Valve Positions at Sunrise Well #10

Recharge Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6” Automatic Control Valve	NA	Open	NA
SOV-1	8” Gate Valve	NA	Open	NA
SOV-2	8” Gate Valve	NA	Open	NA
SOV-3	8” Gate Valve or BFV (New)	NA	Closed	NA
	New Bi-Directional Flow Meter	NA	Operational	NA

Figure 18 - Flow Path for Production Operation at Sunrise Well #10

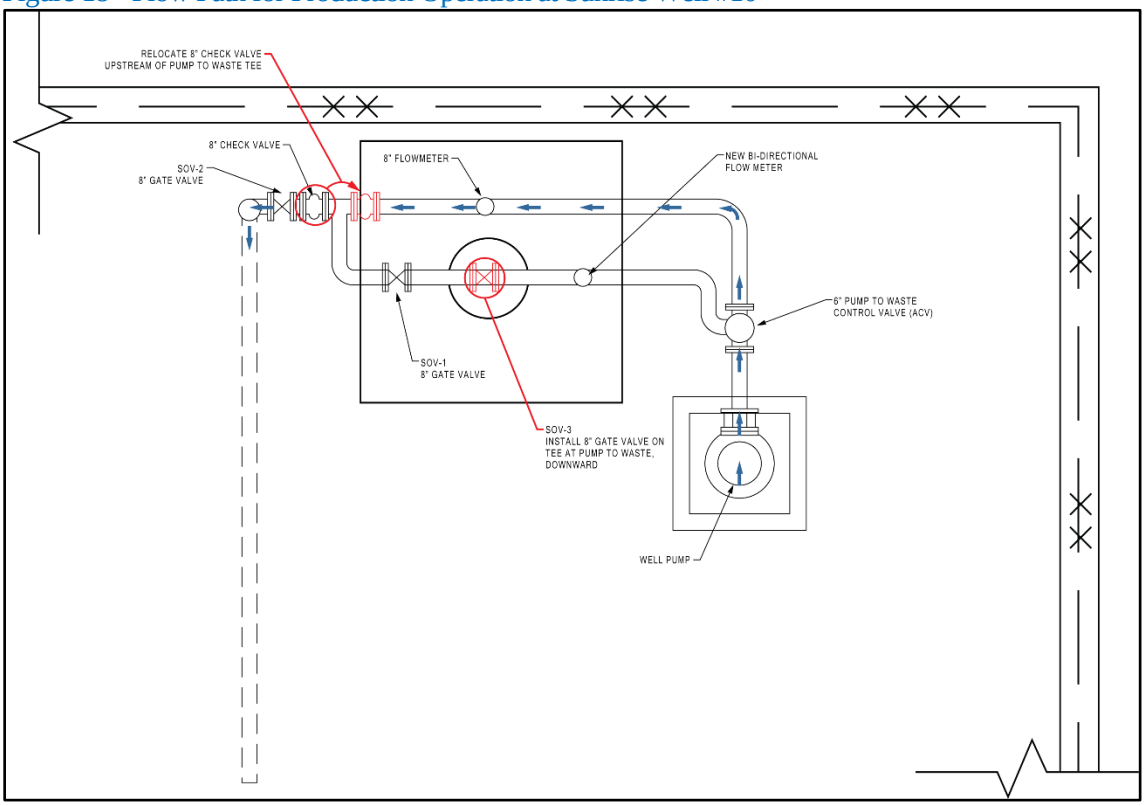

Table 18 - Pumping to the Distribution System and Corresponding Valve Positions at Sunrise Well #10

Production Flow Path & Valve Position				
Tag No.	**Asset**	**PTW**	**Recharge**	**Production**
ACV	6" Automatic Control Valve	NA	NA	Closed
SOV-1	8" Gate Valve	NA	NA	Closed
SOV-2	8" Gate Valve	NA	NA	Open
SOV-3	8" Gate Valve or BFV (New)	NA	NA	Open
	New Bi-Directional Flow Meter	NA	NA	NA

Appendix B – Cost Justification

FERGUSON WATERWORKS

FERGUSON WW #1423
7601 14TH AVENUE
SACRAMENTO, CA 95820-3601

Phone: 916-381-6100
Fax: 916-455-3402

Deliver To:
From: **Kenneth Michel**
Comments:

18:38:14 APR 15 2020

FERGUSON WATERWORKS #1423
Price Quotation
Phone: 916-381-6100
Fax: 916-455-3402

Bid No: B391769
Bid Date: 04/15/20
Quoted By: KMM

Cust Phone:
Terms: CASH ON DEMAND

Customer: **BIDDING CONTRACTOR-SAC**
FOR BIDDING PURPOSES ONLY
1423 - SACRAMENTO
7601 14TH AVE
SACRAMENTO, CA 95820

Ship To: **BIDDING CONTRACTOR-SAC**
FOR BIDDING PURPOSES ONLY
1423 - SACRAMENTO
7601 14TH AVE
SACRAMENTO, CA 95820

Cust PO#:

Job Name:

Item	Description	Quantity	Net Price	UM	Total
MA23610612OL	12 FLG RW OL GATE VLV W/ H/WHL	1	1720.220	EA	1720.22
MA236106XOL	8 FLG RW OL GATE VLV W/ H/WHL	1	896.600	EA	896.60
FTX	8 DI 125# C110 FLG TEE	1	297.560	EA	297.56
FCRXU	8X6 DI 125# C110 FLG CONC RED	1	136.740	EA	136.74

Net Total:	$3051.12
Tax:	$266.97
Freight:	$0.00
Total:	$3318.09

Quoted prices are based upon receipt of the total quantity for immediate shipment (48 hours). SHIPMENTS BEYOND 48 HOURS SHALL BE AT THE PRICE IN EFFECT AT TIME OF SHIPMENT UNLESS NOTED OTHERWISE. QUOTES FOR PRODUCTS SHIPPED FOR RESALE ARE NOT FIRM UNLESS NOTED OTHERWISE.

CONTACT YOUR SALES REPRESENTATIVE IMMEDIATELY FOR ASSISTANCE WITH DBE/MBE/WBE/SMALL BUSINESS REQUIREMENTS.

Seller not responsible for delays, lack of product or increase of pricing due to causes beyond our control, and/or based upon Local, State and Federal laws governing type of products that can be sold or put into commerce. This Quote is offered contingent upon the Buyer's acceptance of Seller's terms and conditions, which are incorporated by reference and found either following this document, or on the web at https://www.ferguson.com/content/website-info/terms-of-sale
Govt Buyers: All items are open market unless noted otherwise.

LEAD LAW WARNING: It is illegal to install products that are not "lead free" in accordance with US Federal or other applicable law in potable water systems anticipated for human consumption. Products with *NP in the description are NOT lead free and can only be installed in non-potable applications. Buyer is solely responsible for product selection.
WATER FLOW RATE NOTICE: Lavatory Faucets with flow rates over 0.5 GPM are not allowed for 'public use' in California.

HOW ARE WE DOING? WE WANT YOUR FEEDBACK!
Scan the QR code or use the link below to
complete a survey about your bids:
https://survey.medallia.com/?bidsorder&fc=1423&on=414030

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Suite 1601
San Francisco, CA 94104
T: 800-478-1002
F: 415-956-9009
www.jprsystems.com

Quotation

Apr 16, 2020

Manufacturer: **Endress+Hauser**
Quote Reference Number: **JPRQ77104**

Project Name:

QC E+H W400 Trevor GEI 2020-04-17

Quoted By:

Conrey Giles Phone: 800-478-1002
E-mail: conrey.giles@jprsystems.com

PLEASE MAKE THE ORDER OUT TO:
Endress+Hauser c/o JPR Systems, Inc.

Ln #	Qty	Order Code and Product Description	Tag No.	Unit Price	Ext. Price
		Electromagnetic Flowmeters			
1	1	**5W4C3H-AAELHP1DUA1KGB+Z1**		$6,059.42	$6,059.42
		5W4C3H-MWU7/0 Promag W 400, 5W4C3H, DN300 12" Electromagnetic flowmeter Inline version. Application: Ideal for water measurement e.g. drinking water, utility water and industrial/municipal wastewater. International drinking water approvals. Installation length: DVGW/ISO conform. Corrosion-resistant transmitter version. Same housing for compact/remote version. :: Versatile standard flowmeter for the water and wastewater industry :: Constant accuracy with 0 x DN inlet run and no pressure loss (optional). AA Approval: Non-hazardous area E Design: Fixed flange L Power Supply: 100-240VAC/24VAC/DC H Output; Input: 4-20mA HART, pulse/freq., switch output P Housing: Remote, alu, coated 1 Cable, Remote Version: 5m/15ft coil + signal cable D Electrical Connection: Thread NPT1/2 U Liner: Polyurethane A1K Process Connection: Cl.150, carbon steel, flange ASME B16.5 G Electrodes: 1.4435/316L, bullet nose B Calibration Flow: 0.2% Z1 >>Marking: Tagging (TAG), see additional spec. Standard Lead Time is 11 Working Days ARO.	**12" Remote TXR**		

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www.jprsystems.com

QC E+H W400 Trevor GEI 2020-04-17

Ln #	Qty	Order Code and Product Description	Tag No.	Unit Price	Ext. Price
2	1	**5W4C2H-AAELHP1DUA1KGB+Z1**		$3,874.22	$3,874.22

5W4C2H-XE00/0 **8" Remote TXR**
Promag W 400, 5W4C2H, DN200 8"

Electromagnetic flowmeter
Inline version.
Application: Ideal for water measurement
e.g. drinking water, utility water
and industrial/municipal wastewater.
International drinking water approvals.
Installation length: DVGW/ISO conform.
Corrosion-resistant transmitter version.
Same housing for compact/remote version.
:: Versatile standard flowmeter
for the water and wastewater industry
:: Constant accuracy with 0 x DN inlet
run and no pressure loss (optional).
AA Approval: Non-hazardous area
E Design: Fixed flange
L Power Supply: 100-240VAC/24VAC/DC
H Output; Input: 4-20mA HART, pulse/freq., switch output
P Housing: Remote, alu, coated
1 Cable, Remote Version: 5m/15ft coil + signal cable
D Electrical Connection: Thread NPT1/2
U Liner: Polyurethane
A1K Process Connection: Cl.150, carbon steel, flange ASME B16.5
G Electrodes: 1.4435/316L, bullet nose
B Calibration Flow: 0.2%
Z1 >>Marking: Tagging (TAG), see additional spec.

Standard Lead Time is 11 Working Days ARO.

NOTES FOR MAGS:
- QUOTED REMOTE TRANSMITTERS WITH 15FT OF CABLE: $6/FT ADDER FOR EXTRA CABLE. COMPACT TRANSMITTER IS $400 LESS
- 0xDN INLET/OUTLET REQUIREMENT FOR FLOWMETERS AVAILABLE, $200 ADDER.
- QUOTED FOR ABOVE GROUN SERVICE, CONFIRM OPTIONS

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QC E+H W400 Trevor GEI 2020-04-17

Ln #	Qty	Order Code and Product Description	Tag No.	Unit Price	Ext. Price
		Grounding Rings			
3	2	**DK5GD-3HAUL**		$271.12	$542.24
		DK5GD-3HAUL Promag, grounding disc/protection disc Includes 1 grounding disc/protection disc 3HA Nominal Diameter: DN300 12", 1.4435/316L U Liner: Polyurethane L Process Connection: Cl.150 ANSI B16.5 Standard Lead Time is 8 Working Days ARO.	**12" PU**		
4	2	**DK5GD-2HAUL**		$202.62	$405.24
		DK5GD-2HAUL Promag, grounding disc/protection disc Includes 1 grounding disc/protection disc 2HA Nominal Diameter: DN200 8", 1.4435/316L U Liner: Polyurethane L Process Connection: Cl.150 ANSI B16.5 Standard Lead Time is 8 Working Days ARO.	**8" PU**		

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QC E+H W400 Trevor GEI 2020-04-17

Ln #	Qty	Order Code and Product Description	Tag No.	Unit Price	Ext. Price

Grand Total $10,881.12

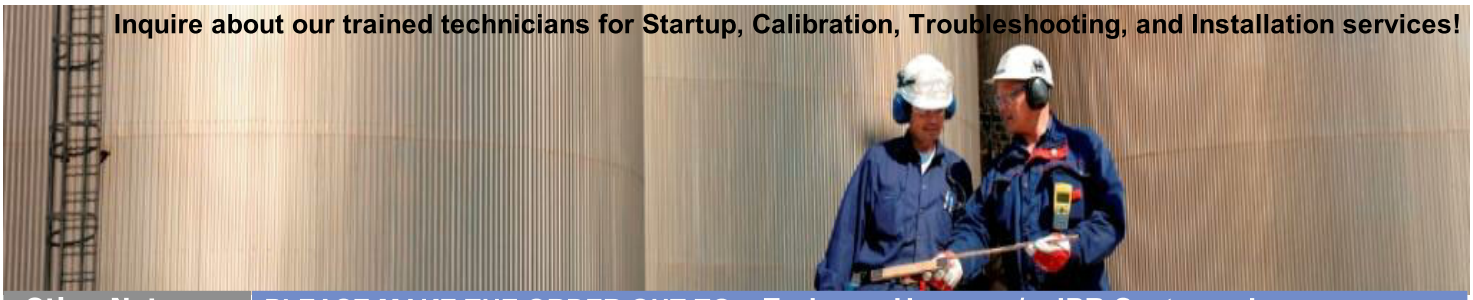
Terms: **NET 30**

F.O.B. **Greenwood Indiana**

Ship Via: **Best Way**

Prices valid for 30 days!

Endress+Hauser can also provide on-site Start-up of these new devices.
When purchasing start-up, the one 1 year factory warranty will be extended to 3 years for FREE!
For an additional charge per instrument, you can extend your warranty to five 5 years.



Other Notes **PLEASE MAKE THE ORDER OUT TO: Endress+Hauser c/o JPR Systems, Inc.**

1. No sales or use tax is included.
2. Shipping cost is not included. It is PREPAY AND ADD.
3. Prices are applicable only to quantities shown.
4. Quoted delivery is an estimate based on material availability at time of quotation.
5. Material compatibility and selectable dimensions are customer's responsibility.
6. The suggested technical solution is based on the application information provided by the customer.
7. JPR Systems. Inc. or Manufacturers' terms & conditions apply depending on purchase order addressee.
8. Fees charged for canceled or returned orders.
9. Please make the order out to Endress+Hauser c/o JPR Systems, Inc.

We appreciate the opportunity to offer high quality instruments and equipment for your process requirements. If you have any questions, please call us at 800-478-1002.

	Line Item	Well Category		
		Standard	State-of-the-Art	ASR
Belowground Well Costs	Mobilization	$40,000	$40,000	$40,000
	Sound Attenuation/Noise Control	$50,000	$50,000	$50,000
	Drilling Fluids and Cuttings Transportation and Disposal	$35,000	$35,000	$35,000
	Conductor Casing and Sanitary Seal	$40,000	$40,000	$40,000
	Pilot Borehole Drilling 17-inch	$30,900	$30,900	$30,900
	Geophysical Logging	$3,200	$3,200	$3,200
	Plumbness and Alignment Test	$7,000	$7,000	$7,000
	Borehole Reaming 28-inch	$38,625	$38,625	$38,625
	Borehole Reaming 34-inch	$22,500	$22,500	$22,500
	Caliper Survey	$3,000	$3,000	$3,000
	18" Dia. (Nominal) Blank Casing	$76,000	$172,000	$172,000
	18" Dia. (Nominal) Wire Wrapped Screen	$19,000	$34,000	$34,000
	3" Dia. Gravel Fill Pipe	$3,150	$3,150	$3,150
	2" Dia. Sounding pipe	$3,360	$11,760	$11,760
	Filter Pack	$20,000	$20,000	$30,000
	Annular and Transition Seals	$3,000	$3,000	$3,000
	Gravel Fill	$8,200	$8,200	$8,200
	Initial Well Development by Swabbing and Air Lifting	$400	$400	$400
	Test Pump Installation and Removal	$9,000	$9,000	$9,000
	Final Pumping Development	$20,000	$20,000	$20,000
	Aquifer Testing	$10,800	$10,800	$10,800
	Downhole Velocity Survey (Spinner Log)	$5,000	$5,000	$5,000
	Title 22 Water Quality Sampling and Analysis	$4,500	$4,500	$4,500
	Well Disinfection	$1,500	$1,500	$1,500
	Video Survey	$1,500	$1,500	$1,500
	Downhole Flow Control	NA	NA	$90,000
	Standby Time	$2,400	$2,400	$2,400
	Total Downhole Cost	$458,035	$577,435	$677,435
Aboveground Well Costs	Mobilization (10% other items)	$126,505	$137,945	$137,945
	Worker Protection, Sheeting, Shoring, and Bracing	$4,000	$4,000	$4,000
	SWPPP Implementation and Erosion Control	$5,000	$5,000	$5,000
	Construction Survey	$5,000	$5,000	$5,000
	Site Clearing and Grubbing	$2,000	$2,000	$2,000
	2-inch Water Pipeline	$8,042	$8,042	$8,042
	12-inch Water Pipeline	$15,054	$15,054	$15,054
	4-inch Sewer Pipeline	$8,163	$8,163	$8,163
	Storm Drain Piping, Manholes, and Drop Inlets	$55,035	$55,035	$55,035
	1,500 gpm Well Pump and 200 Hp motor	$192,000	$192,000	$192,000
	Well Discharge, Pump-to-Waste and injection Bypass Piping, Valves, and Appurtenances	$140,000	$140,000	$140,000
	Sodium Hypochlorite System	$162,750	$162,750	$162,750
	Electrical	$433,000	$433,000	$433,000
	Instrumentation and Communications	$120,000	$224,000	$224,000
	Unallocated Items (10% all items except mobilization)	$115,004	$125,404	$125,404
	Total Aboveground Cost	$1,391,553	$1,517,393	$1,517,393
	Total Construction Costs	$1,849,588	$2,094,828	$2,194,828

Notes: Variation in costs from Standard Well Design

Variable component/ASR component

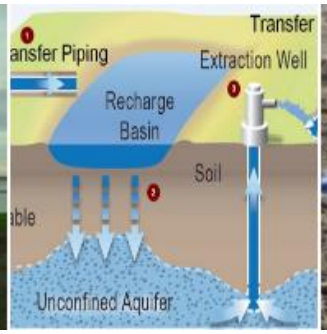
Appendix C – California Energy Commission Study Application

Willow Springs Water Bank

Aquifer Pumped Hydro

50-kW Storage Demonstrations

Presentation to SCE 2020 Water Conference



November 2020

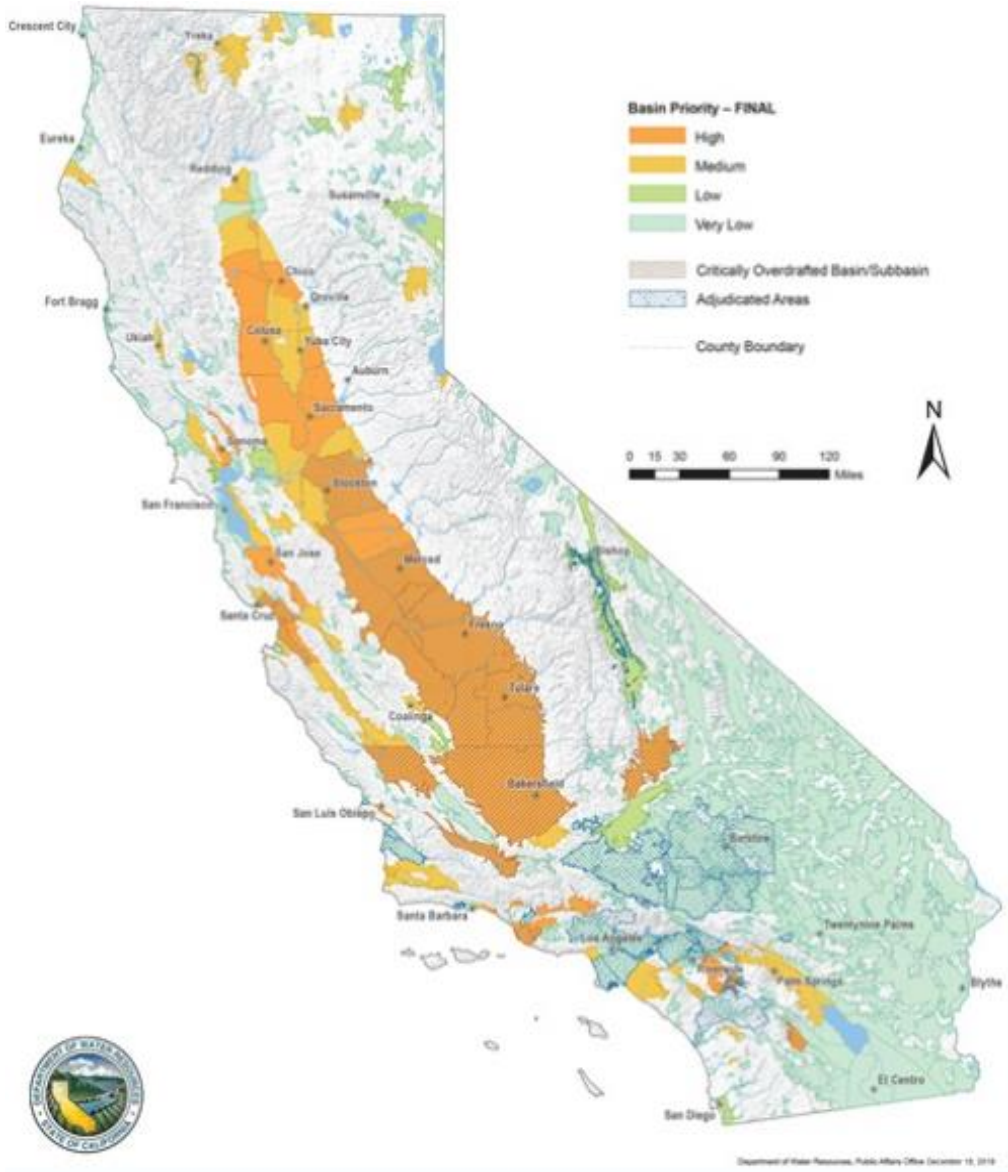
OUTLINE OF PRESENTATION

Willow Springs Water Bank

- Technology drivers
- What we will do
- How we will do it
- Where we will do it
- Vision for California Energy Commission (CEC) grant project

DRIVER: MANY WELLS WILL BE REDUNDANT DUE TO SGMA

Willow Springs Water Bank



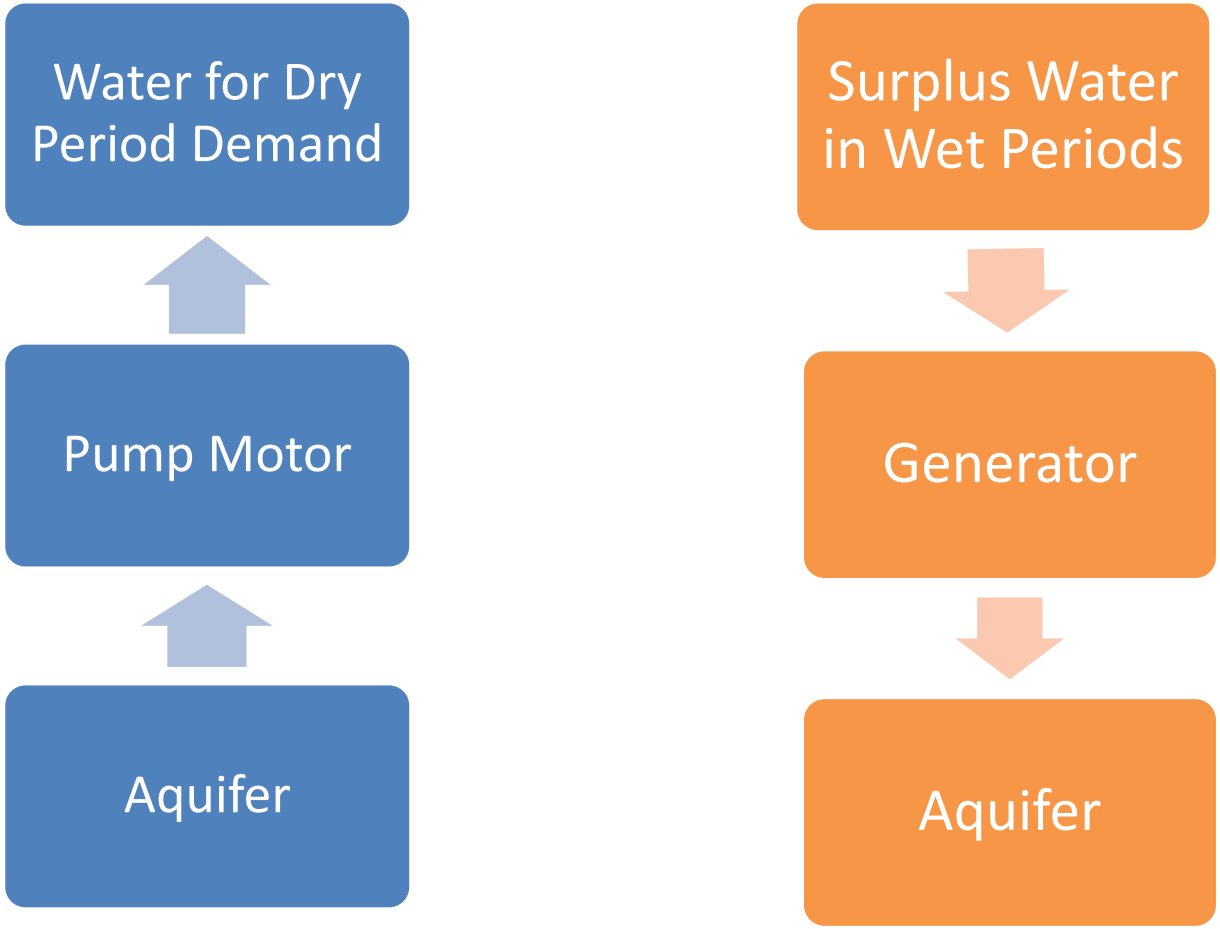
Statewide Map of SGMA 2019 Basin Prioritization

Sustainable Groundwater Management Act (SGMA) will balance aquifers and idle wells in High Priority Basins (orange areas)

- **Over 100,000 wells in Central Valley**
- **SGMA requires more recharge**
- **Idle wells and recharge are perfect for APH**

DRIVER: WELL RUN IN REVERSE IS A GENERATOR

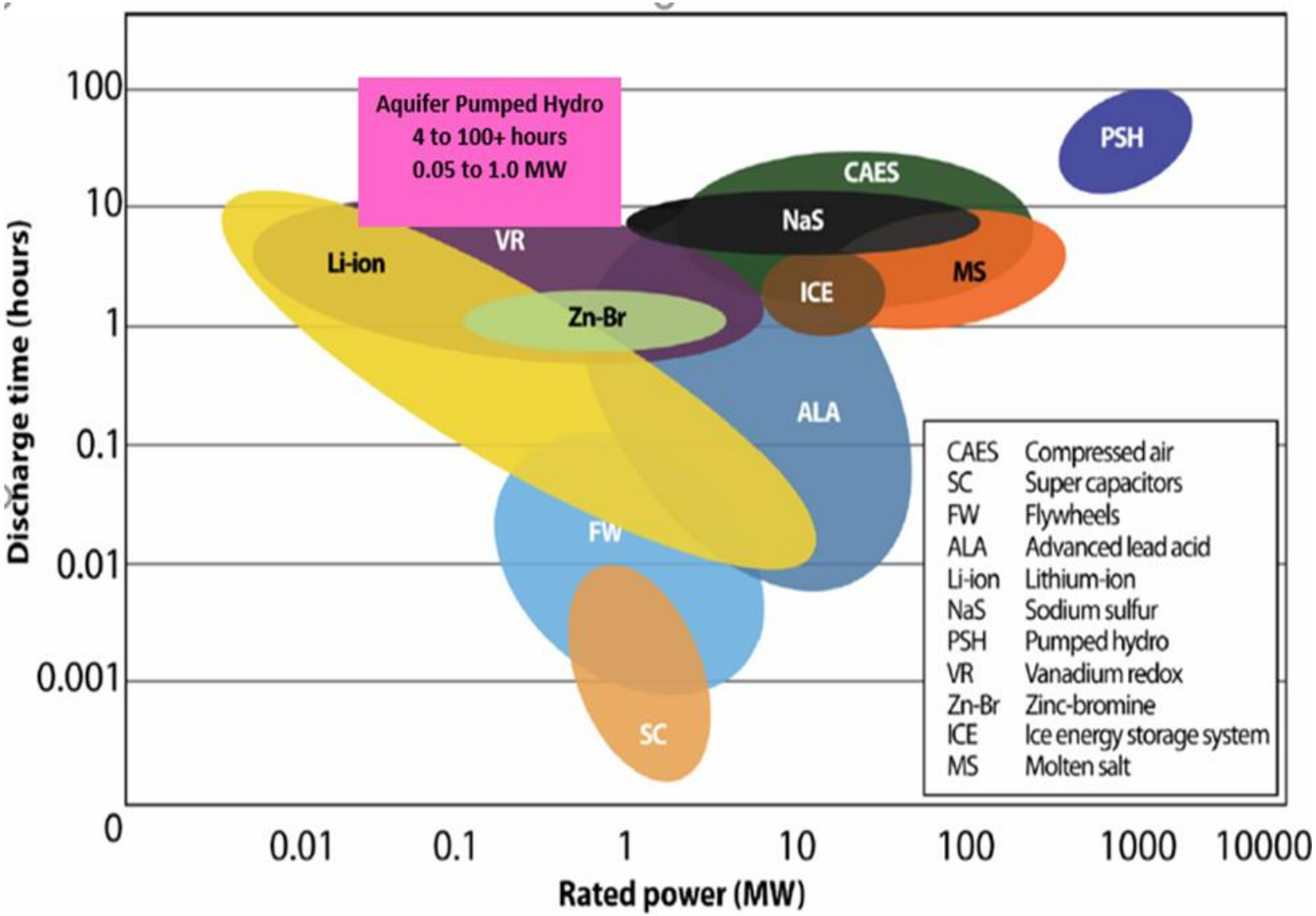
Willow Springs Water Bank



- **Well pump motor becomes a generator when rotated in reverse**
- **Idle wells provide existing infrastructure to generate electricity**

DRIVER: AQUIFER PUMPED HYDRO FILLS A UNIQUE NICHE

Willow Springs Water Bank



4 to 100+ hours of discharge over a range of 50 to 1,000 kW using modular wells

WHAT: HYDRO ENERGY STORAGE SYSTEM (HESS)

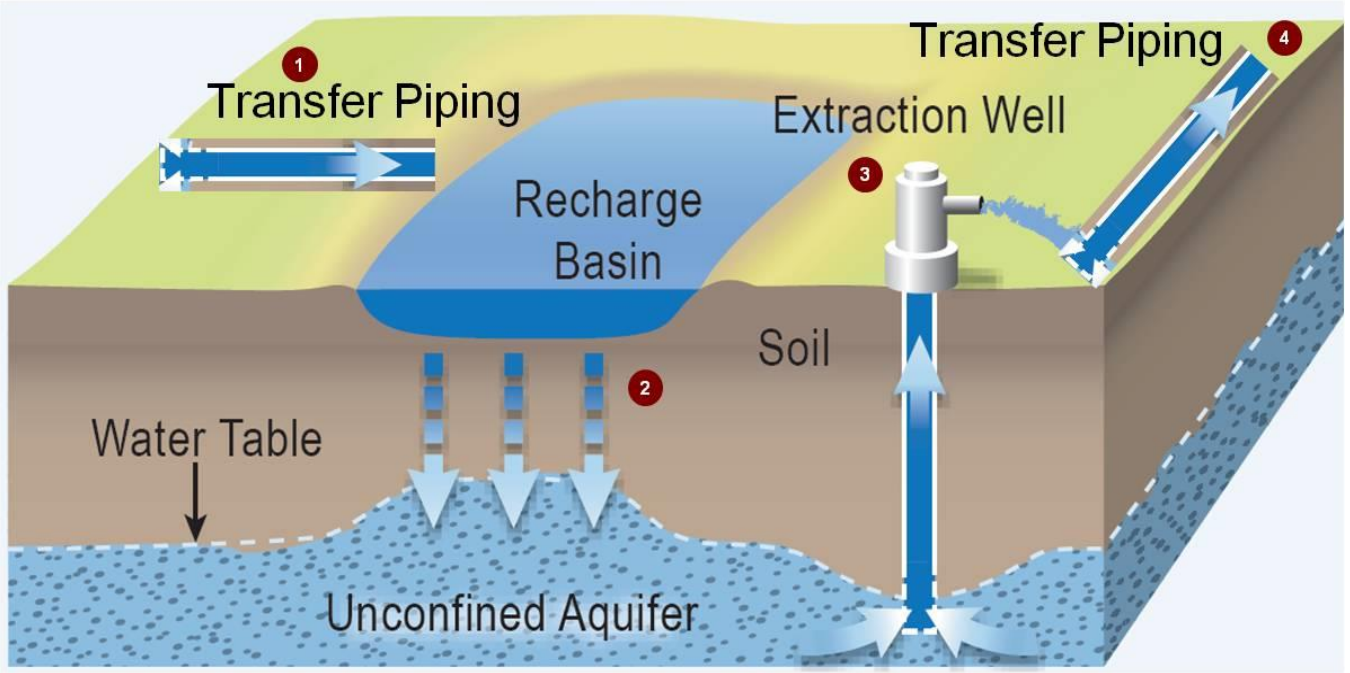
Willow Springs Water Bank

Issue	HESS	BESS
1. Discharge Duration	4 to 100+ hours	2-4 hours (Li battery*)
2. Service Life	25 to 50 years (well life)	3 years (500 to 1500 cycles)
3. PSPS emergency microgrid	Wells provide load following, voltage, and frequency	BESS facility provides voltage and frequency regulation
4. Bimodal ramp up	Can discharge twice daily	Limited cycles reduces flexibility
5. Local ownership	Use or lease existing customer wells	Build new infrastructure
6. Local jobs	Well operating and maintenance jobs	Fewer jobs for battery maintenance
7. Reduced environmental impacts	Retrofit existing wells & interconnection (meters, controls)	New batteries and new electric interconnection/meter connections
8. Waste disposal, safety	Well destruction is safe and easy, no wastes	Waste disposal issues and fire risks

***Unit cost of APH in $/kW is competitive with Li batteries**

HESS: RETROFIT EXISTING WELLS TO STORE ENERGY

Willow Springs Water Bank



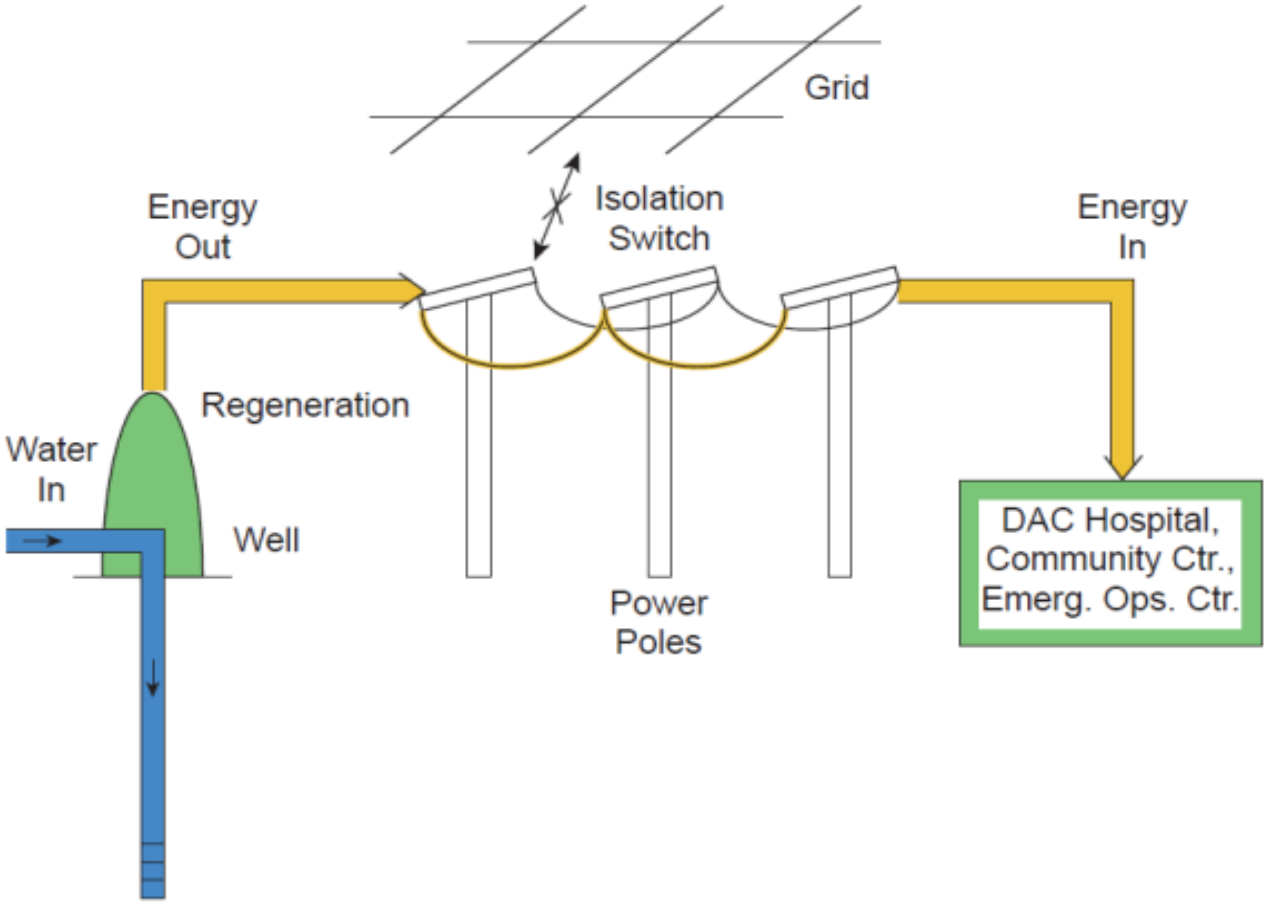
WSWB basins in operation

- **Put: Inject water down the well hole during peak hours to release energy**
- **Take: pump water from the aquifer during off-peak hours to store energy**
- **Tap into over 100,000 large irrigation wells in the Central Valley**

AQUIFER PUMPED HYDRO IN A MICROGRID FOR PSPS EVENTS

Willow Springs Water Bank

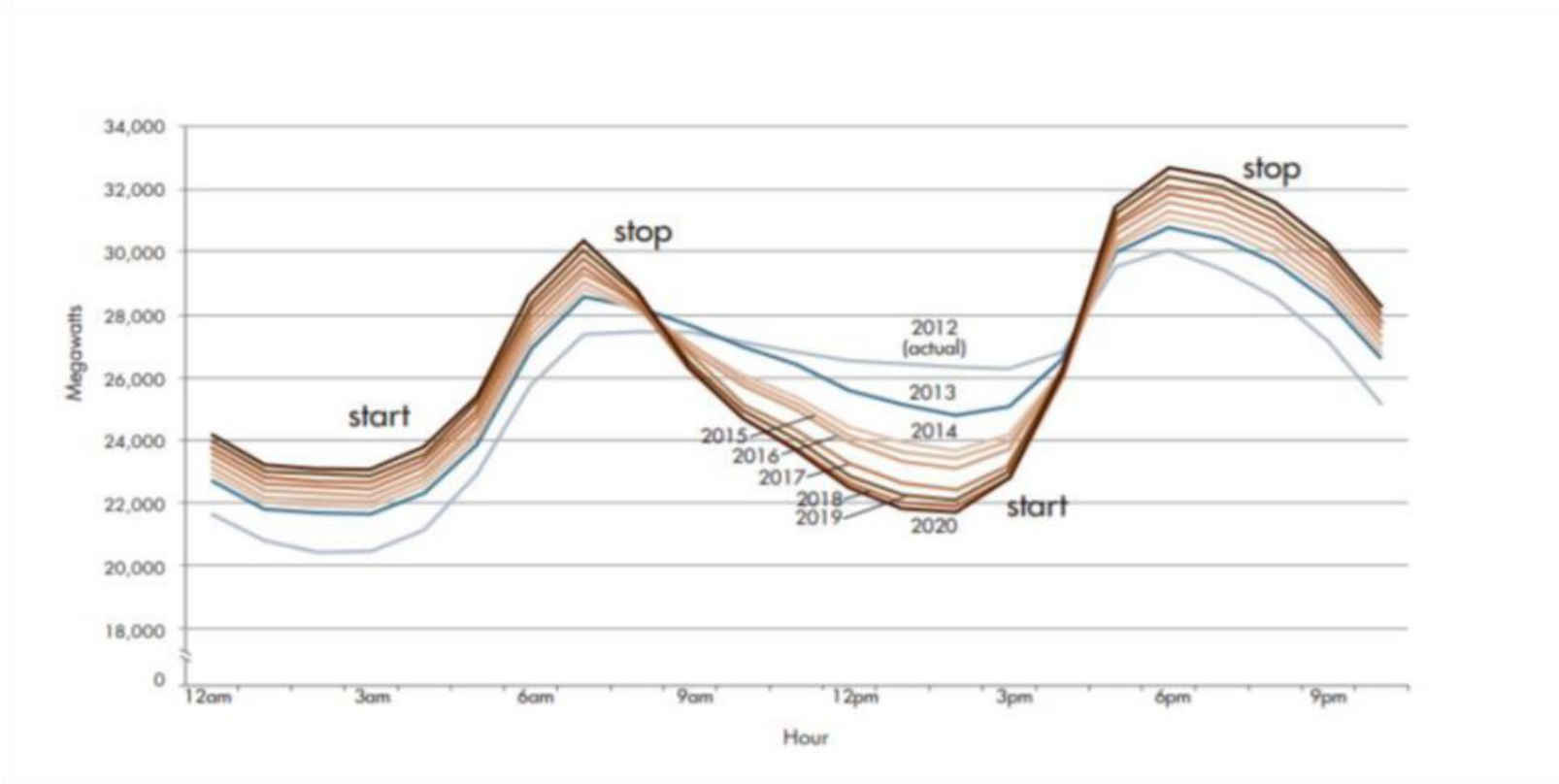
APH can provide islanding to critical facilities during Public Service Power Shutoffs like hospitals and nursing homes in Disadvantaged Communities



"HESS" is Hydro Energy Storage System – provides standalone microgrid

APH CAN ADDRESS BIMODAL NET LOAD

Willow Springs Water Bank



- **Bimodal daily peaks: morning ramp down and evening ramp up**
- **Meeting both peaks daily cuts battery life in half**
- **Pumped Hydro is not limited by number of cycles**

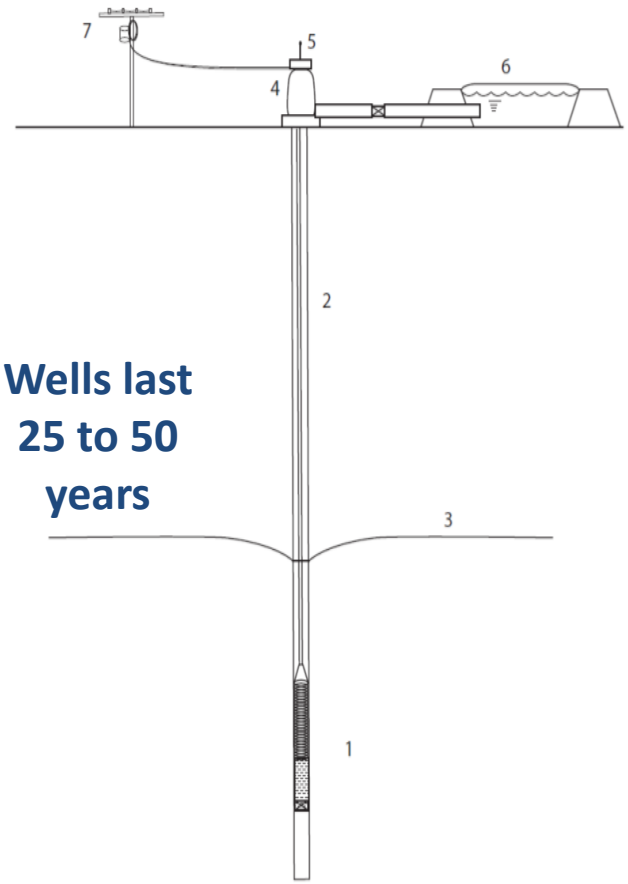
HESS SEASONAL ENERGY STORAGE HAS NO WASTE

Willow Springs Water Bank

Mine Lithium & Lead — Overseas sources

→ Make New Battery — 3 year life, fire risk

→ Disposal of spent battery — Waste stream



Wells last 25 to 50 years

Battery (BESS) is open energy storage system and creates waste

Hydro (HESS) is a closed loop system with no waste, absorbs surplus solar in the Spring

WHERE: WSWB IS IDEAL SITE FOR CEC PROJECT

Willow Springs Water Bank

Water Bank:

- **Location** — Antelope Valley
- **CEQA** — Approved
- **Storage Type** — Groundwater
- **Basin** — Adjudicated
- **Volume** — 1.0 MAF
- **Put / Take** — 280 / 225 TAFY
- **Investor** — CalPERS
- **Manager** — CIM Group

WATER BANK PROVIDES DEMONSTRATION SITE

Willow Springs Water Bank

- CEQA IS DONE: EIR COMPLETED IN 2006; ADDENDUM UPDATE IN 2018
- WSWB WILL DEDICATE EXISTING WELLS TO AQUIFER PUMPED HYDRO
- WSWB IS LOCATED IN KERN COUNTY IN A LOW-INCOME COMMUNITY
- SITE WILL TEST APH FOR PSPS EVENTS
- BUILDS ON PRIOR CEC STUDIES OF APH

Water Flooding onto Basin

Water Seeping into Ground

Recovery from Well

Facilities online: 320 acres of ponds, 15 wells, 54" connecting pipe to CA Aqueduct

PROJECT IS A 2ND GENERATION DEMONSTRATION

Willow Springs Water Bank

MADISON FARMS ECHO, OREGON ASR REGENERATION

200 HP MOTOR WITH VERTICAL LINE SHAFT PUMP – 8" PIPE, AQUIFER LEVEL 520 FEET BELOW LAND SURFACE.

200 HP MOTOR STARTING VFD & 100 HP REGENERATION VFD WITH LOCAL CONTROL PANEL.

3RValve has retrofitted well sites in operational in the western US, including this one at Echo, Oregon; 3RValve is a project partner

TWO PRIOR PUMPED HYDRO PRIOR PROJECTS FOR CEC

Willow Springs Water Bank

Study	Funding	Findings
1. Groundwater Bank Energy Storage Systems (EPC-15-049)	$0.2 M from CEC	APH is feasible but not economic for new wells, (completed in 2017)
2. Water/Energy Bank Proof-of-Concept (EPC-16-029)	$1.0 M from CEC	Demand Response with the State Water Project is feasible (completed in 2019)
3. Aquifer Pumped Hydro Demonstration (EPC-19-058)	$2.0 M from CEC	Design, build, and demonstrate a 50 kW APH at one well for one year (finishes in Dec. 2023*)

*3.5-year demonstration project starting in 2020. Will cost $2.5 M

VISION: PUMPED STORAGE HYDRO IN FLAT AREAS

Willow Springs Water Bank

Willow Springs Water Bank
323.860.4829 direct phone

Mbeuhler@wswaterbank.com

WSWB is 5 miles north of Antelope Valley Poppy Reserve

Wells are modular, can be retrofit rapidly

STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019) CALIFORNIA ENERGY COMMISSION

A) New Agreement # EPC-19-058 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
ERDD	Joseph Sit		916-327-1315

C) Recipient's Legal Name	Federal ID Number
Antelope Valley Water Storage, LLC	20-8945728

D) Title of Project
Long Duration 50 kW Energy Storage with Aquifer Pumped Hydro

E) Term and Amount

Start Date	End Date	Amount
7/18/2020	3/31/2024	$ 2,000,000

F) Business Meeting Information

☐ ARFVTP agreements $75K and under delegated to Executive Director

Proposed Business Meeting Date 7/8/2020 ☐ Consent ☒ Discussion

Business Meeting Presenter Quenby Lum Time Needed: 5 minutes

Please select one list serve. EPIC (Electric Program Investment Charge)

Agenda Item Subject and Description:
ANTELOPE VALLEY WATER STORAGE, LLC. Proposed resolution approving agreement EPC-19-058 with Antelope Valley Water Storage, LLC for a $2,000,000 grant to fund a behind the meter demonstration of an aquifer pumped hydro (APH) system and adopting staff's determination that this action is exempt from CEQA. The project will assist in better understanding APH and define the value and benefits that longer duration APH energy storage can provide, especially when applied in disadvantaged communities and low-income communities.

G) California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?

   ☐ Yes (skip to question 2)
   ☐ No (complete the following (PRC 21065 and 14 CCR 15378)):

   Explain why Agreement is not considered a "Project":

   Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because

2. If Agreement is considered a "Project" under CEQA:

   a) ☒ Agreement **IS** exempt.

   ☐ Statutory Exemption. List PRC and/or CCR section number:

   ☒ Categorical Exemption. List CCR section number: 15303

   ☐ Common Sense Exemption. 14 CCR 15061 (b) (3)

   Explain reason why Agreement is exempt under the above section: Cal. Code Regs., tit 14, § 15303

Cal. Code Regs., tit. 14, sec. 15303 exempts projects consisting of the construction and location of limited numbers of new, small facilities or structures; the installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. This project will involve the construction of a new small onsite reservoir with connections; the conversion retrofit of an existing well motor for aquifer pumped hydro requiring minor modifications; and the installation of a new small energy storage device, and is therefore exempt under CEQA.

b) Agreement **IS NOT** exempt. (consult with the legal office to determine next steps)

Check all that apply

- ☐ Initial Study
- ☐ Negative Declaration
- ☐ Mitigated Negative Declaration
- ☐ Environmental Impact Report
- ☐ Statement of Overriding Considerations

H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)

Legal Company Name:	**Budget**
HDR Engineering, Inc	$ 650,000
TBD Design Build Aquifer Pump Hydro	$ 300,000
3RValve LLC	$ 150,000
Rosamond Community Services District	$ 70,000
Water and Energy Consulting Inc.	$ 400,000
Kern County Administrative Office	$ 80,000
TBD Administrator	$ 0
TBD Geotechnical Drilling	$ 25,000
TBD Survey	$ 25,000

I) List all key partners: (attach additional sheets as necessary)

Legal Company Name:

J) Budget Information

Funding Source	**Funding Year of Appropriation**	**Budget List Number**	**Amount**
EPIC	18-19	301.001F	$2,000,000
			$

R&D Program Area: ESRO: ETSI TOTAL: $ 2,000,000

Explanation for “Other” selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Zachary Ahinga

Address: 1672 W Avenue J Ste 207

City, State, Zip: Lancaster, CA 93534-2861

Phone: 323-960-7483

E-Mail: ZAhinga@cimgroup.com

2. Recipient's Project Manager

Name: Mark Beuhler

Address: 1672 W Avenue J Ste 207

City, State, Zip: Lancaster, CA 93534-2861

Phone: 323-860-4829

E-Mail: mbeuhler@wswaterbank.com

L) Selection Process Used

☒ Competitive Solicitation Solicitation #: GFO-19-306

☐ First Come First Served Solicitation Solicitation #:

M)) The following items should be attached to this GRF

1.	Exhibit A, Scope of Work		☒ Attached
2.	Exhibit B, Budget Detail		☒ Attached
3.	CEC 105, Questionnaire for Identifying Conflicts		☒ Attached
4.	Recipient Resolution	☒ N/A	☐ Attached
5.	CEQA Documentation	☐ N/A	☒ Attached

_____ _____
Agreement Manager **Date**

_____ _____
Office Manager **Date**

_____ _____
Deputy Director **Date**

EXHIBIT A
Scope of Work
Antelope Valley Water Storage, LLC

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR[1]	Task Name
1		General Project Tasks
2		Economics and Metrics
3		APH Experience Incorporation
4	X	Design and Construction of Facilities
5		Community Outreach
6		Deployment in Disadvantaged and Low-Income Communities
7	X	Operations and Field Tests
8		Project Benefits
9		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
APH	Aquifer Pumped Hydro (APH) is a form of pumped storage technology that uses the groundwater aquifer as the lower reservoir and a small, earthen reservoir on the ground surface as the upper reservoir. The individual Aquifer Pumped Hydro unit consists of a reversible pump/turbine, a well, and related equipment. The pump/turbine generates electricity from water flowing down the well hole. It stores electricity at other times by pumping water up the well to the surface using electric power.
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CPR	Critical Project Review [1]
Disadvantaged Community	Disadvantaged Community (DAC) is defined as an area representing census tracts scoring in the top 25 % in CalEnviroScreen 3.0. (https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30)
IOU	Investor Owned Utility
Low-Income Community	Low-income Community is defined as a community within census tracts with median household incomes at or below 80 percent of the statewide median income, or at or below the threshold designated as low-income by the California Department of Housing and Community Development. (http://www.hcd.ca.gov/grants-funding/income-limits/index.shtml)
NEM	The APH technology is behind-the-meter and will require a Net Energy Metering (NEM) interconnection/agreement with SCE. For the demonstration, the stored energy will be discharged to provide on-peak power to SCE during the evening ramp up and recharged off-peak.
PSPS	Public Safety Power Shut Off
Regeneration	Regeneration wells are retrofitted for pumped storage to release energy as well as extract water

[1] Please see subtask 1.3 in Part III of the Scope of Work (General Project Tasks) for a description of Critical Project Review (CPR) Meetings.

Acronym/Term	Meaning
SCE	Southern California Edison
SGMA	The Sustainable Groundwater Management Act (SGMA), which aims to manage California's groundwater basins sustainably. The Central Valley is currently over-drafted. Pumping is greater than the recharge, causing subsidence. To fix this problem, SGMA requires that all basins reduce extractions to match recharge. This may require additional recharge, fallowing of farmland, or both.
TAC	Technical Advisory Committee

II. GOALS AND OBJECTIVES

A. Purpose of Agreement

The purpose of this Agreement is to fund a behind the meter demonstration of a non-lithium ion energy storage technology, Aquifer Pumped Hydro (APH), which can provide a minimum of 10 hours of energy storage/discharge capability at a minimum rating of 50 kilowatts. The project will assist in better understanding APH and define the value and benefits that longer duration APH energy storage can provide over lithium-ion energy storage, especially when applied in Disadvantage Communities (DAC) and Low-Income Communities.

B. Problem/ Solution Statement

Problem
The increased emphasis on resiliency in the state is driving the need for longer duration energy storage backup capabilities. Longer duration energy storage and energy discharge is needed to respond to unplanned grid outages, curtailment risk, Public Safety Power Shutoffs (PSPS) and to increase renewables penetration. DAC and Low-Income Communities are especially vulnerable to preemptive shutoffs. Many of them cannot afford emergency generators. As wildfires become more common, new energy storage/discharge technologies are needed that provide economical, standalone power when the grid is down.

The California grid is facing three issues that could benefit from longer duration energy storage:

1. **Evening Ramp Up:** There is not enough power for the grid during the 5-hour evening ramp up (from 4:00 to 9:00 p.m.) as solar goes offline but consumers turn on appliances. The 2-4 hour discharge of lithium batteries has trouble covering the 5-6 hour ramp up period.

2. **Public Safety Power Shutoffs:** Increased wildfire risks have forced Investor Owned Utilities to shut down transmission lines during high wind events. For example, in October of 2019, power to 800,000 customers (2.5-3.0 million people) was shut off due to wildfire risks. These preemptive shutoffs created major disruptions and may have contributed to at least one death.

3. **Overgeneration:** In non-summer months, especially in the springtime, there is a glut of solar energy in the afternoons and a dearth of generation in the early evening hours. This creates risks of overgeneration and curtailment of renewables.

Over 90% of the energy storage systems built to date in California use lithium ion batteries. Excessive reliance on lithium batteries can create materials and minerals shortages, and safety issues from thermal runaway. Also, lithium batteries have a limited lifetime due to the number of cycles that can be performed, typically 500 to 1,500. With daily use, a lithium battery is worn out in about 3 years. Old lithium batteries create a disposal problem. They are also limited to a 2-4-hour discharge, which is not enough to cover the evening ramp up.

Solution

A groundwater storage facility will be used for demonstration of APH technology. Groundwater will be used to fill and drain a small surface reservoir. An existing well at the demonstrate site with at least a 150 kW, or 200 horsepower (HP) nameplate capacity well motor will be retrofitted to also act as generator. At 35% generation efficiency, the well will produce at least 50 kW of power. The technology is behind-the-meter and will require a Net Energy Metering (NEM) interconnection agreement with SCE. For the demonstration, the stored energy will be discharged to provide on-peak power to SCE during the evening ramp up and recharged off-peak. The end-use customer will benefit from the differential between on and off-peak SCE rates.

The facility will be operated for one year to demonstrate that a minimum of 10hour discharges can be produced reliably. The regeneration well will be operated to provide at least 50 kW of energy discharge using local groundwater. They will also be operated with imported water to show 100+ hour energy discharge during simulated PSPS outages.

The test well will be used to demonstrate both the two-way groundwater dependent APH as well as the one-way configuration that stores energy when imported water is available. Using imported water is an added value aspect of this project for DACs and Low-Income Communities that will be negatively impacted by both PSPS and Sustainable Groundwater Management Act (SGMA)[2] events.

C. Goals and Objectives of the Agreement

Agreement Goals

This Agreement will demonstrate and define the necessary technical, financial, and operational resources to assess the potential of energy storage/discharge with APH to provide continuous energy discharge during grid outages, during peak periods, and during PSPS events; which provide end-user benefits that may drive wide-scale adoption of the technology in California.

[2] The Sustainable Groundwater Management Act (SGMA) aims to manage California's groundwater basins sustainably. The Central Valley is currently over-drafted. Pumping is greater than the recharge, causing subsidence. To fix this problem, SGMA requires that all basins reduce extractions to match recharge. This may require additional recharge, fallowing of farmland, or both.

- Demonstrate how APH offers the end user customer the opportunity to receive increased reliability, resiliency, cost saving and other services during times of power interruptions;
- Identify how continuous energy discharge with APH can be applied to avoid disruption of power supply to critical facilities like hospitals, nursing homes, and emergency charging centers during PSPS events;
- Demonstrate how energy storage with APH can provide extra energy discharge during the summer evening ramp up; and address absorption of surplus renewables in the winter and spring on the weekends during off-peak or super off-peak hours, thereby mitigating renewable curtailment;
- Demonstrate how the behind-the-meter APH technology can incentivize participation by IOU customers; and
- Demonstrate the commercial potential of the APH technology in California due to the distributed nature of wells, benefits for transmission congestion, distribution reliability, end-user energy shifting and scalability.
- The APH technology shall have been demonstrated in the field at a Technology Readiness Level (TRL) of at least six with the capability to reach a TRL of seven when entering the demonstration phase. The goal is to advance to a TRL of eight upon completion of this Agreement.

Ratepayer Benefits:[3] This Agreement will result in California ratepayer benefits including: (1) reduced peak power cost, (2) power during PSPS event, (3) longer life cycle than lithium battery, and (4) potential for rapid implementation, especially within Low-Income Communities and DACs. APH can also be used to inject water into contaminated aquifers where clay layers prevent conventional recharge with percolation, diluting contamination and improving water quality. The benefits will be measured and verified during the demonstration test. Ratepayer benefits will be obtained from:

- Reliability improvements for the grid a minimum of 10 hours of energy discharge for PSPS event;
- Cost benefits are expected from lower installation cost, lower life cycle cost, competitive capacity costs and reduced transmission needs due to distributed power sources; and
- Safety benefits due to no thermal runaway risk and less GHGs due to improved renewables penetration.

Technological Advancement and Breakthroughs:[4] This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by providing a cost-effective resilient and

[3] California Public Resources Code, Section 25711.5(a) requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established the EPIC in 2011, defines ratepayer benefits as greater reliability, lower costs, and increased safety (See CPUC "Phase 2" Decision 12-05-037 at page 19, May 24, 2012, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF).
[4] California Public Resources Code, Section 25711.5(a) also requires EPIC-funded projects to lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory and energy goals.

reliable APH energy storage technology that will address the need for longer term energy storage and discharge during grid outages and PSPS events, growth in peak load, evening ramp up, over-supply and curtailment issues, and the need for ancillary services.

Technological advancement and breakthroughs are summarized as follows:

- Energy storage at a capacity cost ($381/kWh) that is comparable to lithium ion batteries (~$470 per kWh based on $1876/kW installation cost and 4-hour discharge for lithium);
- Discharge durations of 10 hours or longer;
- Ability to absorb renewables during non-summer season using super off-peak rates;
- Continuous power (50 kW) for critical facilities during PSPS events (100 hours using imported water);
- Scalable and rapid implementation due to the use of existing infrastructure and US-made equipment;
- Targeted development in Low-Income Communities and DACs;
- Distributed storage for transmission congestion relief, distribution reliability, and deferral of upgrades;
- Use of imported recharge water to reduce energy costs and provide recharge co-benefits; and
- No local safety risk due to waste disposal, thermal runaway, & leakage, especially to DACs and Low Income Communities.

When the IOU and investment community gain confidence in APH technology and its long-term performance then the market breakthrough is:

- IOUs will be able to solicit procurements for energy storage/discharge programs with incentives for agricultural and municipal pumpers that intend to mitigate the impacts by SGMA and PSPS events.

Agreement Objectives
The objectives of this Agreement are to:

Design and Construction of ground water facilities: Complete the design/build process for a 50 kW APH system to conduct a demonstration of the APH energy storage/discharge capabilities at the ground water facility.

Regeneration Wells Retrofit: Design and retrofit an existing well to enable the injection of water to enable energy storage and discharge for the well regeneration system.

Operations and Field Tests: Perform real-time field demonstration and monitor performance of APH system to determine costs, technical constraints, and define operating parameters. The testing results will be a basis to:

- Quantify the amount of energy needed to recharge the storage system “energy in” to discharge the target power of 50 kW.
- Confirm the energy storage capacity cost is comparable to lithium ion batteries;
- Confirm energy discharge durations of a minimum of 10 hours ;
- Determine the best time to use the minimum of 10 hours of energy discharge

- Confirm ability to absorb renewables during non-summer months using super off-peak rates;
- Confirm ability to provide continuous energy discharge for critical facilities during PSPS events (100 hours using imported water);
- Confirm no local safety risk due to waste disposal, thermal runaway, & leakage, especially to Low-Income Communities and DACs;
- Determining clogging constraints using imported water; and
- Determine life cycle maintenance requirements.

Economics and Metrics**:** Determine the economics of the APH technology by assessing utility tariffs, interconnection requirements, and various operational and other metrics including:

- Cost of interconnection and controls, and utility tariff for NEM contract implications;
- Economics of operation, maintenance and replacement cost over a 30-year life cycle.
- Value of APH during PSPS event when the grid is down;
- Metrics for APH and grid integration; and
- Benefits of modular expansion of APH using less than 50 kW per module.

DAC and Low-Income Community Outreach: Identify and reach out to appropriate Low-Income Communities and DAC representatives to develop APH implementation roadmap focused on specific needs of Low-Income Communities and DACs especially vulnerable to preemptive power shutoffs. The focus is outreach with Low-Income Communities and DACs, identify critical facilities, and methods to provide continuous energy discharge to critical facilities.

- Deployment in DAC and Low-Income Communities: Estimate the commercialization potential of long duration storage particularly in DAC and Low-Income Communities that are ground zero for PSPS and SGMA impacts.

Project Benefits: Provide an assessment of resilience, reliability, cost savings, and safety benefits for the IOU ratepayers.

- Overall benefits and co-benefits of the project are summarized in **Table 1 and 2: Benefits and Co-Benefits** below. These benefits will be verified including: (1) reduced peak power cost, (2) power during PSPS event, (3) longer life cycle than lithium battery, and (4) rapid implementation especially within Low-Income Communities and DACs.

Table 1: APH Evaluation Metrics

Measurement	Metric	Calculation	Value	Initial Est.	EPIC* Benefit
1. Power	kW	Total rated (nameplate) kW of 1 existing well is 200 HP**, 35% Eff.	Load shifting, grid stability	150 kW (50 kW actual)	R, C

2. Discharge Duration	Hours	Hours of water injection down well	Resilience, reliability, load shift, reduced peak power cost	10 hours	R, C
3. Energy Capacity	kWh	Actual power times the duration	Resilience, reliability, load shift, grid stability	500 kWh	R, C
4. % on-peak & off-peak power	%	Provide summer on-peak power, absorb winter super off-peak power.	Resilience, reliability, load shift, renewables absorption	100% discharge during peak hours	R, C, T
5. PSPS Event Discharge	Hours (100+)	Hours of discharge during 7-day PSPS event (imported water)	Resilience, reliability, service for locals	100 hours	R, S, T
6. Number of Cycles in a life	Cycles/ life	Discharge energy daily, track maintenance and life cycle	Reliability, cost savings, load shift	≥ 5 yrs.	R, C
7. Actual Capacity Cost	$/kWh	Cost / (energy capacity) = $ 0.5 M*** / 1313 kWh	Cost savings (uses existing well, cuts cost)	$381/ kWh	C
8. Installation Time	Mos./ unit	Reduced installation using existing wells, US-made equip.	Accelerates mitigation of PSPS events for DACs	3-6 months****	R, T
9. Benefits Low Income, DAC	% kW in DACs	Rated kW of well retrofits in Low Income or DAC communities	Resilience, critical facility service, DAC jobs	100% in Low Income /DAC	R, T
10. Storage Density	kW/sq. mi.	Install APH wells across Central Valley, supports transmission and distribution, end users	Resilience, reliability, grid stability, defer transmission & distribution upgrades	19 kW/ sq. mi. (52.5 kW/2.8 sq. mi.) (WSWB is 1800 acres)	R, C
11. Water Source	Importe d (Y/N)	Imported water for recharge avoids use of extraction energy	Resilience, cost savings, local services for LI and DACs	Yes	R, C, T

12. Local health, safety, outreach	Local Risks? (Y/N)	Risks from waste disposal, thermal runaway, leakage (battery, natural gas), non-local materials & equip.	Local communities are safer, informed, no legacy risks, GHG reduction, uses local resources	No	C, S, T

* EPIC ratepayer benefits: greater reliability (R), lower costs (C), and increased safety (S). Also includes technological advancement (T).
** 1 well with 200 HP= 52.5 kW @ 35% efficiency.
*** Cost includes cost of reservoir and retrofitting one well.
**** Assuming electrical modifications take no longer than a month or two.

Table 2: Benefits and Co-Benefits

Benefits to Ratepayer	Measured Value	Metric Number in Measurement and Verification Plan (Table 2)
a. Reliability, resiliency, sustainability	• Power • Discharge duration • Capacity • Peak power • PSPS power • Storage density	1 2 3 4 5 10
b. Impacts/benefits to end customer	• Reduced peak power cost • More peak power reduces cost • Power during PSPS event • Longer life cycle than lithium battery • Rapid implementation, especially for DACs	2 4 5 6 8
c. GHG reductions	• Avoids use of natural gas turbines to meet peaks • Absorbs overgeneration during super off peak	4 4
d. Value of savings	• Longer life cycle than lithium battery • Comparable capacity costs with lithium • Using imported water reduces energy cost	6 7 11
e. Value of co-benefits	• Recharge water in over-drafted basins	- 8

Benefits to Ratepayer	Measured Value	Metric Number in Measurement and Verification Plan (Table 2)
	• Rapid installation to relieve PSPS events • Local jobs within DACs • US made and supplied equipment	9 8
f. Cost savings vs. business as usual	• Uses existing, redundant infrastructure • Enables recharge in areas with Corcoran clay	7 -
g. Benefit value streams	• Generation • Transmission • Distribution • End Users	1,2,3,4,5 10 10 2,4,5,6,8

III. TASK 1 GENERAL PROJECT TASKS

PRODUCTS

Subtask 1.1 Products

The goal of this subtask is to establish the requirements for submitting project products (e.g., reports, summaries, plans, and presentation materials). Unless otherwise specified by the Commission Agreement Manager (CAM), the Recipient must deliver products as required below by the dates listed in the **Project Schedule (Part V).** Products that require a draft version are indicated by marking **"(draft and final)"** after the product name in the "Products" section of the task/subtask. If "(draft and final)" does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, **"days"** means working days.

The Recipient shall:

For products that require a draft version, including the Final Report Outline and Final Report

- Submit all draft products to the CAM for review and comment in accordance with the Project Schedule (Part V). The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- Consider incorporating all CAM comments into the final product. If the Recipient disagrees with any comment, provide a written response explaining why the comment was not incorporated into the final product.
- Submit the revised product and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period, or approves a request for additional time.

For products that require a final version only

- Submit the product to the CAM for acceptance. The CAM may request minor revisions or explanations prior to acceptance.

EXHIBIT A
Scope of Work
Antelope Valley Water Storage, LLC

For all products

- Submit all data and documents required as products in accordance with the following Instructions for Submitting Electronic Files and Developing Software:

  - **Electronic File Format**
    - Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the Energy Commission's software and Microsoft (MS)-operating computing platforms, or with any other format approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and documents in a format specified by the CAM, such as memory stick or CD-ROM.

    The following describes the accepted formats for electronic data and documents provided to the Energy Commission as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:
    - Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.
    - Text documents will be in MS Word file format, version 2007 or later.
    - Documents intended for public distribution will be in PDF file format.
    - The Recipient must also provide the native Microsoft file format.
    - Project management documents will be in Microsoft Project file format, version 2007 or later.

  - **Software Application Development**

    Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open source programs:
    - Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
    - Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5.
    - Visual Studio.NET (version 2008 and up). Recommend 2010.
    - C# Programming Language with Presentation (UI), Business Object and Data Layers.
    - SQL (Structured Query Language).
    - Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
    - Microsoft SQL Reporting Services. Recommend 2008 R2.
    - XML (external interfaces).

    Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. The CAM will consult with the Energy Commission's Information Technology Services Branch to determine whether the exceptions are allowable.

MEETINGS

Subtask 1.2 Kick-off Meeting

The goal of this subtask is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other Energy Commission staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

  The administrative portion of the meeting will include discussion of the following:
  - Terms and conditions of the Agreement;
  - Administrative products (subtask 1.1);
  - CPR meetings (subtask 1.3);
  - Match fund documentation (subtask 1.7);
  - Permit documentation (subtask 1.8);
  - Subcontracts (subtask 1.9); and
  - Any other relevant topics.

  The technical portion of the meeting will include discussion of the following:
  - The CAM's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Project Schedule;
  - Technical products (subtask 1.1);
  - Progress reports and invoices (subtask 1.5);
  - Final Report (subtask 1.6);
  - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
  - Any other relevant topics.

- Provide an *Updated Project Schedule, List of Match Funds,* and *List of Permits*, as needed to reflect any changes in the documents.

The CAM shall:

- Designate the date and location of the meeting.
- Send the Recipient a *Kick-off Meeting Agenda*.

Recipient Products:

- Updated Project Schedule *(if applicable)*
- Updated List of Match Funds *(if applicable)*
- Updated List of Permits *(if applicable)*

CAM Product:

- Kick-off Meeting Agenda

Subtask 1.3 Critical Project Review (CPR) Meetings
The goal of this subtask is to determine if the project should continue to receive Energy Commission funding, and if so whether any modifications must be made to the tasks, products, schedule, or budget. CPR meetings provide the opportunity for frank discussions between the Energy Commission and the Recipient. As determined by the CAM, discussions may include project status, challenges, successes, advisory group findings and recommendations, final report preparation, and progress on technical transfer and production readiness activities (if applicable). Participants will include the CAM and the Recipient, and may include the CAO and any other individuals selected by the CAM to provide support to the Energy Commission.

CPR meetings generally take place at key, predetermined points in the Agreement, as determined by the CAM and as shown in the Task List on page 1 of this Exhibit. However, the CAM may schedule additional CPR meetings as necessary. The budget will be reallocated to cover the additional costs borne by the Recipient, but the overall Agreement amount will not increase. CPR meetings generally take place at the Energy Commission, but they may take place at another location, or may be conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.

The Recipient shall:

- Prepare a *CPR Report* for each CPR meeting that: (1) discusses the progress of the Agreement toward achieving its goals and objectives; and (2) includes recommendations and conclusions regarding continued work on the project.
- Submit the CPR Report along with any other *Task Products* that correspond to the technical task for which the CPR meeting is required (i.e., if a CPR meeting is required for Task 2, submit the Task 2 products along with the CPR Report).
- Attend the CPR meeting.
- Present the CPR Report and any other required information at each CPR meeting.

The CAM shall:

- Determine the location, date, and time of each CPR meeting with the Recipient's input.
- Send the Recipient a *CPR Agenda* and a *List of Expected CPR Participants* in advance of the CPR meeting. If applicable, the agenda will include a discussion of match funding and permits.
- Conduct and make a record of each CPR meeting. Provide the Recipient with a *Schedule for Providing a Progress Determination* on continuation of the project.
- Determine whether to continue the project, and if so whether modifications are needed to the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Deputy Director of the Energy Research and Development Division.
- Provide the Recipient with a *Progress Determination* on continuation of the project, in accordance with the schedule. The Progress Determination may include a requirement that the Recipient revise one or more products.

Recipient Products:

- CPR Report(s)
- Task Products (draft and/or final as specified in the task)

CAM Products:

- CPR Agenda
- List of Expected CPR Participants
- Schedule for Providing a Progress Determination
- Progress Determination

Subtask 1.4 Final Meeting

The goal of this subtask is to complete the closeout of this Agreement.

The Recipient shall:

- Meet with Energy Commission staff to present project findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement. This meeting will be attended by the Recipient and CAM, at a minimum. The meeting may occur in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.
  The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be divided into two separate meetings at the CAM's discretion.
  - The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.
  - The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
    - Disposition of any state-owned equipment.
    - Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.
    - The Energy Commission's request for specific "generated" data (not already provided in Agreement products).
    - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
    - "Surviving" Agreement provisions such as repayment provisions and confidential products.
    - Final invoicing and release of retention.
- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide *All Draft and Final Written Products* on a CD-ROM or USB memory stick, organized by the tasks in the Agreement.

Products:

- Final Meeting Agreement Summary *(if applicable)*
- Schedule for Completing Agreement Closeout Activities
- All Draft and Final Written Products

REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

The goals of this subtask are to: (1) periodically verify that satisfactory and continued progress is made towards achieving the project objectives of this Agreement; and (2) ensure that invoices contain all required information and are submitted in the appropriate format.

The Recipient shall:

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
  - Summarize progress made on all Agreement activities as specified in the scope of work for the preceding month, including accomplishments, problems, milestones, products, schedule, fiscal status, and an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the "Payment of Funds" section of the terms and conditions, including a financial report on Match Fund and in-state expenditures.

Products:

- Progress Reports
- Invoices

Subtask 1.6 Final Report

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. The CAM will review the Final Report, which will be due at least **two months** before the Agreement end date. When creating the Final Report Outline and the Final Report, the Recipient must use the Style Manual provided by the CAM.

Subtask 1.6.1 Final Report Outline

The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Style Manual* provided by the CAM. *(See Task 1.1 for requirements for draft and final products.)*

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

- Style Manual
- Comments on Draft Final Report Outline
- Acceptance of Final Report Outline

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline, Style Manual, and Final Report Template provided by the CAM with the following considerations:
  - Ensure that the report includes the following items, in the following order:
    - Cover page (**required**)
    - Credits page on the reverse side of cover with legal disclaimer (**required**)
    - Acknowledgements page (optional)
    - Preface (**required**)

        - Abstract, keywords, and citation page (**required**)
        - Table of Contents (**required**, followed by List of Figures and List of Tables, if needed)
        - Executive summary (**required**)
        - Body of the report (**required**)
        - References (if applicable)
        - Glossary/Acronyms (If more than 10 acronyms or abbreviations are used, it is required.)
        - Bibliography (if applicable)
        - Appendices (if applicable) (Create a separate volume if very large.)
        - Attachments (if applicable)
    - Ensure that the document is written in the third person.
    - Ensure that the Executive Summary is understandable to the lay public.
        - Briefly summarize the completed work. Succinctly describe the project results and whether or not the project goals were accomplished.
        - Identify which specific ratepayers can benefit from the project results and how they can achieve the benefits.
        - If it's necessary to use a technical term in the Executive Summary, provide a brief definition or explanation when the technical term is first used.
    - Follow the Style Guide format requirements for headings, figures/tables, citations, and acronyms/abbreviations.
    - Ensure that the document omits subjective comments and opinions. However, recommendations in the conclusion of the report are allowed.
    - Include a brief description of the project results in the Abstract.
- Submit a draft of the report to the CAM for review and comment. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt
- Consider incorporating all CAM comments into the Final Report. If the Recipient disagrees with any comment, provide a written response explaining why the comment was not incorporated into the final product
- Submit the revised Final Report and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period or approves a request for additional time.
- Submit one bound copy of the *Final Report* to the CAM along with *Written Responses to Comments on the Draft Final Report*.

Products:
- Final Report (draft and final)
- Written Responses to Comments on the Draft Final Report

CAM Product:
- Written Comments on the Draft Final Report

MATCH FUNDS, PERMITS, AND SUBCONTRACTS

Subtask 1.7 Match Funds

The goal of this subtask is to ensure that the Recipient obtains any match funds planned for this Agreement and applies them to the Agreement during the Agreement term.

While the costs to obtain and document match funds are not reimbursable under this Agreement, the Recipient may spend match funds for this task. The Recipient may only spend match funds

during the Agreement term, either concurrently or prior to the use of Energy Commission funds. Match funds must be identified in writing, and the Recipient must obtain any associated commitments before incurring any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a *Match Funds Status Letter* that documents the match funds committed to this Agreement. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state this in the letter.

  If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter:
  - A list of the match funds that identifies:
    - The amount of cash match funds, their source(s) (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied.
    - The amount of each in-kind contribution, a description of the contribution type (e.g., property, services), the documented market or book value, the source (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient must identify its owner and provide a contact name, address, telephone number, and the address where the property is located.
    - If different from the solicitation application, provide a letter of commitment from an authorized representative of each source of match funding that the funds or contributions have been secured.
- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional match funds.
- Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

Products:

- Match Funds Status Letter
- Supplemental Match Funds Notification Letter *(if applicable)*
- Match Funds Reduction Notification Letter *(if applicable)*

Subtask 1.8 Permits

The goal of this subtask is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track. Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement, with the exception of costs incurred by University of California recipients. Permits must be identified and obtained before the Recipient may incur any costs related to the use of the permit(s) for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a *Permit Status Letter* that documents the permits required to conduct this Agreement. If no permits are required at the start of this Agreement, then state this in the letter. If permits will be required during the course of the Agreement, provide in the letter:
  - A list of the permits that identifies: (1) the type of permit; and (2) the name, address, and telephone number of the permitting jurisdictions or lead agencies.
  - The schedule the Recipient will follow in applying for and obtaining the permits.

  The list of permits and the schedule for obtaining them will be discussed at the Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies of the permits will be developed. The impact on the project if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in progress reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, then provide the CAM with an *Updated List of Permits* (including the appropriate information on each permit) and an *Updated Schedule for Acquiring Permits*.
- Send the CAM a *Copy of Each Approved Permit*.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 days. Either of these events may trigger a CPR meeting.

Products:

- Permit Status Letter
- Updated List of Permits *(if applicable)*
- Updated Schedule for Acquiring Permits *(if applicable)*
- Copy of Each Approved Permit *(if applicable)*

Subtask 1.9 Subcontracts

The goals of this subtask are to: (1) procure subcontracts required to carry out the tasks under this Agreement; and (2) ensure that the subcontracts are consistent with the terms and conditions of this Agreement.

The Recipient shall:

- Manage and coordinate subcontractor activities in accordance with the requirements of this Agreement.
- Incorporate this Agreement by reference into each subcontract.
- Include any required Energy Commission flow-down provisions in each subcontract, in addition to a statement that the terms of this Agreement will prevail if they conflict with the subcontract terms.
- If required by the CAM, submit a draft of each *Subcontract* required to conduct the work under this Agreement.
- Submit a final copy of the executed subcontract.
- Notify and receive written approval from the CAM prior to adding any new subcontractors (see the discussion of subcontractor additions in the terms and conditions).

Products:

- Subcontracts *(draft if required by the CAM)*

TECHNICAL ADVISORY COMMITTEE

Subtask 1.10 Technical Advisory Committee (TAC)

The goal of this subtask is to create an advisory committee for this Agreement. The TAC should be composed of diverse professionals. The composition will vary depending on interest, availability, and need. TAC members will serve at the CAM's discretion. The purpose of the TAC is to:

- Provide guidance in project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:
  - Technical area expertise;
  - Knowledge of market applications; or
  - Linkages between the agreement work and other past, present, or future projects (both public and private sectors) that TAC members are aware of in a particular area.
- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
- Evaluate the tangible benefits of the project to the state of California, and provide recommendations as needed to enhance the benefits.
- Provide recommendations regarding information dissemination, market pathways, or commercialization strategies relevant to the project products.

The TAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter;
- Members of trades that will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives);
- Public interest market transformation implementers;
- Product developers relevant to the project;
- U.S. Department of Energy research managers, or experts from other federal or state agencies relevant to the project;
- Public interest environmental groups;
- Utility representatives;
- Air district staff; and
- Members of relevant technical society committees.

The Recipient shall:

- Prepare a *List of Potential TAC Members* that includes the names, companies, physical and electronic addresses, and phone numbers of potential members. The list shall include the expertise of each proposed TAC member and the value to the project. The list will be discussed at the Kick-off meeting, and a schedule for recruiting members and holding the first TAC meeting will be developed.
- Recruit TAC members. Ensure that each individual understands member obligations and the TAC meeting schedule developed in subtask 1.11.
- Prepare a *List of TAC Members* once all TAC members have committed to serving on the TAC.
- Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from each TAC member.

Products:

- List of Potential TAC Members
- List of TAC Members
- Documentation of TAC Member Commitment

Subtask 1.11 TAC Meetings
The goal of this subtask is for the TAC to provide strategic guidance for the project by participating in regular meetings, which may be held via teleconference.

The Recipient shall:

- Discuss the TAC meeting schedule with the CAM at the Kick-off meeting. Determine the number and location of meetings (in-person and via teleconference) in consultation with the CAM.
- Prepare a *TAC Meeting Schedule* that will be presented to the TAC members during recruiting. Revise the schedule after the first TAC meeting to incorporate meeting comments.
- Prepare a *TAC Meeting Agenda* and *TAC Meeting Back-up Materials* for each TAC meeting.
- Organize and lead TAC meetings in accordance with the TAC Meeting Schedule. Changes to the schedule must be pre-approved in writing by the CAM.
- Prepare *TAC Meeting Summaries* that include any recommended resolutions of major TAC issues.

The TAC shall:

- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
- Advocate on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.

Products:

- TAC Meeting Schedule (draft and final)
- TAC Meeting Agendas (draft and final)
- TAC Meeting Back-up Materials
- TAC Meeting Summaries

III. TECHNICAL TASK

TASK 2 ECONOMICS AND METRICS

The goal of this task is to determine the economics and define metrics for a standalone 50kW APH system, particularly to identify the primary benefits the system will deliver to the recipients and Low-Income Communities and DACs. Benefits to be evaluated include increased reliability,

resiliency and other services during times of power interruptions caused by weather, grid system failures or PSPS events.

The Recipient shall:

- Determine economics and metrics for 50 kW APH unit
  - Economics of operation, maintenance and replacement cost over a 30-year life cycle.
  - Determine value of APH during PSPS event when the grid is down.
  - Establish metrics for Low-Income Community and DAC PSPS mitigation measures; and
  - Develop applicability/evaluation template for APH for interested parties such as well owners and water agencies to use
  - Summarize findings from economic and metric analysis into *Technical Memo for Economics and Metrics*
- Develop *Template for Interconnection Agreement,*
  - Determine cost of interconnection and controls, and utility tariff for NEM contract implications.
  - Investigate separate interconnection for each well vs single point of interconnection for multiple wells.

Products:

- Technical Memo for Economics and Metrics
- Template for Interconnection Agreement

TASK 3 APH EXPERIENCE INCORPORATION

The goal of this task is to provide APH experience incorporation into the retrofit of the well to enable use of lessons learned from other well regeneration systems.

The Recipient shall:

- Create an *APH Technical Analysis Findings Report* with the APH experience and lessons learned from other regeneration systems incorporated into design, including 1 year of operations with interpretation of operational results during testing period.

Products:

- APH Technical Analysis Findings Report

TASK 4 DESIGN AND CONSTRUCTION OF FACILITIES

The goal of this task is to provide engineering design and construction services for the APH demonstration site. Demonstration shall be in an IOU electric service territory and at a site that is an IOU customer.

The Recipient shall:

- Determine best project delivery approach (such as Design/Bid/Build or Progressive Design/Build with GMP, etc.).
- Perform engineering design for a minimum of 50 kW APH system at the demonstration site for a minimum of 10-hour discharge period.

- Provide construction management and inspection services, including record documents and adjustments made during construction.
- Develop and execute a *Commissioning Plan* with consultation from the CAM and the TAC
- Develop and execute an *Operations and System Test Plan* to cover 12 months with consultation from the CAM and the TAC.
- Summarize the results of Task 4 in a *Facility Certification, Start-Up, and Operational Commissioning Document.*
- Submit a *CPR Report #1* and participate in a CPR Meeting per subtask 1.3.

Products:

- Commissioning Plan (draft and final)
- Operations and System Test Plan (draft and final)
- Facility Certification, Start-up and Operational Commissioning Document
- CPR Report #1

TASK 5 COMMUNITY OUTREACH

The goal of this task is to reach out to appropriate Low-Income Community and DAC representatives to develop an APH implementation roadmap focused on critical facilities and ways to provide continuous power during PSPS.

The Recipient shall:

- Determine the number of Low-Income Community and DAC critical facilities in the selected region that would be impacted by PSPS events.
  - Develop ways to provide continuous power for individual hospitals, nursing homes, and charging facilities; and.
  - Hold field meetings with representative Low-Income Communities and DACs to assess their needs.
- Summarize findings from outreach in *Technical Memo Summarizing Results of Low-Income Community and Disadvantaged Community Outreach.*

Products:

- Technical Memo Summarizing Results of *Low-Income Community and* Disadvantaged Community Outreach

TASK 6 DEPLOYMENT IN DISADVANTAGED AND LOW-INCOME COMMUNITIES

The goal of this task is to estimate the commercialization potential of long duration storage particularly in DAC and Low-Income Communities in the selected region that are ground zero for PSPS and SGMA impacts.

The Recipient shall:

- Determine applicability of technology to be used on closed polyfluoroalkyl substances wells and statewide potential impact and include an application template and summarize findings into *APH Application/Evaluation Template.*
- Develop a *Technical Memo on Disadvantaged Community and Low-Income Community Deployment* that includes:

- Determine amounts of recharge needed to comply with SGMA;
- Assess best ways to mitigate PSPS impacts on DACs and Low-Income Communities;
- Assess which wells are idle and how often;
- Assess which wells are redundant due to SGMA; and
- Determine how SGMA impacts statewide correlate with DACs and Low-Income Communities

Products:

- APH Application/Evaluation Template
- Technical Memo on Disadvantaged Community and Low-Income Community Deployment

TASK 7 OPERATIONS AND FIELD TESTS

The goal of this task is to conduct 1-year of operations to test and demonstrate the 50 kW APH system at the demonstration site.

The Recipient shall:

- Create and execute a *Measurement and Verification Plan* with consultation from the CAM on metrics. Metrics shall include, but not be limited to the following: value that longer-duration energy storage provides with specific information on increased resiliency, higher reliability, added cost savings from peak load reductions, load shifting, providing increased services to the electric grid during times of grid stability challenges; benefits to Low-Income Communities and DACs; value of longer-duration storage when compared to the normal 2-4 hours of storage current systems provide.
- Measurement and Verification Plan will include the collection and measurement and verification (M&V) of data on the installation over the one year demonstration period. The duration of data collection may be reduced with prior CAM written approval. M&V includes plots of charge/discharge power levels, storage efficiencies, and ambient temperatures, as a function of time.
- Conduct one-year operations to test and demonstrate the APH system and create a *One-Year Operations Report* that includes, but is not limited to, the following details:
  - Provision of engineering and design services to manage the operation, maintenance and repair of the 50 kW APH system for 12 months during the demonstration period;
  - Provision of management, all labor and materials to operate, maintain and repair the 50 kW APH system for 12 months during the demonstration period;
  - Implementation of operations and testing plan for 12 months;
  - Operation for 4 summer months for 5 hours each weekday during evening ramp up to shift peak load;
  - Operation periodically during the 8 months of winter and spring to absorb surplus renewables and to establish well plugging constraints;
  - Operation of APH system to demonstrate for a minimum of 10-hour discharge periods;
  - Operation of APH system to demonstrate PSPS power for 100 hours;
  - Results of execution of the Measurement and Verification Plan;
  - Determination of clogging constraints using imported water; and
  - Development of life cycle maintenance requirements.
- Submit a *CPR Report #2* and participate in a CPR Meeting per subtask 1.3.

Products:

- Measurement and Verification Plan
- One-Year Operations Report (draft and final)
- CPR Report #2

TASK 8 PROJECT BENEFITS

The goal of this task is to report the benefits resulting from this project.

The Recipient shall:

- Complete three Project Benefits Questionnaires that correspond to three main intervals in the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- Provide all key assumptions used to estimate projected benefits, including targeted market sector (e.g., population and geographic location), projected market penetration, baseline and projected energy use and cost, operating conditions, and emission reduction calculations. Examples of information that may be requested in the questionnaires include:

  - <u>For Product Development Projects and Project Demonstrations:</u>
    - Published documents, including date, title, and periodical name.
    - Estimated or actual energy and cost savings, and estimated statewide energy savings once market potential has been realized. Identify all assumptions used in the estimates.
    - Greenhouse gas and criteria emissions reductions.
    - Other non-energy benefits such as reliability, public safety, lower operational cost, environmental improvement, indoor environmental quality, and societal benefits.
    - Data on potential job creation, market potential, economic development, and increased state revenue as a result of the project.
    - A discussion of project product downloads from websites, and publications in technical journals.
    - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
    - <u>Additional Information for Product Development Projects</u>:
      - ✓ Outcome of product development efforts, such copyrights and license agreements.
      - ✓ Units sold or projected to be sold in California and outside of California.
      - ✓ Total annual sales or projected annual sales (in dollars) of products developed under the Agreement.
      - ✓ Investment dollars/follow-on private funding as a result of Energy Commission funding.
      - ✓ Patent numbers and applications, along with dates and brief descriptions.
    - <u>Additional Information for Product Demonstrations</u>:
      - ✓ Outcome of demonstrations and status of technology.
      - ✓ Number of similar installations.
      - ✓ Jobs created/retained as a result of the Agreement.

  - <u>For Information/Tools and Other Research Studies:</u>
    - Outcome of project.

  - Published documents, including date, title, and periodical name.
  - A discussion of policy development. State if the project has been cited in government policy publications or technical journals, or has been used to inform regulatory bodies.
  - The number of website downloads.
  - An estimate of how the project information has affected energy use and cost, or have resulted in other non-energy benefits.
  - An estimate of energy and non-energy benefits.
  - Data on potential job creation, market potential, economic development, and increased state revenue as a result of project.
  - A discussion of project product downloads from websites, and publications in technical journals.
  - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Respond to CAM questions regarding responses to the questionnaires.

The Energy Commission may send the Recipient similar questionnaires after the Agreement term ends. Responses to these questionnaires will be voluntary.

Products:

- Kick-off Meeting Benefits Questionnaire
- Mid-term Benefits Questionnaire
- Final Meeting Benefits Questionnaire

TASK 9 TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to develop a plan to make the knowledge gained, experimental results, and lessons learned available to the public and key decision makers.

The Recipient shall:

- Prepare an *Initial Fact Sheet* at start of the project that describes the project. Use the format provided by the CAM.
- Prepare a *Final Project Fact Sheet* at the project's conclusion that discusses results. Use the format provided by the CAM.
- Prepare a *Technology/Knowledge Transfer Plan* that includes:
  - An explanation of how the knowledge gained from the project will be made available to the public, including the targeted market sector and potential outreach to end users, utilities, regulatory agencies, and others.
  - A description of the intended use(s) for and users of the project results.
  - Published documents, including date, title, and periodical name.
  - Copies of documents, fact sheets, journal articles, press releases, and other documents prepared for public dissemination. These documents must include the Legal Notice required in the terms and conditions. Indicate where and when the documents were disseminated.
  - A discussion of policy development. State if project has been or will be cited in government policy publications, or used to inform regulatory bodies.
  - The number of website downloads or public requests for project results.
  - Additional areas as determined by the CAM.

- Conduct technology transfer activities in accordance with the Technology/Knowledge Transfer Plan. These activities will be reported in the Progress Reports.
- When directed by the CAM, develop *Presentation Materials* for an Energy Commission-sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the California Energy Commission.
- Provide at least (6) six *High Quality Digital Photographs* (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the project sites or related project photographs.
- Prepare a *Technology/Knowledge Transfer Report* on technology transfer activities conducted during the project.

Products:

- Initial Fact Sheet (draft and final)
- Final Project Fact Sheet (draft and final)
- Presentation Materials (draft and final)
- High Quality Digital Photographs
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)

IV. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

RESOLUTION NO: 20-0708-9f

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: ANTELOPE VALLEY WATER STORAGE, LLC

RESOLVED, that the State Energy Resources Conservation and Development Commission (CEC) adopts the staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

RESOLVED, that the CEC approves Agreement EPC-19-058 with Antelope Valley Water Storage, LLC for a $2,000,000 grant to fund a behind-the-meter demonstration of an aquifer pumped-hydro (APH) system. The project will assist in better understanding APH and define the value and benefits that longer duration APH energy storage can provide, especially when applied in disadvantaged communities and low-income communities; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her designee shall execute the same on behalf of the CEC.

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the CEC held on July 8, 2020.

AYE:
NAY:
ABSENT:
ABSTAIN:

Cody Goldthrite
Secretariat

Appendix D – Statewide ASR General Order 2012-0010

STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY ORDER 2012-0010

GENERAL WASTE DISCHARGE REQUIREMENTS FOR AQUIFER STORAGE AND RECOVERY PROJECTS THAT INJECT DRINKING WATER INTO GROUNDWATER

The State Water Resources Control Board (State Water Board) finds that:

1. A stable supply of high quality water is critical to the continued welfare, wellbeing, and economic development of California. According to the California Department of Water Resources (DWR), the demand on groundwater will continue to increase as California's population grows from 37 million (2005 estimate) to a projected 60 million by 2050 based on current trends.

2. Groundwater is an important water source for municipal water supply, agriculture, and individual water users across California. According to the DWR 2009 Water Plan:

   a. In 1995, an estimated 13 million Californians, nearly 43 percent of the state's population, were served by groundwater. Many small to moderate-sized towns and cities (e.g., Fresno, Davis, Lodi) rely solely on groundwater for their drinking water supplies. California public water supply systems use more than 16,000 wells to supply water to the public.

   b. Groundwater has played a leading role in transforming California into the nation's top agricultural producer, most populous state, and the seventh largest economy in the world.

   c. With the growing limitations on available surface water exported through the Sacramento-San Joaquin Delta and the potential impacts of climate change, reliance on groundwater through conjunctive management (i.e., coordinated and planned use and management of surface water and groundwater resources together to maximize the availability and reliability of water supplies) will become increasingly important in meeting the state's future water needs.

   d. In some areas of the state, groundwater has been overdrafted, resulting in lowered groundwater elevations and reduced groundwater storage. A comprehensive assessment of overdraft in the state's groundwater basins has not been conducted since the 2003 update of DWR Bulletin 118-80, but it is estimated that overdraft is between 1 million and 2 million acre-feet annually.

   e. Other basins may be subject to overdraft in the future if current water management practices are continued. Overdraft can result in increased water production costs, land subsidence, water quality impairment, and environmental degradation.

   Aquifer Storage and Recovery (ASR) projects will improve statewide water management by increasing local storage that will be responsive to the needs of local communities and environmental resources. Statewide implementation of ASR projects will help California fulfill its vast conjunctive use potential. This is particularly true in the Central Valley, which possesses not only the state's largest sources of surface water, but also by far the state's largest aquifer.

3. According to DWR Bulletin 118-80, a basin is subject to critical conditions of overdraft when present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts. The following eleven basins were identified as being in a critical condition of overdraft:

Pajaro Basin	Cuyama Valley Basin	Eastern San Joaquin County Basin
Kern County Basin	Chowchilla Basin	Madera Basin
Kings Basin	Kaweah Basin	Tulare Lake Basin
Tule Basin	Ventura Central Basin	

Other basins have been determined to be in a state of overdraft since the release of DWR Bulletin 118-80 including, but not limited to, the Seaside Groundwater Basin.

4. Conjunctive management of surface and groundwater supplies can be a useful tool to improve water supplies. Two widely used methods for managed groundwater recharge are recharge basins and injection wells. This General Order (Order) is intended to regulate only ASR projects that inject drinking water that has been treated pursuant to a California Department of Public Health (CDPH) domestic water supply permit.

5. In general, ASR projects[1] involve the storage of water in a suitable aquifer during times when water is available, and recovery of the water from the aquifer when it is needed. According to the United States Environmental Protection Agency (U.S. EPA), ASR wells are used to achieve two objectives: (1) storing water in the ground; and (2) recovering the stored water either using the same well or pairing recharge wells with recovery wells located in the same well field.[2] The benefits of ASR projects permitted by this Order may include, but are not limited to, the following:

   a. Improved local water supply reliability and overall quality.

   b. Improved statewide water supply reliability and overall quality.

   c. Drought relief during the dry season.

   d. Protection from salt water intrusion or other sources of undesirable water quality.

REGULATORY BACKGROUND AND BASIS FOR THE GENERAL ORDER

6. Water Code section 13260 states in part:

   …the following persons shall file with the appropriate regional board a report of the discharge, containing the information which may be required by the regional board:

   (3) Any person operating, or proposing to construct, an injection well.

7. Water Code section 13051 states in part:

   As used in this division, "injection well" means any bored , drilled, or driven shaft, dug pit, or hole in the ground into which waste or fluid is discharged, and any associated subsurface appurtenances, and the depth of which is greater than the circumference of the shaft, pit, or hole.

8. Water Code section 13264 states in part:

   No person shall initiate any new discharge of waste or make any material changes in any discharge, or initiate a discharge to, make any material changes in a discharge to, or construct, an injection well, prior to the filing of the report required by Section 13260 and no person shall take any of these actions after filing the report but before…: (1) The issuance of waste discharge requirements pursuant to Section 13263.

9. Water Code section 13267(d) states:

   The state board or a regional board may require any person, including a person subject to a waste discharge requirement under Section 13263, who is discharging, or who proposes to discharge, wastes or fluid into an injection well, to furnish the state board or regional board with a complete report on the condition and operation of the facility or injection well, or any other information that may be reasonably required to determine whether the injection well could affect the quality of the waters of the state.

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[1] Definitions and abbreviations are provided in Appendix A, which is attached hereto and is made part of this Order by reference.

[2] Class V Fact Sheet Aquifer Recharge and Aquifer Storage and Recovery Wells, US EPA, Office of Water and Drinking Water, September 2009.

10. Water Code section 13360 states in part:

    No waste discharge requirement or other order of a regional board or the state board or decree of a court issued under this division shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be permitted to comply with the order in any lawful manner. However, the restrictions of this section shall not apply to waste discharge requirements or orders or decrees with respect to…:

    (2) Discharges of waste or fluid to an injection well, except any well which is regulated by the Division of Oil and Gas in the Department of Conservation pursuant to Division 3 (commencing with Section 3000) of the Public Resources Code and Subpart F of Part 147 of Title 40 of the Code of Federal Regulations and is in compliance with that division and Subpart A (commencing with Section 146.1) of Subchapter D of Chapter 1 of Title 40 of the Code of Federal Regulations.

11. The United States Environmental Protection Agency implements the Underground Injection Control program. Code of Federal Regulations, title 40, part 144.12(a) states:

    No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.

    ASR projects regulated under this Order are consistent with Class V of the Underground Injection Control program and this Order requires that ASR project operators comply with current US EPA permit by rule requirements. No requirements in this Order will cause a discharger to be in violation of the groundwater protection provisions of the Safe Drinking Water Act (42 U.S.C. section 300f et seq.).

GENERAL ORDER APPLICABILITY

12. This Order regulates certain low-threat ASR projects on a state-wide basis to achieve the following goals:

    a. Consistent regulation of ASR projects state-wide.

    b. Implementation of best practicable treatment and control (BPTC) in accordance with State Water Board Resolution 68-16 (the "Antidegradation Policy") for ASR projects.

    c. A streamlined review and permitting process for ASR projects.

13. Applicability of this Order will be determined by the Executive Officer of the Regional Water Board in the region where the project will take place taking into consideration the following factors:

    a. This Order does not automatically apply to existing ASR projects and Regional Water Boards will evaluate whether this Order is the appropriate regulatory mechanism before granting coverage to any project, whether existing or proposed.

    b. Although an ASR project may be eligible for coverage under this Order, the Executive Officer of the pertinent Regional Water Board may determine that the project should be regulated under individual waste discharge requirements, a waiver of waste discharge requirements, or an enforcement order.

c. Operators of existing ASR projects that are not currently regulated by the Regional Water Board should discuss the appropriate regulatory mechanism and monitoring requirements with the Regional Water Board.

d. In granting coverage under this Order, the Executive Officer of the Regional Water Board will also issue a monitoring and reporting program which may, if deemed appropriate, include monitoring and reporting requirements that differ from those contained in the monitoring and reporting program included with this Order.

14. The applicability of this Order is limited as required by Water Code section 13263(i), which states in part:

The state board or a regional board may prescribe general waste discharge requirements for a category of discharges if the state board or the regional board finds or determines that all of the following criteria apply to the discharges in that category:

1) The discharges are produced by the same or similar operations.

2) The discharges involve the same or similar types of waste.

3) The discharges require the same or similar treatment standards.

4) The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

ASR projects to be regulated under this Order fit all of the criteria and therefore a general order is appropriate. All discharges regulated under this Order would be from similar operations producing treated potable water. The discharges will all be similar in that the primary constituents of concern will be disinfection by-products generated by drinking water treatment required pursuant to domestic water supply permits issued by CDPH. The discharges will employ similar treatment and are all required to meet the same standards prior to discharge (i.e., drinking water standards). Individual waste discharge requirements are not necessary because the discharges are similar and the discharge requirements would be similar if individual waste discharge requirements were issued.

15. To obtain or terminate coverage under this Order, an Applicant[3] must submit the information described in Section C of this Order. The application fee is based on the threat and complexity of the discharge. Operation of an ASR project that involves injection of drinking water into groundwater is classified as 3C pursuant to California Code of Regulations, title 23, section 2200(a)(1) which states, in part:

Threat to water quality…and complexity…of the discharge is assigned by the Regional Board in accordance with the following definitions:

Category "3" – Those discharges of waste that could degrade water quality without violating water quality objectives, or could cause a minor impairment of designated beneficial uses as compared with Category 1 and Category 2.

Category "C" – Any discharger for which waste discharge requirements have been prescribed pursuant to Section 13263 of the Water Code not included in Category A or Category B as described above. Included are dischargers having no waste treatment systems or that must comply with best management practices, dischargers having passive treatment and disposal systems, or dischargers having waste storage systems with land disposal.

[3] For the purpose of this Order, the term "Applicant" refers to the entity, whether a person, private company, or public agency, that applies for coverage under this Order. Upon Issuance of a Notice of Applicability by the Executive Officer of the applicable Regional Water Board, the Applicant becomes the "Permittee"

ASR PROJECT DESCRIPTION

16. ASR projects can increase groundwater supplies by storing water in an aquifer in times of abundant supply and extracting water when needed. Because ASR can significantly increase water storage at relatively low cost and with little environmental impact, the number of ASR projects in California has increased and may increase further in the future.

17. ASR projects are generally operated as “one-well” or “multi-well” systems. In the one-well system, water is injected into, and removed from the same well. In multi-well systems, water is injected into a well and that water is removed from a different well, wells, or a combination of injection well(s) and the different well(s).

18. Many current ASR projects utilize existing water treatment and conveyance infrastructure such as surface water intake pumping systems, water treatment plants, and potable water distribution systems to avoid the cost and environmental impacts associated with constructing duplicate treatment and conveyance systems. In such cases, a typical ASR project takes surface water from an existing surface water intake, treats it to meet drinking water standards at an existing water treatment plant, and conveys it to one or more injection wells via an existing water distribution system. During periods of aquifer injection, both water users and the injection well system receive potable water from the treatment plant. Water is later extracted from the aquifer as needed, treated again at the wellhead if necessary, and conveyed to water users in the same distribution system. It is anticipated that most ASR projects will be designed to maximize the use of existing infrastructure in this way.

19. It is anticipated that there will be a large variation in the size of ASR projects seeking coverage under this Order. Some will consist of single well projects and others will consist of large well fields. A corresponding variation in the knowledge of aquifer characteristics is expected. Pilot tests may be performed for ASR projects with limited information about aquifer characteristics; alternatively, pilot tests may not be needed when well fields and groundwater quality have been adequately characterized. This Order contains a procedure that is described in Section C, to allow implementation of a pilot test if an Applicant elects to perform one.

20. Projects that are regulated under this Order are not required to recover or hydraulically control the injected water except pursuant to a mitigation measure included in a project-specific California Environmental Quality Act (CEQA) document or a subsequent order adopted by the State Water Board or the Regional Water Board.

ELIGIBILITY REQUIREMENTS

21. In order to be eligible for coverage under this Order, the project must meet all of the following requirements:

    a. Drinking water that has been treated pursuant to a CDPH domestic water supply permit is placed in the aquifer via one or more injection wells.

    b. With regard to ASR well construction:

        i. The wells are constructed in compliance with the requirements of the California Well Standards by a licensed well driller under the supervision of a California registered engineer or geologist.

        ii. The well construction details and lithologic log are documented and the well construction (well screen, filter pack, annular seal) limits the injected water to specific aquifer zones at the injection well.

c. With regard to water quality, injected water:

   i. Is of a quality that will ensure compliance with this Order.

   ii. Has been treated and delivered to the injection well consistent with the requirements of a California Department of Public Health (CDPH) domestic water supply permit.

d. With regard to legal authorization:

   i. The project is not restricted by local agency ordinance, prohibition, or other applicable law or regulation.

   ii. The project is consistent with the CEQA project description provided in this Order and any project level CEQA environmental impact evaluation has been completed prior to submitting a Notice of Intent (NOI).

GROUNDWATER QUALITY CONCERNS

22. This section describes the constituents of concern for ASR projects that inject treated drinking water and their potential to degrade groundwater quality. The following sections (Basin Plans, Beneficial Uses, and Regulatory Considerations; and Antidegradation Analysis) discuss how this Order ensures compliance with applicable regulations and policies.

23. In ASR projects, water from one source is discharged into another. Injected water may be of different quality than groundwater in the aquifer. In addition to the possibility of elevated concentrations of naturally occurring or anthropogenic constituents in the source water, mixing water from different sources may cause geochemical reactions in the aquifer that can improve or degrade groundwater quality.

24. The process of disinfection is designed to prevent the transmission of waterborne diseases. CDPH requires a measurable disinfectant concentration in the potable water distribution system when the water source is surface water. Specifically, California Code of Regulations title 22, section 64564, subdivision (a) states that all approved surface water utilized by a supplier shall be provided with continuous disinfection treatment sufficient to insure that the total treatment process provides inactivation of Giardia lamblia cysts and viruses, in conjunction with the removals obtained through filtration. Subdivision (b) states that, except for suppliers serving fewer than 500 persons, the residual disinfectant concentrations of samples collected from the distribution system shall be detectable in at least 95 percent of the samples taken each month that the system serves water to the public. The regulation further states that at any sample point in the distribution system, the presence of heterotrophic plate count (HPC) at concentrations less than or equal to 500 colony forming units per millimeter shall be considered equivalent to a detectable disinfectant residual.

25. Because some ASR projects will utilize existing infrastructure as described above, some disinfectant and disinfection by-products are likely to be present in the injected water. Additional disinfection by-products may be formed in the aquifer as residual disinfectant reacts with organic material in the aquifer matrix.

26. Disinfection by-products consist of organic and inorganic substances produced by the interaction of chemical disinfectants with naturally occurring substances in the water source. A summary of common disinfection by-products is presented below:

Disinfection Byproduct	How Is It Formed?
Trihalomethanes	
Bromodichloromethane *Bromoform* *Dibromochloromethane* *Chloroform*	Trihalomethanes occur when naturally-occurring organic and inorganic materials in the water react with the disinfectants, chlorine, and chloramine.

Disinfection Byproduct	How Is It Formed?
Haloacetic acids *Dichloroacetic acid* *Trichloroacetic acid* *Chloroacetic acid* *Bromoacetic acid* *Dibromoacetic acid*	Haloacetic acids occur when naturally-occurring organic and inorganic materials in the water react with the disinfectants, chlorine, and chloramine.
Bromate	Bromate occurs when bromide in the water reacts with the disinfectant ozone.
Chlorite	Chlorite occurs when chlorine dioxide breaks down.

None of these constituents would be present at concentrations that exceed drinking water limits (MCLs) in water injected into the aquifer because this Order requires that the injected water meet all drinking water standards.

27. Other constituents of concern that may be present in the injected water due to natural or anthropogenic sources include salinity species, metals, pesticides, pharmaceuticals and personal care products. These other constituents, if present, would be as the result of storm water runoff and treated wastewater discharged into the water source upstream of the water supply intake system. However, none of these constituents would be present at concentrations that exceed drinking water limits (MCLs) in water injected into the aquifer because this Order requires that the injected water meet all drinking water standards.

28. Finally, injection of water into any aquifer may induce geochemical reactions, some of which may cause exceedance of a water quality objective. For example, the introduction of water with a higher concentration of dissolved oxygen into an anaerobic aquifer may induce geochemical oxidation-reduction (or “redox”) reactions that increase concentrations of inorganic species in the aquifer and recovered water. The redox reactions may result in higher dissolved concentrations of inorganic constituents in recovered water than in the injected water. Specifically, arsenic, iron, manganese, nitrogen, selenium, and sulfur have been identified as constituents of concern in ASR projects. However, none of these constituents would be present in the aquifer at concentrations that exceed applicable water quality objectives because this Order prohibits it.

BASIN PLANS, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

29. Water Code section 13240 requires each Regional Water Board to formulate and adopt Water Quality Control Plans (Basin Plans) for all areas within its region.

30. Water Code section 13241 states:

    Each regional board shall establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance; however, it is recognized that it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses. Factors to be considered by a regional board in establishing water quality objectives shall include, but not necessarily be limited to, all of the following:

    a. Past, present, and probable future beneficial uses of water.

    b. Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.

c. *Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.*

d. *Economic considerations.*

e. *The need for developing housing within the region.*

f. *The need to develop and use recycled water.*

31. Basin Plans designate beneficial uses, establish Water Quality Objectives (WQOs), contain implementation plans and policies for protecting waters of the basin, and incorporate by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

32. The beneficial uses of groundwater are defined in each Regional Water Board's basin plan. The beneficial uses of groundwater statewide are summarized in the following table:

REGION	*Beneficial Uses*								
	AGR	AQUA	FRSH	GWR	IND	MUN	PRO	REC-1	WILD
1 North Coast	×		×		×	×	×		
2 San Francisco Bay	×		×	×	×	×	×		
3 Central Coast	×				×	×			
4 Los Angeles	×				×	×	×		
5 Central Valley - Sacramento and San Joaquin River	×				×	×	×		
5 Central Valley - Tulare Lake	×				×	×	×	×	×
6 Lahontan	×	×	×		×	×			×
7 Colorado River	×				×	×			
8 Santa Ana	×				×	×	×		
9 San Diego	×		×	×	×	×	×		

AGR denotes agricultural supply. AQUA denotes aquaculture. FRSH denotes freshwater replenishment. GWR denotes groundwater recharge. IND denotes industrial service supply. MUN denotes municipal and domestic supply. PRO denotes industrial process supply. REC-1 denotes water contact recreation. WILD denotes wildlife habitat.

33. State Water Board Resolution 88-63, established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

ANTIDEGRADATION ANALYSIS

34. Resolution 68-16 states, in part:

    1. *Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.*

2. *Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.*

35. As noted in Findings 22 through 28 above, constituents of concern that have the potential to degrade groundwater include disinfection by-products, salinity species, metals, pesticides, pharmaceuticals and personal care products. With the exception of disinfection by-products and certain metals that may become dissolved in the aquifer through geochemical reactions, these constituents of concern, if present, would be the result of storm water runoff and wastewater discharged into the water source upstream of the water supply intake system. However, none of these constituents would be present at concentrations that exceed drinking water maximum contaminant levels (MCLs) in water injected into the aquifer, because this Order requires that the injected water meet all drinking water standards.
36. This Order regulates discharges from ASR projects into numerous groundwater aquifers and zones, each with its own chemical characteristics. Some of these waters are high quality waters pursuant to Resolution 68-16 but there is not sufficient data to fully determine the boundaries of high quality groundwater on a statewide basis. To the extent a discharge under this Order may be of high quality waters, this Order is consistent with Resolution 68-16 as described in the findings below.
37. This Order prohibits injection of water that does not comply with drinking water standards or that would cause violation of any water quality objective within the aquifer. It also requires that ASR projects not cause a condition of pollution or nuisance. Coverage under this Order will not be granted unless the NOI demonstrates that the project will comply with the Injected Water and Groundwater Limitations of this Order.
38. ASR projects regulated by this Order will provide important economic and environmental benefits:
    a. Subsurface storage of potable water avoids the cost, land use, and other environmental impacts of new dams and water storage reservoirs.
    b. Conjunctive use may allow communities to sustain some population and economic growth without the environmental impacts associated with increased surface water withdrawals during periods of low stream flow, which can impact the habitat value of surface waters.
    c. Using existing water treatment and distribution infrastructure to supply the injection wells with potable water will avoid significant costs and potentially significant environmental impacts associated with building new water treatment plants and distribution systems.
    d. Design, construction, and operation of ASR projects will enhance local employment.

    For these reasons, the limited degradation of water quality that may occur as a result of ASR projects regulated under this Order is consistent with maximum benefit to the people of the state provided that terms of the applicable Basin Plan and any relevant State Board policies are met.
39. The Permittee subject to this Order must implement best practicable treatment or control. At a minimum, the following treatment and control measures are required for all ASR projects:
    a. Treatment (typically flocculation, filtration, and disinfection to remove suspended solids and pathogenic microorganisms) so that all injected water is potable water produced in compliance with a CDPH domestic water supply permit.

b. Adequate characterization of injectate water quality. If injectate water quality is variable through the year, operate the ASR project to optimize use of better quality water during injection cycles.

c. Design and operation of ASR projects to minimize adverse aquifer conditions and geochemistry.

d. Additional treatment when necessary to fully protect all beneficial uses.

e. Groundwater monitoring of the injection/extraction wells and groundwater monitoring wells to evaluate the potential for groundwater quality changes.

f. Implementation of an Operation & Maintenance (O&M) Plan.

40. Introduction of disinfection by-products into the aquifer could be reduced or eliminated completely by two primary means: use of non-chemical disinfection methods or treatment after disinfection to remove disinfection by-products.

    a. The best non-chemical disinfection method available is treatment with ultraviolet (UV) light to destroy pathogens. This technology is widely available and its use for disinfecting treated wastewater is becoming more common for that use. However, UV disinfection is effectively prohibited for ASR projects that will utilize existing water treatment and distribution infrastructure as described in Finding 19, because CDPH requires that water suppliers serving surface water to 10,000 or more people maintain a residual chlorine concentration in the distribution system to prevent pathogen regrowth. In situations where UV disinfection could be allowed, this would require the Permittee to construct a new disinfection system to replace one that is still functional. The capital cost of replacement would vary, but can reasonably be expected to range from a few to several million dollars per facility depending on the design flow rate, length and diameter of required conveyance piping, pump sizes and treatment systems required to meet drinking water standards.

    b. There are several treatment technologies available to remove disinfection by-products that are trihalomethanes (bromoform, dibromochloromethane, and chloroform) and haloacetic acids (dichloroacetic, trichloroacetic, chloroacetic, bromoacetic, and dibromoacetic acids). The most common method to remove low concentrations of these constituents is granulated activated carbon (GAC) adsorption, which involves passing the disinfected water through a vessel that contains GAC. The constituents are physically bound to the GAC by adsorption. As the adsorption sites are filled, the GAC must be changed to continue the process. The frequency of GAC replacement varies depending on the character of the disinfected water, the flow rate, and GAC vessel dimensions. Treating disinfected water to remove disinfection by-products would require the Permittee to construct a new treatment process at each injection well head to preserve chlorine residual within the distribution system that conveys treated water to the injection wells. The capital cost of GAC treatment would vary with the volume to be treated, but can reasonably be expected to range from a few to several million dollars depending on the design flow rate, pump sizes and size of the GAC treatment systems required to remove disinfection by-products.

41. Treatment technologies to remove salinity species and metals are also available. The most common broadly applicable technology is reverse osmosis, which physically separates ions from water. Reverse osmosis is an energy-intensive process and the infrastructure costs can reasonably be expected to range from a few to several million dollars depending on the design flow rate, quality of the raw water, desired quality of the treated water, and brine storage and disposal options. Reverse osmosis also generates a waste brine stream, which would create additional storage and disposal costs.

42. Degradation of groundwater by some of the constituents of concern associated with an ASR project is consistent with maximum benefit to the people of the state if the Permittee employs the minimum treatment and control technologies described in Finding 39 above. Although degradation could be further minimized be employing the treatment technologies described in Findings 40 through 41, the cost of this level of treatment is far greater than the benefits to be obtained because it is not necessary to prevent impacts to the primary beneficial use of groundwater, which is municipal and domestic supply. Economic prosperity of communities and associated industries is of maximum benefit to the people of the state and is a sufficient reason to allow some groundwater degradation, which may arise in some cases, provided that terms of the applicable Basin Plan, and other applicable State and Regional Water Board policies are consistently met.

OTHER REGULATORY CONSIDERATIONS

43. Operation of an ASR project under this Order is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in California Code of Regulations, Title 27(hereafter Title 27). The activity is exempt from Title 27 requirements pursuant to Title 27 section 20090, which states that certain activities are exempt as long as the activity meets, and continues to meet, all preconditions listed. ASR projects regulated under this Order are exempt from Title 27, section 20090(c), which exempts:

    …[d]ischarges of waste to wells by injection pursuant to the Underground Injection Control Program established by the United States Environmental Protection Agency (USEPA) under the Safe Drinking Water Act, [42 U.S. Code Section 300(h), see Title 40 of the Code of Federal Regulations, Parts 144 to 146, 40 CFR 144 to 146].

    No requirements in this Order will cause a discharger to be in violation of the groundwater protection provisions of the Safe Drinking Water Act (42 U.S.C. section 300f et seq.).

44. Water Code section 13267(b) states:

    In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

    The technical reports required by this Order, the Notice of Applicability (NOA), and the MRP are necessary to assure compliance with this Order. The Permittee owns and/or operates the facility subject to this Order.

45. Water Code section 13267(c) states, in part:

    In conducting an investigation pursuant to subdivision (a), the regional board may inspect the facilities of any person to ascertain whether the purposes of this division are being met and waste discharge requirements are being complied with.

    The Standard Provisions and Reporting Requirements of this Order require that all Dischargers allow State and Regional Water Board staff to inspect the ASR facility and related records.

46. Domestic water quality monitoring requirements for public water systems are contained in the California Code of Regulations, title 22, chapter 15. Monitoring requirements are based on the number of connections, water source(s), historic water quality data, vulnerability to degradation by pollutants, and constituents of concern. Because ASR projects can change groundwater quality, additional monitoring may be appropriate.

47. California Health and Safety Code section 116470(a) states in part:

    As a condition of its operating permit, every public water system shall annually prepare a consumer confidence report and mail or deliver a copy of that report to each customer. The report shall include all of the following information:

    (1) The source of the water purveyed by the public water system.

    (2) A brief and plainly worded definition of the terms "maximum contaminant level," "primary drinking water standard," and "public health goal."

    (3) If any regulated contaminant is detected in public drinking water supplied by the system during the past year, the report shall include all of the following information:

    (A) The level of the contaminant found in the drinking water, and the corresponding public health goal and primary drinking water standard for that contaminant.

    (B) Any violations of the primary drinking water standard that have occurred as a result of the presence of the contaminant in the drinking water and a brief and plainly worded statement of health concerns that resulted in the regulation of that contaminant.

    (4) Information on the levels of unregulated contaminants, if any, for which monitoring is required pursuant to state or federal law or regulation.

    (5) Disclosure of any variances or exemptions from primary drinking water standards granted to the system and the basis therefore.

    The MRP of this Order requires that all Dischargers submit a copy of these reports to the Regional Water Board.

48. Health and Safety Code section 116470(b) states in part:

    On or before July 1, 1998, and every three years thereafter, public water systems serving more than 10,000 service connections that detect one or more contaminants in drinking water that exceed the applicable public health goal, shall prepare a brief written report in plain language that does all of the following:

    (1) Identifies each contaminant detected in drinking water that exceeds the applicable public health goal.

    (2) Discloses the numerical public health risk, determined by the office, associated with the maximum contaminant level for each contaminant identified in paragraph (1) and the numerical public health risk determined by the office associated with the public health goal for that contaminant.

(3) Identifies the category of risk to public health, including, but not limited to, carcinogenic, mutagenic, teratogenic, and acute toxicity, associated with exposure to the contaminant in drinking water, and includes a brief plainly worded description of these terms.

(4) Describes the best available technology, if any is then available on a commercial basis, to remove the contaminant or reduce the concentration of the contaminant. The public water system may, solely at its own discretion, briefly describe actions that have been taken on its own, or by other entities, to prevent the introduction of the contaminant into drinking water supplies.

(5) Estimates the aggregate cost and the cost per customer of utilizing the technology described in paragraph (4), if any, to reduce the concentration of that contaminant in drinking water to a level at or below the public health goal.

(6) Briefly describes what action, if any, the local water purveyor intends to take to reduce the concentration of the contaminant in public drinking water supplies and the basis for that decision.

The MRP of this Order requires that all Dischargers submit a copy of these reports to the Regional Water Board.

49. This Order grants no water rights to the Permittee. This Order also does not grant a Permittee any rights to use water storage space in the relevant aquifer. The Permittee must have valid legal rights, such as a water-right permit or license, water-service contract, or other rights to obtain water for underground storage under this Order.

50. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544).

CALIFORNIA ENVIRONMENTAL QUALITY ACT

51. On September 19, 2012, the State Water Board adopted a Mitigated Negative Declaration for the activities described in the foregoing Findings in accordance with the provisions of the California Environmental Quality Act (CEQA; Public Resources Code, section 21100 et. seq.) and the CEQA Guidelines. Potentially significant impacts to water quality will be reduced to a less than significant level through the requirements of this Order; therefore the project will have no significant impact on the environment.

52. To mitigate or avoid potentially significant water quality impacts, this Order:

    a. Limits applicability to ASR projects that inject water that has been treated pursuant to a CDPH domestic water supply permit and that meets drinking water standards.

    b. Requires a project-level analysis of potentially significant environmental impacts pursuant to CEQA prior to issuance of a Notice of Applicability granting coverage under this Order.

    c. Prohibits exceedance of any water quality objective.

    d. Establishes an MRP to determine whether the discharge is in compliance with the applicable Basin Plan.

53. Applicants are required to submit documentation of compliance with CEQA by a lead agency that evaluates the project-specific environmental impacts. The Regional Water Board will review the CEQA document and make any findings as required by CEQA regulations prior to the issuance of a Notice of Applicability. If the Applicant is a private entity, the Regional Water Board may be the lead agency for the purpose of CEQA and the Applicant may be required to prepare the draft CEQA document and pay fees associated with filing the documents, compliance with public notice requirements, and review by the Department of Fish and Game.
54. If an Applicant elects to perform a pilot test, that activity may be exempted from the provisions of CEQA, by a categorical exemption under CEQA Guidelines section 15306. Alternatively, an Applicant can perform a pilot test-specific CEQA evaluation.
55. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

PUBLIC MEETING

56. All the above and the supplemental information and details in the attached Information Sheet, incorporated by reference herein, were considered in establishing the following conditions of discharge.
57. The State Water Board has notified all known interested agencies and persons of its intent to adopt the Order for ASR projects that utilize drinking water and has provided all known interested agencies and persons with an opportunity for a public hearing and an opportunity to submit comments.
58. The State Water Board, in a public meeting on September 19, 2012, heard and considered all comments pertaining to this Order.

IT IS HEREBY ORDERED that pursuant to Section 13263 and 13267 of the Water Code, the Permittee, its agents, successors, and assigns, in order to meet the provisions contained in division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

Note: Other prohibitions, conditions, definitions, and the method of determining compliance are contained in Attachment B, "General Order for ASR Projects, Standard Provisions" attached hereto and is made part of this Order by reference.

A. ELIGIBILITY REQUIREMENTS

Only projects that will meet all of the following requirements may receive coverage under this Order:

1. Water injected into the aquifers must be water that has been treated to meet all drinking water standards consistent with the requirements of a CDPH domestic water supply permit.
2. All injection wells must be constructed in compliance with the requirements of the California Well Standards by a licensed well driller under the supervision of a California licensed engineer or geologist.
3. For all injection wells, the well construction details and lithologic log must be documented and the well construction (well screen, filter pack, annular seal) must limit the injected water to the specified aquifer target zones.
4. The project must not be prohibited by local agency ordinance, prohibition, or other applicable law or regulation.
5. The project must be consistent with the CEQA project description provided in this Order and any project level CEQA environmental impact evaluation has been completed.

B. PROHIBITIONS

1. Injection of water into the aquifer storage zone contrary to the description provided in the NOI, the NOA, the requirements set forth in this Order, or any mitigation measures adopted by the CEQA lead agency is prohibited.
2. Operation of an ASR project that results in a condition of pollution or nuisance (as defined in Water Code section 13050 is prohibited.
3. Injection of water that has not been fully treated and disinfected prior to injection in compliance with an applicable CDPH domestic water supply permit is prohibited.
4. Operation of a pilot test shall not extend beyond 24 months from the date the pilot test Notice of Applicability is issued.

C. SPECIFICATIONS

1. If constituents of concern are detected in groundwater samples related to operation of an ASR project, and the concentrations are higher than the permissible concentration listed in the NOA, the Permittee shall immediately notify the Regional Water Board and implement the Non-Compliance Response Plan as described in Provision F.1.c.
2. The Permittee shall design, operate and maintain all systems and equipment to ensure continuous compliance with the requirements of this Order. Such systems and equipment may include additional treatment systems as necessary.
3. If source water quality is variable through the year, the Permittee shall operate the ASR project to optimize use of better quality water during injection cycles. The Permittee shall implement controls such as fences and alarm systems as necessary to prevent unauthorized access to the ASR facilities.
4. The Permittee shall develop, maintain, and implement an Operation and Maintenance (O&M) Plan to ensure that operations personnel are familiar with the ASR system and the requirements of this Order, and have access to specific procedures to immediately evaluate and address threatened or actual violations of this Order.
5. The Executive Officer or the Regional Water Board may terminate Notice of Applicability for any ASR project at any time for cause pursuant to Attachment B.
6. Discharge of water from well development, pipeline flushing, or other maintenance activities shall be discharged under appropriate discharge permits. This Order does not authorize such discharges.

D. APPLICATION FOR COVERAGE/TERMINATION OF COVERAGE

1. To obtain coverage under this Order, an Applicant must submit to the applicable Regional Water Board an NOI that consists of the following:
   a. An application fee for a threat and complexity of “3-C” as described in California Code of Regulations, title 23, section 2200. The fee shall be submitted in the form of a check made payable to the *State Water Board*. The current fee schedule is available on the Internet at:

      http://www.waterboards.ca.gov/resources/fees/docs/fy1112fee_schdl_wdr.pdf

   b. A completed Form 200. The form is available on the Internet at:

      http://www.waterboards.ca.gov/publications_forms/forms/docs/form200.pdf

   c. A technical report, prepared under the supervision of a California licensed engineer or geologist that addresses the items listed in Attachment C, which is attached hereto and is made part of this Order by reference. Please submit one of the following:

i. If a pilot test is planned for an ASR project, at a minimum the technical report shall address the pilot test information requirements listed in Attachment C. It is recognized that some information will not be available until the pilot test is performed, but the report should be as complete as possible based on the available information. The water quality characterization shall include all the analytes listed in MRP Order WQ 2012-0010, which is attached hereto and is made part of this Order by reference, or in a revised MRP issued by the Executive Officer.

ii. If a pilot test has been completed, submit a technical addendum that describes the pilot test, presents the data collected, and completes or revises the technical report and antidegradation analysis as appropriate.

iii. If a pilot test is not planned, then adequate information to answer all the items listed on Attachment C should be available and a complete technical report shall be submitted.

d. Documentation that the ASR project injection wells are registered with the US Environmental Protection Agency's Underground Injection Control Program. Information is available on the internet at:

http://www.epa.gov/region9/water/groundwater/injection-wells-register.html

2. To authorize a pilot test or an ASR project, the Executive Officer will issue an NOA for either the pilot test or the ASR project as described below:

a. If a pilot test is proposed and the Executive Officer determines the pilot test NOI is consistent with the requirements of the Order, the Executive Officer will issue an NOA that will, at a minimum, contain the following:

i. A statement that the pilot test described in the NOI is consistent with the Order.

ii. A description of the pilot test, including an inventory of injection/extraction wells, the injection/extraction target zones, and monitoring wells with a description of the zones that will be monitored.

iii. If a CEQA categorical exemption for the activity is not used, the NOA will include requirements to implement any water quality related mitigation measures included in a project specific CEQA document.

iv. Details of injection source water, water quality, and any applicable limits to the injection schedule and volume of injected water.

v. An MRP that lists the constituents to be monitored, the monitoring frequency, and the groundwater monitoring network. MRP Order WQ 2012-0010 is part of this Order. However, an Executive Officer may elect to issue a different MRP that supersedes MRP Order WQ 2012-0010. The monitoring network shall be installed prior to initiating the pilot test.

vi. Adequate scaled figures and maps to describe the ASR project components and monitoring well locations.

b. For a pilot test technical addendum, or an ASR project without a pilot test, if the Executive Officer determines the NOI is complete and the project is consistent with the requirements of the Order, the Executive Officer will issue an NOA that will, at a minimum, contain the following:

i. A statement that the ASR project, as defined by the NOI is consistent with the Order.

ii. A description of the ASR project including an inventory of injection/ extraction wells, the injection/extraction target zones, and monitoring wells with a description of the zones monitored.

iii. Requirements to implement any water quality related mitigation measures included in the project specific CEQA document.

iv. Details of injection source water, water quality, and any applicable limits to the injection schedule and volume of injected water.

v. An MRP that lists the constituents to be monitored, the monitoring frequency, and the groundwater monitoring network. MRP Order WQ 2012-0010 is part of this Order. However, an Executive Officer may elect to issue a different MRP that supersedes MRP Order WQ 2012-0010. If any part of the monitoring network requires installation, it shall be installed prior to injecting water.

vi. Adequate scaled figures and maps to describe the ASR project components and monitoring well locations.

3. If a Permittee permanently ceases activity at an ASR project, termination of the Order coverage shall be requested in writing. Upon submission of the request, authorization to continue storing water under the Order is immediately terminated. The Executive Officer will issue a Notice of Termination within **60 days** of termination request.

E. INJECTED WATER AND GROUNDWATER LIMITATIONS

1. Water to be injected shall comply with both primary and secondary MCLs at each point of injection.

2. If pre-ASR project conditions in the aquifer storage zone(s) exceed any applicable water quality objectives, the quality of the injected water may not exceed those water quality objectives.

3. Operation of an ASR project shall not cause groundwater to exceed any of the following:

   a. Primary or Secondary MCLs. Injected water shall comply with any new MCL on the date that the new MCL applies to the drinking water system.

   b. Numeric water quality objectives in the Basin Plan for beneficial uses within the ASR project's area of hydrologic influence.

   c. Any Basin Plan water quality objective for the beneficial uses of groundwater.

F. PROVISIONS

1. All of the following reports shall be submitted pursuant to Water Code section 13267, and prepared by a California registered professional as described in Provision No. F.2.

   a. Within **90 days** after issuance of the NOA, the Permittee shall submit a Sampling and Analysis Plan – A description of sampling methods, sample preservation, sample containers, recordkeeping, quality control/quality assurance procedures, chain-of-custody forms, etc., in compliance with the MRP.

   b. Within **30 days** after completion of any new injection well, the Permittee shall submit a copy of the Class V injection well permit by rule notification and registration documentation that has been submitted to the United States Environmental Protection Agency.

   c. Within **90 days** after discovering non-compliance with this Order, and prior to re-initiating injection, the Permittee shall submit a Non-Compliance Response Plan. The Non-Compliance Response Plan shall describe the response to conditions of non-compliance with constituents of concern listed in the NOA. The Non-Compliance Response Plan shall include the following:

      i. A list of all constituents of concern and the concentrations that exceeded the limits presented in the NOA.

ii. The status of the ASR project (e.g., describe the current injection and extraction status).

iii. Corrective measures underway or proposed to address the exceedance and to prevent recurrence.

d. Within **30 days** after the date of discovery, the Permittee shall report to the Regional Water Board:

i. Any toxic chemical release data it reports to the State Emergency Response Commission pursuant to Section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

ii. Any violation of the domestic water supply permit requiring notification of CDPH.

2. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and/or geology, shall be prepared under the direction of appropriately qualified professional(s).

3. The Permittee shall comply with MRP Order WQ 2012-0010 or a project-specific MRP issued by a Regional Water Board Executive Officer with the NOA, and any revisions thereto as ordered by the Executive Officer.

4. The Permittee shall comply with the Standard Provisions and Reporting Requirements for General Waste Discharge Requirements for ASR Projects, contained in Attachment B. This attachment and its individual paragraphs are referenced as "Standard Provision(s)."

5. Any person signing an NOI, monitoring report, or other technical report makes the following certification, whether written or implied:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

6. Before making a material change in an ASR project, which operates under a NOA, the Permittee shall submit an NOI to the Regional Water Board. A material change includes, but is not limited to, the following:

a. An increase in the amount of water injected so that the aquifer storage zone becomes larger than described in the NOA or CEQA evaluation.

b. A change in the raw water source, quality, or timing of injection.

c. A change in the injection target zone.

d. A change in raw water treatment technique (e.g. disinfection method change) that results in revision of the domestic water supply permit by CDPH.

7. The Permittee must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of the NOA.

8. The Permittee must pay an annual fee in accordance with the fee schedule inTitle 23, section 2200 and annual fee invoices issued by the State Water Board. Annual fees are based on Threat to Water Quality and Complexity ratings. The rating for projects regulated under this Order is 3C. The fee is subject to review and revision by the State Water Board. Annual Fee invoices are issued each year by the State Water Board for the state fiscal year (July 1 through June 30).
9. A copy of this Order shall be kept at the ASR project site for reference by operating personnel. Key operating and site management personnel shall be familiar with its contents.
10. This Order grants no property rights of any sort or any exclusive privileges. In addition, this Order grants no legal rights to divert, extract, and/or use groundwater or surface water or to store water in an aquifer.
11. In the event of any change in control or ownership of the ASR project facilities owned or controlled by the Permittee, the Permittee shall notify the succeeding owner of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Regional Water Board.
12. If the Permittee becomes aware that it failed to submit any relevant information or submitted incorrect information any document to the Regional Water Board, it shall submit the required or corrective information to that Regional Water Board within **30 days**.
13. The State Water Board will review this Order periodically and will revise requirements when necessary.

CERTIFICATION

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Board, on September 19, 2012.

AYE: Chairman Charles R. Hoppin
Vice Chair Frances Spivy-Weber
Board Member Tam M. Doduc
Board Member Steven Moore
Board Member Felicia Marcus

NAY: None

ABSENT: None

ABSTAIN: None

Jeanine Townsend

Jeanine Townsend
Clerk to the Board

ATTACHMENT A
DEFINITIONS AND ACRONYMS
GENERAL WASTE DISCHARGE REQUIREMENTS FOR ASR PROJECTS THAT INJECT DRINKING WATER INTO GROUNDWATER

Term	Definition (as used in this Order)
Adsorption	The attraction and adhesion of a layer of ions from an aqueous solution to the solid mineral surfaces with which it is in contact.
Applicant	The entity, whether a person, private company, or public agency, that applies for coverage under this Order. Upon issuance of a Notice of Applicability by the Executive Officer of the applicable Regional Water Board, the Applicant becomes the "Permittee".
Aquifer	Rock or sediment in a formation, group of formations, or part of a formation which is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.
Aquifer Storage and Recovery (ASR)	Aquifer storage and recovery involves the storage of water in a suitable aquifer through a well during times when water is available, and recovery of the water when it is needed.
Aquifer Storage Zone	Defined by the horizontal and vertical extent of injected water. The aquifer storage zone will generally extend farther away from the injection well(s) depending upon stratigraphic variations in hydraulic conductivity, groundwater gradient, flow direction, and operation of extraction well(s).
Area of Hydrologic Influence	The area of hydrologic influence is defined as the area of the aquifer which is affected chemically or physically by the ASR project (the aquifer storage zone plus any additional areas affected by the ASR project).
BPTC	Best practicable treatment or control
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
Composite Sample	A composite sample is a combination of individual samples collected over the specified sampling period either: (1) at equal time intervals with a maximum interval of one hour, or (2) at varying time intervals so that each sample represents an equal portion of cumulative flow.
Conductivity (Hydraulic Conductivity)	A mathematical factor that describes the rate at which water can move through a permeable medium. Higher values allow more rapid water movement.

Term	Definition (as used in this Order)
Conjunctive Management (Use)	Conjunctive management of water supplies refers to the coordinated and planned use and management of both surface water and groundwater resources to maximize the availability and reliability of water supplies in a region.
Disinfection Byproducts (DBPs)	Disinfection byproducts are chemical compounds that are formed when disinfectants used in water treatment plants react with bromide and/or natural organic matter (e.g., decaying vegetation) present in the source water or groundwater.
Domestic Water Supply Permit	A domestic water supply permit is issued by the California Department of Public Health for operation of a public water system that serves greater than 200 connections.
DWR	California Department of Water Resources
General Order (Order)	General Waste Discharge Requirements Order
Grab Sample	A grab sample is any sample collected over a period less than 15 minutes.
Groundwater	The water contained in interconnected pores of an aquifer that can flow freely into wells (phreatic water).
Groundwater Basin	An alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and a definable bottom.
Injected Water (Injectate)	Injected water is potable water treated pursuant to the requirements of a CDPH domestic water supply permit which is injected into an aquifer through an injection well. Once placed in the aquifer, injected water is groundwater.
Injection Target Zone	The depth interval in which water is to be stored.
Injection Well	A bored, drilled, or driven shaft, dug pit, or hole in the ground into which waste or fluid is discharged, and any associated subsurface appurtenances, and the depth of which is greater than the circumference of the shaft, pit, or hole.
MCL	Maximum Contaminant Level
Monitoring Well	A well that is used to measure groundwater elevation and collect groundwater samples. A monitoring well is generally constructed with a relatively short (less than 20 feet) screen interval.
NOA	Notice of Applicability
NOI	Notice of Intent

Term	Definition (as used in this Order)
O&M	Operation and Maintenance
Overdraft	A condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years that approximate average conditions plus any temporary surplus. Overdraft may cause land subsidence and damage to the environment and increase the energy cost of pumping groundwater.
Permittee	The entity, whether a person, private company, or public agency, that performs the activities regulated under this Order and is responsible for compliance with this Order. The Notice of Applicability issued by the Executive Officer of the applicable Regional Water Board will specify the name(s) of the Permittee(s).
Public Drinking Water System (Public Water System)	A public drinking water system (public water system) means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. A public water system includes the following: (1) Any collection, treatment, storage, and distribution facilities under control of the operator of the system which are used primarily in connection with the system. (2) Any collection or pretreatment storage facilities not under the control of the operator that are used primarily in connection with the system. (3) Any water system that treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption. (reference: California Health and Safety Code section 116275(h))
Recharge	Groundwater recharge is the mechanism by which surface water moves from the land surface, through the topsoil and subsurface, and into the aquifer, or through injection of water directly into an aquifer by wells. Groundwater recharge can be either natural or managed. Natural recharge occurs from precipitation falling on the land surface, from water stored in lakes, and from streams carrying storm runoff. Managed recharge occurs when water is placed into constructed recharge or spreading ponds or basins, or when water is injected into the subsurface by wells. Managed recharge is also known as artificial, intentional, or induced recharge. Two widely used

Term	Definition (as used in this Order)
	methods for managed groundwater recharge are recharge basins and injection wells.
Salt Water Intrusion	The movement of salt water into an aquifer formally occupied by fresh water.
Screen (Well Screen)	An engineered pipe equipped with slots, holes, continuous wire-wrap, or similar construction that allows groundwater to enter the well (extraction), or injected water to exit the well (injection).
USEPA	United States Environmental Protection Agency
Water Quality Objective (WQO)	The limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of pollution or nuisance within a specific area.

ATTACHMENT B
STANDARD PROVISIONS AND REPORTING REQUIREMENTS
GENERAL WASTE DISCHARGE REQUIREMENTS FOR ASR PROJECTS THAT INJECT DRINKING WATER INTO GROUNDWATER

A. General Provisions:

1. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, or protect the Permittee from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
2. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
3. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
   a. Violation of any term or condition contained in this Order;
   b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
   c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge;
   d. A material change in the character, location, or volume of discharge.
4. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Regional Water Board. Data on ASR equipment, water quality, geology, and hydrogeology shall not be considered confidential.
5. The Permittee shall take all reasonable steps to minimize any adverse impact to the waters of the state resulting from noncompliance with this Order. Such steps shall include, but are not limited to, accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance.
6. The Permittee shall maintain in good working order and operation any facility, control system, or monitoring device installed to achieve compliance with the Order.
7. The Permittee shall permit representatives of the Regional Water Board and the State Water Board, upon presentations of credentials, to:
   a. Enter ASR project premises and facilities in which any records are kept,
   b. Copy any records required to be kept under terms and conditions of this Order,
   c. Inspect at reasonable hours, monitoring equipment required by this Order, and
   d. Sample, photograph and video record any ASR project related equipment, chemical storage area, or monitoring device.
8. For any electrically operated equipment at the site, the failure of which would cause a violation of this Order, the Permittee shall employ safeguards to prevent violations. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means.
9. The fact that it would have been necessary to halt or reduce the permitted activity in Order to maintain compliance with this Order shall not be a defense for the Permittee's violations of the Order.
10. Neither the treatment nor the discharge shall create a condition of nuisance or pollution as defined by the California Water Code, section 13050.

B. General Reporting Requirements:

1. In the event the Permittee does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Permittee shall notify the Regional Water Board that issued the NOA by telephone as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within **two weeks**. The written notification shall state the nature, time and cause of noncompliance, and shall include a schedule for corrective actions. (Note: Current phone numbers for all Regional Water Board offices may be found on the internet at:

   http://www.waterboards.ca.gov/about_us/contact_us/docs/rwqcbs_directory.pdf

2. All reports shall be signed by persons identified below:

   a. For a corporation: by a principal executive officer of at least the level of senior vice-president.

   b. For a partnership or sole proprietorship: by a general partner or the proprietor.

   c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.

   d. A duly authorized representative of a person designated in 2a, 2b or 2c of this requirement if:

      i. The authorization is made in writing by a person described in 2a, 2b or 2c of this provision;

      ii. the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

      iii. the written authorization is submitted to the Regional Water Board.

3. Technical and monitoring reports specified in this Order are required pursuant to Water Code section 13267. Failing to furnish the reports by the specified deadlines and falsifying information in the reports may result in assessment of civil liabilities against the Permittee.

4. The Permittee shall mail a copy of each monitoring report and any other reports required by this Order to the Regional Water Board that issued the NOA. Note: Current addresses for Regional Water Boards may be found on the internet at:

   http://www.waterboards.ca.gov/about_us/contact_us/docs/rwqcbs_directory.pdf.

C. Provisions for Monitoring:

1. All analyses shall be made in accordance with the latest edition of:

   a. *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA 600 Series) and

   b. *Test Methods for Evaluating Solid Waste* (SW 846-latest edition). The test method may be modified subject to application and approval of alternate test procedures under the Code of Federal Regulations (40 CFR 136).

2. Chemical, bacteriological, and bioassay analysis shall be conducted at a laboratory certified for such analyses by the California Department of Public Health. In the event a certified laboratory is not available to the Permittee, analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to EPA guidelines or to procedures approved by the Regional Water Board.

3. Unless otherwise specified, all metals shall be reported as total metals.
4. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Water Board Executive Officer.
   a. Record of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements,
      ii. The individual(s) who performed the sampling of the measurements,
      iii. The date(s) analyses were performed,
      iv. The individual(s) who performed the analyses,
      v. The laboratory which performed the analysis,
      vi. The analytical techniques or methods used, and
      vii. The results of such analyses.
5. All monitoring instruments and devices used by the Permittee to fulfill the prescribed monitoring program shall be properly maintained and calibrated at least yearly to ensure their continued accuracy.
6. The Permittee shall maintain a written sampling program sufficient to assure compliance with the terms of this Order. Anyone performing sampling on behalf of the Permittee shall be familiar with the sampling plan.
7. The Permittee shall construct all monitoring wells to meet or exceed the standards stated in the State Department of Water Resources *Bulletins 74-81, 74-90,* and subsequent revisions, and shall comply with the reporting provisions for wells required by Water Code sections 13750 et seq.
8. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

ATTACHMENT C
NOTICE OF INTENT TECHNICAL REPORT REQUIREMENTS
GENERAL WASTE DISCHARGE REQUIREMENTS FOR ASR PROJECTS THAT INJECT DRINKING WATER INTO GROUNDWATER

A technical report, prepared under the supervision of a California licensed engineer or geologist, shall include the following and any additional information needed to describe and characterize the ASR project and anticipated effects on water quality. It is anticipated that information availability for different projects, will vary; some may be in areas with adequate study and/or past ASR project operation, and others may be in areas with little available information.

The technical report may address:

A. A pilot test to collect additional information for the purpose of preparing a technical addendum to complete an NOI.

B. A technical addendum describing the results of the pilot test and completing the information needs of the NOI.

C. An ASR project if adequate information on the project is known from a nearby ASR project, relevant data from the proposed project area, or operation of the ASR project itself.

At a minimum, the technical report shall address the following:

1. The Applicant's statement of intent to comply with the terms and conditions of this Order.
2. A copy of the CDPH domestic water supply permit for the injected source water.
3. A project description that includes:
   a. A map that identifies all of the wells that will be used for injection/extraction and/or monitoring.
   b. The target aquifer zones into which water will be injected. Provide available information on the aquifer thickness, the presence of low or high permeability zones, and groundwater elevations.
   c. The area of hydrologic influence of the proposed project. This information shall be supported by analysis of existing data or a numerical model.
   d. The types and areal extent of land uses within that area of influence, including locations of agricultural, industrial, municipal, and domestic water supply wells within the area of hydrologic influence.
   e. The location, source, and areal extent of known or probable contaminants latent in or above the receiving formation, including a history of any past or ongoing remedial actions in the vicinity. Include an analysis of the potential for operation of an ASR project to impact remedial activities, mobilize contaminants, or cause groundwater to come into contact with contaminated soil.
   f. A description of regional groundwater conditions and non-ASR activities that may influence groundwater quality in the project vicinity. This description should include a discussion of groundwater quality trends that may complicate future interpretation of monitoring data presented in the monitoring reports.
   g. If a pilot test will be performed, a schedule for the test. Note that operation of a pilot test shall not extend beyond 24 months from the date the pilot test NOA is issued.
4. Well construction details and soil boring logs for existing injection/extraction, and monitoring wells. For planned wells, provide the proposed well construction details. All wells shall be constructed in conformance with the California Well Standards.
5. For any existing injection wells, a copy of the Class V injection well permit by rule notification and registration documentation that has been submitted to the United States Environmental Protection Agency.

6. A project-specific list of constituents of concern including the following:
   a. Primary or Secondary MCLs.
   b. Numeric water quality objectives in the Basin Plan for beneficial uses associated with the land uses within the ASR project's area of hydrologic influence.
   c. Any Basin Plan water quality objective for the beneficial uses of groundwater.
7. Any proposed changes to the attached MRP technical justification for the proposed changes based on site-specific conditions.
8. Documentation of CEQA compliance, including a site-specific analysis of any impacts that the proposed project would have on beneficial uses of groundwater in the relevant area.
   a. If a pilot test will be performed:
      i. The activity may be eligible for exemption from the provisions of the CEQA, by a categorical exemption (CEQA Guidelines section 15306). Alternatively, a Permittee can perform a pilot test specific CEQA evaluation.
   b. If a pilot test will not be performed:
      i. The CEQA document shall address all items in the initial study not addressed in the negative declaration adopted for the General Order.
      ii. Documentation that the Applicant has analyzed potential impacts the ASR project might have on beneficial uses of groundwater within the project's area of hydrologic influence and has solicited comments from the Regional Water Board that will act as a responsible agency pursuant to CEQA Guidelines section 15306.
9. A demonstration that the project will not violate the Injected Water or Groundwater Limitations of the General Order. At a minimum, the analysis shall address the constituents listed in Findings 24 through 28.

   If a pilot test will be performed, the available information may be limited. The potential for such violation shall be determined by calculation and/or numeric modeling based on the available data.

   If a pilot test will not be performed, adequate information should be available to determine if the Injected Water and Groundwater Limitations would be violated. The determination shall be supported by data collected at the ASR project (from the ASR well, technical analysis based on groundwater sampling and other relevant data from the proposed project area or a nearby ASR well constructed and operated similarly).

   All conclusions must be supported by data, all calculation methods justified, and calculations provided. Appropriately annotated spreadsheets or software reports are acceptable in lieu of hand calculations. The following information is required:
   a. Groundwater Degradation Assessment
      i. List of constituents of concern: average and range.
      ii. Any basin plan water quality objective for the beneficial uses of groundwater.
      iii. List of water resource constituents that may be affected by the discharge: average and range.
      iv. A comparison of injected water quality to pre-ASR project activity groundwater quality in the aquifer storage zone.
      v. Forecast the extent of degradation that will result from the project. The forecast must show no exceedances of water quality objectives in groundwater.

STATE WATER RESOURCES CONTROL BOARD
MONITORING AND REPORTING PROGRAM – ORDER WQ 2012-0010
GENERAL WASTE DISCHARGE REQUIREMENTS FOR
AQUIFER STORAGE AND RECOVERY PROJECTS
THAT INJECT DRINKING WATER INTO GROUNDWATER

This Monitoring and Reporting Program (MRP) allows determination of the potential for groundwater degradation and incorporates requirements for monitoring of injected water and groundwater. This MRP is issued pursuant to Water Code section 13267. The Permittee shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All samples shall be representative of the volume and nature of the monitored medium. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Injection flow monitoring shall be conducted continuously using a flow meter and shall be reported in gallons per day and cumulative totals.

Field test instruments (such as those used to monitor pH) may be used provided that:

1. The operator is trained in the proper use of the instrument;
2. The instruments are field calibrated prior to each use;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

INJECTION WELL MONITORING

Injection wells shall be monitored when water is being injected into the aquifer. Monitoring of the injection wells shall include, at a minimum, the following

Constituent/Parameter	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Well Operational Status [1]	N/A	Recorded	Daily	Quarterly
Daily Average Injection Rate	gpd [2]	Meter	Continuous	Quarterly
Injected Water, cumulative total for year to date	ac•ft/yr	Meter	Continuous	Quarterly
Extracted Water, cumulative total for year to date	ac•ft/yr	Meter	Continuous	Quarterly

[1] Well Operational Status shall be reported for each well associated with the ASR project. Injection activity shall be recorded on a daily basis.
[2] Alternative units may be used to report the data.

INJECTED WATER MONITORING

Injected water is limited to potable water that the Permittee produces through its CDPH permitted domestic water supply permit. Section 116470 of the California Health and Safety Code requires:

1. An Annual Water Quality Report (AWQR). The AWQR characterizes the injected water.
2. Public water systems that serve more than 10,000 service connections and that detect one or more contaminants in drinking water that exceed the applicable public health goal, are required to prepare a report that addresses the contaminant issue.

Both of the reports shall be submitted as part of the Annual Report.

Additionally, potable water used as injected water shall be monitored during periods when injection is occurring. Monitoring of the injected water shall include at least the following:

Constituent	Units	Type of Sample	Sampling Frequency[1,2]	Reporting Frequency[1]
pH	pH units	Grab	Quarterly	Quarterly
Arsenic	mg/L	Grab	Quarterly	Quarterly
Iron	mg/L	Grab	Quarterly	Quarterly
Manganese	mg/L	Grab	Quarterly	Quarterly
Nitrate (as Nitrogen)	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly

[1] The sampling and reporting frequency shall be quarterly for one year, commencing on the first date of injection under this Order. Thereafter, sampling is not required.

[2] Injected water sampling is not required for any quarter during which injection did not occur.

EXTRACTION WELL MONITORING

The following extraction wells shall be monitored if water was injected in the previous calendar year:

1. An extraction well used for injection in the previous calendar year.
2. An extraction well that is pumping a substantial amount of previously injected water.

Monitoring of the extraction wells shall include at least the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Well Activity [1]	N/A	Recorded	Daily	Quarterly
Average Pumping Rate	gpd [2]	Meter	Continuous	Quarterly
Extracted Water/Year [3]	ac•ft/yr	Meter	Continuous	Quarterly
Electrical Conductivity	umhos/cm	Grab	Quarterly[4, 5]	Quarterly[4]
pH	pH units	Grab	Quarterly[4, 5]	Quarterly[4]
Arsenic	mg/L	Grab	Quarterly[4, 5]	Quarterly[4]
Iron	mg/L	Grab	Quarterly[4, 5]	Quarterly[4]
Manganese	mg/L	Grab	Quarterly[4, 5]	Quarterly[4]
Nitrate (as Nitrogen)	mg/L	Grab	Quarterly[4, 5]	Quarterly[4]
Total Dissolved Solids	mg/L	Grab	Quarterly[4, 5]	Quarterly[4]

[1] Well Activity shall be reported for all wells associated with the ASR project. Injection/extraction activity shall be recorded on a daily basis.
[2] Alternative units may be used to report the data.
[3] Extracted Water/Year represents the total amount of water extracted from a well for the calendar year.
[4] The sampling and reporting frequency shall be quarterly for one year, commencing on the first date of injection under this Order. After four quarterly sampling events are completed, regardless of whether they occur during four consecutive quarters, further sampling is not required.
[5] Extracted water sampling is not required for any quarter during which extraction did not occur.

GROUNDWATER AQUIFER MONITORING

If the Permittee proposes to monitor the target zone using wells other than those designated as injection or extraction wells, the monitoring wells shall be monitored in accordance with the following.

Prior to construction and/or sampling of any groundwater monitoring wells, the Permittee shall submit plans and specifications to the Regional Water Board for approval. Once installed, all new wells shall be added to the monitoring network and shall be sampled and analyzed according to the schedule presented below. All samples shall be collected using approved EPA methods. Groundwater elevations shall be calculated to determine groundwater gradient and direction of flow.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Use of low flow or passive sampling methods that do not require well purging are acceptable if described in the approved Sampling and Analysis Plan (SAP). Samples shall be filtered using a 0.45 micron filter if required by the SAP. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency[1]	Reporting Frequency[1]
Electrical Conductivity	umhos/cm	Grab	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
Arsenic	mg/L	Grab	Quarterly	Quarterly
Iron	mg/L	Grab	Quarterly	Quarterly
Manganese	mg/L	Grab	Quarterly	Quarterly
Nitrogen (as Nitrate)	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly

[1] The sampling and reporting frequency shall be quarterly for one year, commencing on the first date of injection under this Order. Thereafter, sampling is not required.

REPORTING

In reporting monitoring data, the Permittee shall arrange the data in tabular form so that the date, sample type (e.g., source water, injection well, extraction well, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the Order, NOA, and Basin Plan. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all groundwater monitoring reports shall be prepared under the supervision of a registered professional engineer or geologist and signed by the registered professional.

A. QUARTERLY MONITORING REPORT

For the first year commencing with the date of first injection under this Order, the Permittee shall establish a quarterly sampling schedule for injection wells, injected water, extraction wells, and groundwater monitoring such that samples are obtained as required. For subsequent years, quarterly

monitoring reports are not required. Quarterly monitoring reports shall be submitted to the Regional Water Board by the **1st day of the second month after the quarter** (e.g. the January-March quarter is due by May 1st) each year. The quarterly monitoring report shall include the following:

1. A discussion of the status (dates of injection, extraction, and idle time) for all extraction/injection wells associated with the ASR project.
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the injection, extraction, and groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the Order, the NOA, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each monitoring well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged (if applicable, see notes on passive sampling in the Receiving Water section).
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any.
4. Results of groundwater monitoring (analytical results tabulated with reporting limits for non-detectable results).
5. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable).
6. A comparison of monitoring data to the groundwater limitations presented in the NOA and an explanation of any violation of those requirements. Any other violation of the Order with explanation and corrective action to prevent future violations.
7. Summary data tables of historical and current water table elevations and analytical results.
8. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
9. Copies of laboratory analytical report(s) for groundwater monitoring.

B. Annual Monitoring Report

For the first year commencing with the date of first injection under this Order, an annual monitoring report shall be prepared in addition to the quarterly monitoring reports. For subsequent years, only the annual monitoring report is required. The annual monitoring report shall be submitted to the Regional Water Board by **1 February** each year. The annual monitoring report shall include the following:

1. The annual water quality report and public health goal report published during the calendar year (if required by CDPH).
2. For the first year only, tabular and graphical summaries of all monitoring data collected during the year.
3. Projected ASR project activity for the next calendar year.
4. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the Order and/or the Notice of Applicability.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of violations found during the reporting period, and actions taken or planned for correcting noted violations. If the Permittee has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the Permittee, or the Permittee's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

The Permittee shall implement the above monitoring program as of the date of this Order.

Ordered by: for Tom Howard
Executive Officer

September 19, 2012
Date

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2021 REGULAR MEETING

SUBJECT	:	DISCUSSION AND POSSIBLE ACTION TO APPROVE DISTRICT POLICY UPDATES
STATUS	:	Discussion and Action Item
REPORT DATE	:	November 8, 2021
PREPARED BY	:	Brittney Moore, Senior Management Analyst Joshua Nelson, Assistant General Counsel Susan Talwar, Director of Finance and Administrative Services

OBJECTIVE:
Consider approving updates to the Citrus Heights Water District's (CHWD or District) Board and Officer Policies (2000 Series); and Board Meeting Policies (3000 series).

BACKGROUND AND ANALYSIS:
At the District's 2019 Strategic Planning Session, an objective to promote organizational effectiveness to enhance service levels to customers and staff was established. A task of that objective was to review and update the District's entire policy manual. To that end, the Board of Directors approved a substantial overhaul of the District's Human Resources Policies (4000 series) in August 2019; Fiscal Management Policies (6000 series) in June 2020; and Account Receivables Policies (7000 series) in October 2021. A Study session highlighting the proposed changes to the 2000 and 3000 series, as part of an annual review of those policies, was provided to the Board at the August 18, 2021 Regular Board Meeting. Also, proposed edits, along with clean versions of the complete policy manuals, were provided to the Board in electronic and paper form in August 2021 for additional review. The proposed revisions reflect language clean-up, incorporate best practices, and/or reflect recent changes in law.

The following is a summary of the proposed changes:

Board and Officer Policies (2000 Series):
Updates to the Board and Officer Policies (2000 Series) largely focus on clean-up edits. These edits include the following:

- Terminology: The policies referred to adjourned meetings as separate meetings. Technically, these are continuations of prior meetings.
- Streamlining: The policies attempted to include the substance of other legal requirements. This inevitably creates conflicts over time as laws change. The draft simply references these other legal requirements.
- Directors (No. 2005): The draft updates this policy to reflect by-division elections.
- Other Officers (No. 2200, 2210, 2400): The draft removes a number of requirements applicable to other officers (i.e., staff). These issues are covered in personnel policies and should be addressed there to avoid inconsistencies.

Board Meeting Policies (3000 series):

Similar to the 2000 Series, clean-up edits have been proposed for the Board Meeting Policies. In addition, some edits have been proposed to reflect current best practices. These edits include the following:

- Terminology: The policies referred to adjourned meetings as separate meetings. Technically, these are continuations of prior meetings.
- Agenda and Minutes (No. 3010, 3060): The proposed edits remove unnecessary specificity. The Board and staff, working together, should retain some flexibility to determine the format, content, and distribution of its agenda and minutes. These portions of the policies are proposed to be addressed in an Administrative Procedure in support of the Board policy.
- Meeting Conduct (No. 3030): Staff proposes the Board consider switching from *Robert's Rules* to *Rosenberg's Rules*. This is explained in the enclosed memorandum (Attachment 3). In addition, the edits delete overly prescriptive public comment requirements.
- Board Decisions (No. 3040): Staff proposes deleting this policy as it unnecessarily constrains Board decision-making.
- Recording (No. 3070): Staff proposes deleting this policy as it does not reflect current practice.

RECOMMENDATIONS:

1. Approve updates to the District's Board and Officer Policies (2000 Series)
2. Approve updates to the District's Board Meeting Policies (3000 Series)

ATTACHMENTS:

1. Red-lined Version of Board and Officer Policies (2000 Series) with New Edits
2. Red-lined Version of Board Meeting Policies (3000 Series) with New Edits
3. Memorandum on Parliamentary Procedure
4. Rosenberg's Rules of Order
5. Clean Copy of Edited Board and Officer Policies (2000 Series)
6. Clean Copy of Edited Board Meeting Policies (3000 Series)

Moved by Director _____, Seconded by Director _____, Carried _____

ATTACHMENT 1

Red-lined Board and Officer Policies (2000 Series)

CITRUS HEIGHTS WATER DISTRICT
POLICIES AND PROCEDURES MANUAL

2000.00 AUTHORITY OF THE BOARD OF DIRECTORS

The Board of Directors, acting as a Board, is the governing body of Citrus Heights Water District. The Board shall act only at its regular, ~~regularly adjourned,~~ special, or emergency ~~special~~ meetings, which may be adjourned as provided by applicable law. All powers of the District shall be exercised and performed by the Board as a body. Individual Board members, except as otherwise authorized by the Board, shall have no power to act for the District, or the Board, or to direct the Staff of the District, nor commit the District to any policy, act, or expenditure nor sign any document on behalf of the Board.

2000.10 RESPONSIBILITY OF THE BOARD OF DIRECTORS

The primary responsibility of the Board of Directors is the formulation and evaluation of District policy. Routine matters concerning the operational aspects of the District are to be delegated to professional staff members of the District.

~~2000.11~~ ~~Review of Board of Directors and Officers Policies and Procedures~~

~~Adopted Board of Directors and Officers Policies and Procedures shall be reviewed by the Board of Directors every four years or more frequently as necessary to assure compliance with applicable laws, ethical and appropriate practices, and relevance to current District operations. Such a review could cause a policy and procedure to be readopted/reaffirmed without change, amended or discontinued.~~

2005.00 MEMBERS OF THE BOARD OF DIRECTORS

Members of the Board of Directors~~, although qualifying for election by Division,~~ are elected ~~at large and represent the electorate community~~by Division but should make decisions in the interests of the District and its customers as a whole.

2005.10 Duties of Members of the Board of Directors

Members of the Board of Directors shall:

2005.11 Prepare themselves to discuss agenda items at Board of Directors meetings unless a personal or financial conflict of interest exists.

2005.12 Participate in the decision-making responsibilities of the Board of Directors unless a personal or financial conflict of interest exists.

2005.13 Perform other duties as may be required by law or as directed by the Board of Directors.

2010.00 PRESIDENT AND VICE PRESIDENT OF THE BOARD OF DIRECTORS

A President and a Vice President of the Board of Directors shall be chosen from members of the Board of Directors. The President and Vice President shall perform duties as established by the Board of Directors and as required by law.

2010.10 Selection and Term of Office of President and Vice President

Each December or as otherwise necessary, the Board of Directors shall elect a President and a Vice President from among its members. Nominations from members of the Board will be requested and a President and a Vice President shall be elected by a majority vote of the Board of Directors. The term of office of the President and the Vice President shall begin immediately upon their election unless otherwise specified by the Board of Directors.

2010.20 Duties of the President

The President of the Board of Directors shall:

2010.21 Preside at meetings and hearings of the Board of Directors and conduct said meetings to ensure proper order and decorum.

2010.22 Execute documents on behalf of the District that are approved at the meeting including, but not limited to, warrants, resolutions, agreements, and contracts.

2010.23 Rule on points of order and passage or failure of motions, resolutions, or ordinances brought before the Board.

2010.24 Invite public participation when appropriate during meetings of the Board of Directors.

2010.25 Set the time and place for any ~~adjourned,~~ special or emergency ~~special~~ meeting of the Board of Directors.

2010.26 Serve as public spokesperson of the Board and express adopted policy of the District when called upon to do so.

2010.27 Represent the Board of Directors at public meetings or ceremonies when called upon to do so.

2010.28 Perform other duties as may be required by law or as directed by the Board of Directors.

2010.29 Appoint a member(s) of the Board of Directors, Officers or staff to serve or represent the District at public meetings, ceremonies or on committees on behalf of the District.

2010.30 Duties of the Vice President

In the absence of the President, the Vice President shall assume the duties of the President until such a time as the President is in attendance. In the event that the office of President is vacant, the

Vice President shall act in the place of the President until the Board of Directors elects a new President.

2010.40 Participation in Meetings of the Board of Directors

The President and Vice President shall have the same rights as other members of the Board of Directors in voting, introducing motions, resolutions, and ordinances, and any discussion of questions that follow said actions.

2020.00 ATTENDANCE AT BOARD OF DIRECTORS MEETINGS

Members of the Board of Directors are expected to attend all regular, ~~regularly~~ adjourned, ~~and~~ special, and emergency meetings of the Board of Directors. If unable to attend a meeting, Directors shall attempt to inform the President of the Board and/or the General Manager of the intended absence.

2020.10 Vacancy

A vacancy shall occur if any member of the Board of Directors ceases to discharge the duty of his/her office for the time period ~~of three consecutive months except as formally authorized by action of the Board of Directors.~~provided by law, including Government Code section 1770.

2040.00 DIRECTOR'S COMPENSATION

Each member of the Board of Directors~~, upon submittal of a monthly "Statement of Meetings Attended & Claim for Director's Compensation" (See attachment 2040.A2) to the District Secretary,~~ shall be entitled to receive compensation, in a dollar amount as specified by Citrus Heights Water District Ordinance Fixing the Compensation of the Board of Directors, per day or partial day for attendance at meetings of the Board and District related functions. ~~Compensation will be limited to a total of ten (10) days in any calendar month.~~

~~Changes in the compensation of Board members shall require the approval of the Board during an Open Session at a Regular Meeting of the Board of Directors held at least 60 days prior to the effective date of the change in compensation (see Water Code Section 20204 et seq. and Policy No. 2100).~~

~~Review of the Ordinance Fixing the Compensation of the Board of Directors shall be performed annually during an Open Session at a Regular Meeting of the Board of Directors, concurrent with the annual review of the Salary Schedule for District employees.~~

2040.10 Officer's Compensation

The Board appointed District Secretary, District Treasurer, and District Assessor/Collector shall not be compensated for their duties as District Officers.

2040.20 Reimbursement

District Officers and each member of the Board of Directors shall be entitled to reimbursement for actual and necessary expenses incurred in performance of their duties required or authorized by

the Board. Reimbursements shall be subject to written documentation and shall be limited to imposed maximums (i.e.: meal expenses, travel expenses, etc.).

2040.30 Approval

Reimbursement pursuant to Section 2040.20 for actual and necessary expenses to the Directors and Officers shall be reviewed and approved monthly by the Board of Directors as part of their review of the Treasurer's report and accounts payable.

2040.90 Reporting

An annual report shall be prepared by the Treasurer quantifying meeting attendance, compensation, and expenses for members of the Board of Directors and District Officers.

2060.00 EDUCATIONAL AND TRAINING FUNCTIONS

The Board of Directors supports participation by members of the Board of Directors and Officers at educational and training functions of national, state, or local significance that either directly relates to the purposes, goals and objectives of the District or that contribute to a better understanding of water and management issues relevant to District operations. There is no limit as to the number of Directors and Officers attending a particular educational or training function when it is apparent that their attendance is beneficial to the District.

Educational and training functions typically include meetings, seminars, facility tours, and conferences related to District purposes and operations.

2060.10 ATTENDANCE BY DIRECTORS

Members of the Board of Directors are authorized to attend educational and training functions of their choosing. Expenses per person in excess of $5,000.00 per function and aggregately $~~10,000.00~~10, 000.00 per calendar year shall require formal approval from the Board of Directors.

A Director shall not attend a conference or training event for which there is an expense to the District if it occurs after they have announced their pending resignation or have not filed for ~~re-election~~re- election, or if it occurs after an election in which it has been determined that they will not retain theirseat on the Board of Directors except as formally authorized by action of the Board of Directors.

2060.30 COMPENSATED MEETING DAY

Directors shall be entitled to receive meeting day compensation in accordance with Compensationand Reimbursement Policy 2040 for each day's or partial day's attendance at an educational or training function plus one day for travel if necessary.

2060.50 EXPENSES

The District shall pay for actual and necessary expenses for attendance at education and trainingfunctions.

2060.51 Function Expenses

The District will generally pay fees for registration and attendance at educational and training functions in advance for its representative(s).

Expenses advanced by the District for educational and training functions that are not attended by the Director or Officer other than due to circumstances beyond their control andfor which a refund or credit cannot be obtained shall be promptly reimbursed to the Districtby the Director or Officer within thirty (30) days of the date of said function.

2060.52 Travel Expenses

Travel expenses shall be allowed based upon the actual mode of travel. Travel arrangementsmay be made by the individual or by the District.

Travel by personal vehicle is permitted within California and Nevada ~~and~~

And shall be reimbursed at the current expense rate authorized under Internal Revenue Service (IRS) regulations per actual mile driven, not to exceed the cost of an unrestricted round-trip coach air fare plus associated ground transportation and parking expenses.

Travel by air, train, or bus is permitted and shall not exceed or be reimbursed beyond the cost of an unrestricted round-trip coach air fare plus associated ground transportation and parking expenses.

2060.53 Lodging Expenses

Actual lodging expenses will be paid or reimbursed at an amount not to exceed the highestpublished conference rates for accommodations. Lodging arrangements may be made by theindividual or by the District.

2060.54 Meal Expenses

Per diem reimbursements for approved events, not to exceed the limits detailed below,can be obtained by submitting reconciliation request form.

Half Day event	$45.00
Full Day Event	$90.00

Directors or Officers shall generally not receive the above per diem if meals are providedas an accompaniment to registration. However, if a Director or Officer is unable to utilize the provided meal, he or she may receive a half-day or full day per diem as applicable. Any request for per diem shall indicate the District-related reason for not enjoying the provided meal. No compensation will be provided for the purchase of alcoholic beverages.

2060.55 Other Expenses

Other actual and necessary expenses, including but not limited to such items as car rental,taxi or bus fares, gratuities, parking, telephone calls, and facsimile transmissions will be reimbursed at no cost.

2060.56 Spouse/Companion Expenses

Spouse and/or companions may accompany District representatives to educational and training functions at the sole and total expense of the spouse/companion(s). It is incumbentupon the Director or Officer to document those additional expenses that may accrue due to aspouse and/or companion, and to deduct said expenses from any expenses being submitted to the District for reimbursement or reconciliation.

2060.58 Expense Reconciliation

Upon the conclusion of an educational or training event for which expenses have been incurred, all expenses shall be documented and reconciled on the District's "Conference/Meeting Expense Reconciliation" form.

2060.59 Reporting

An annual report shall be prepared by the Treasurer quantifying attendance and expenses at training and educational functions for members of the Board of Directors and District Officers.

2060.70 DIRECTORS' REPORTS

Upon returning from seminars, workshops, conferences, etc., where expenses are reimbursed by theDistrict, Directors and Officers will either prepare a written report for distribution to the Board ofDirectors, or make a verbal report during the next regular meeting of the Board. Said report shall detail what was learned at the session(s) that will be of benefit to the District. Materials from thesession(s) may be delivered to the District office to be included in the District library for future use and reference by Directors, Officers and staff.

CITRUS HEIGHTS WATER DISTRICT

Conference/Meeting Expense Reconciliation

Attachement 2060.A1
Rev. Jan 1, 2014

(users\admin\forms\hr Employee type forms\expense reconciliation worksheet.xls)

Name: _____ **Date(s):** _____

Purpose: _____

Location: _____

PLEASE - List All Expenses:

Registration: _____ $ _____

Coach Airfare on: _____ **Conf #:** _____ $ _____

Mileage: _____ @ $.56/mile (IRS rate - eff 1/1/14) $ _____

Lodging at: _____ **Conf #:** _____

# of nights: _____ @ _____ per night (Plus Tax) $ _____

Meals:

Date	*Breakfast* $20 ±	*Lunch* $25 ±	*Dinner* $45 ±	*DailyTotal* *<$90*	*Attach Receipts*
S				-	
M				-	
T				-	
W				-	
TH				-	
Meal Totals	-	-	-	-	

$ -

*Note: Enter "**CONF**" in proper column if meal was included as part of registration.*

Other: _____

_____

_____

Attach Receipts $ _____

Total Expenses $ _____

Prepaid / Credit Card Expenses

Registration	-	Meals	
Airfare	-	Car Rental	
Hotel	-		
Parking			

Total Prepaid Expenses **$** _____

Balance Due to: _____ $ _____

Signature: _____ Date: _____

Entered on cal ☐ CC to attendee ☐ Completed ☐ Approved: _____

2080 BENEFITS FOR DIRECTORS AND OFFICERS

2080.10 WORKERS' COMPENSATION INSURANCE BENEFITS

Directors and Officers shall be covered by the District's Workers' Compensation Insurancepolicy while acting as a Board of Directors or acting under its orders.

2080.20 OTHER BENEFITS

Directors and Officers may participate in District benefit plans at the sole and express expense ofthe Director or Officer subject to the terms, conditions, and acceptance of the District's employee benefit provider(s).

District Officers that are also employees of the District shall be entitled to benefits pursuant toPersonnel Policies and Procedures.

2090.00 BONDS FOR DIRECTORS AND OFFICERS

Directors and Officers shall be bonded as required by law. Premiums shall be paid fully by the District.

~~See Section 2200.15 of "Officers of the District" Policy 2200 for bonding requirements for Officers.~~

2100.00 STANDARDS OF CONDUCT FOR DIRECTORS AND OFFICERS

The policy of the Citrus Heights Water District is to maintain the highest ethical standards for its Directors and Officers. The proper operation of the District requires decisions and policy to be made within the proper channels of governmental structure, that public office not be used for personal gain, and that Directors and Officers remain objective and responsive to the needs of the public they serve. Accordingly, it is the policy of the Citrus Heights Water District that Directors and Officers will maintain the highest standard of personal honesty and fairness in carrying out their duties.

This policy sets forth the basic ethical standards to be followed by the Directors and Officers of the Citrus Heights Water District. The objectives of this policy are to: provide guidance for dealing with ethical issues; heighten awareness of ethics and values as critical elements in Directors' and Officers' conduct; and improve ethical decision-making and values-based management.

The Board of Directors of Citrus Heights Water District is committed to maintaining excellence inlegislative leadership that results in providing the highest quality of services to its constituents. Toassist in the governing of the behavior between and among Directors, Officers, employees and thepublic, the following policies and procedures shall be observed:

2100.10 POLICIES

2100.11 Directors and Officers are obligated to uphold the Constitution of the ~~UnitedStates~~United States and the Constitution of the State of California. Directors and Officers will comply with applicable laws regulating their

conduct, including conflict of interest, financial disclosure and open government laws. Directors and Officers will strive to work in cooperation with other public officials unless prohibited from so doing by law or officially-recognized confidentiality of their work.

2100.12 Directors and Officers, in the performance of their official duties and responsibilities, will not discriminate against or harass any person on the basis of race, religion, color, creed, age, marital status, national origin, ancestry, gender, gender identity, sexual orientation, medical condition ~~or~~, disability, or any other protected class. A Director or Officer will not grant any special consideration, treatment or advantage to any person or group beyond that which is available to every other person or group in similar circumstances.

2100.13 Except as specifically authorized, a Director or Officer will not use or permit the use of District-owned vehicles, equipment, telephones, materials or property for personal benefit or profit. A Director or Officer will not ask or require a District employee to perform services for the personal benefit or profit of a Director, Officer, or employee. Each Director and Officer must protect and properly use any District asset within his or her control, including information recorded on paper or in electronic form. Directors and Officers will safeguard District property, equipment, moneys and assets against unauthorized use or removal, as well as from loss due to criminal act or breach of trust.

2100.14 A. A Director or Officer is not authorized, without approval of the Board of Directors or as otherwise permitted by law, to disclose information that qualifies as confidential information under applicable provisions of law to a person not authorized to receive it, that (1) has been received for, or during, a closed session meeting of the Board, (2) is protected from disclosure under the attorney/client or other evidentiary privilege, or (3) is not required to be disclosed under the California Public Records Act.

~~B. This section does not prohibit any of the following: (1) making a confidential inquiry or complaint to a district attorney or grand jury concerning a perceived violation of law, including disclosing facts to district attorney or grand jury that are necessary to establish the alleged illegality of an action taken by the District, an elected official or employee, (2) expressing an opinion concerning the propriety or legality of actions taken by the District in closed session, including disclosure of the nature and extent of the allegedly illegal action, or (3) disclosing information acquired by being present in a closed session that is not confidential information. Prior to disclosing confidential information pursuant to (1) or (2), above, however, a Director or Officer will first bring the matter to the attention of either the President of the Board or the full Board of Directors, to provide the Board an opportunity to cure an alleged violation.~~

~~C~~B. A Director or Officer who willfully and knowingly discloses for pecuniary gain confidential information received by him or her in the course of his or her official duties may be guilty of a misdemeanor under Government Code Section 1098.

2100.15 A. A Director will not have a financial interest in a contract with the District, or be a purchaser at a sale by the District or a vendor at a purchase made by the District, unless the Director or Officer's participation was authorized under ~~Government Code Sections 1091 or 1091.5, or other provisions of~~applicable law. A Director or Officer will not participate in the discussion, deliberation or vote on a matter before the Board of Directors, or in any way attempt to use his or her official position to influence a decision of the Board, if he or she has a prohibited interest with respect to the matter~~,~~ as ~~defined in~~provided by law. Directors or Officer should review Government Code section 1090, the Political Reform Act~~, Government Code Sections 81000, and following, relating to conflicts of interest. Generally, a Director or Officer has a financial interest in a matter if it is reasonably foreseeable that the Board decision would have a material financial effect (as defined by Fair Political Practices Commission (FPPC) regulations) that is distinguishable from the effect on the public generally on (a) a business entity in which the Director or Officer has a direct or indirect investment in the amount specified in FPPC regulations; (b) real property in which the Director or Officer has a direct or indirect investment interest, with a worth in the amount specified in FPPC regulations; (c) a source of income of the Director or Officer in the amount specified in FPPC regulations, within 12 months before the Board decision; (d) a source of gifts to the Director or Officer in an amount specified in FPPC regulations within 12 months before the Board decision; or (e) a business entity in which the Director or Officer holds a position as a director, trustee, officer, partner, manager or employee. An "indirect interest" means any investment or interest owned by the spouse or dependent child of the Director or Officer, by an agent on behalf of the Director or Officer, or by a business entity or trust in which the Director or Officer, or the Director or Officer's spouse, dependent child or agent, owns directly, indirectly or beneficially a 10 percent interest or greater. An elected official will not accept honoraria, or gifts that exceed the limitations specified in the Fair Political Practices Act or FPPC regulations. Director or Officers will report all gifts, campaign contributions, income and financial information as required under the District's Conflict of Interest Code and the provisions of the Fair Political Practices Act and FPPC regulations. (Government Code Sections 87100 and following.)~~ and other applicable law for more detail.

B. If a member of the Board believes that he or she may be disqualified from participation in the discussion, deliberations or vote on a particular matter due to a conflict of interest, the following procedure will be followed:

(a) if the Director or Officer becomes aware of the potential conflict of interest before the Board meeting at which the matter will be discussed or acted on, the Director or Officer will notify the District's General Manager and the District's legal counsel of the potential conflict of interest, so that a determination can be made whether it is a disqualifying conflict of interest; (b) if it is not possible for the Director or Officer to discuss the potential conflict with the General Manager and the District's legal counsel before the meeting, or if the Director or Officer does not become aware of the potential conflict until during the meeting, the Director or Officer will immediately disclose the potential conflict during the Board meeting, so that there can be a determination whether it is a disqualifying conflict of interest; and (c) upon a determination that there is a disqualifying conflict of interest, the Director or Officer (1) will not participate in the discussion, deliberation or vote on the matter for which a conflict of interest exists, which will be so noted in the Board minutes, and (2) leave the room until after the discussion, vote and any other disposition of the matter is concluded, unless the matter has been placed on the portion of the agenda reserved for uncontested matters. ~~The Director or Officer may speak on an uncontested matter during the time the general public speaks on the issue.~~

~~C. A Director or Officer will not recommend the employment of a relative by the District. A Director or Officer will not recommend the employment of a relative to any person known by the Director or Officer to be bidding for or negotiating a contract with the District.~~

~~D. A Director or Officer who knowingly asks for, accepts or agrees to receive any gift, reward or promise thereof for doing an official act, except as may be authorized by law, may be guilty of a misdemeanor under Penal Code Section 70. (Government Code Sections 1090 and following, 81000 and following, and 87105; Penal Code Sections 68 and 70.)~~

2100.17 Board members are prohibited from soliciting political funds or contributions at District facilities, or from District employees. A Board member will not accept, solicit or direct a political contribution from (a) District employees, officers, consultants or contractors, or (b) vendors or consultants who have a material financial interest in a contract or other matter while that contract or other matter is pending before the District. A Director will not use the District's seal, trademark, stationery or other indicia of the District's identity, or facsimile thereof, in any solicitation for political contributions contrary to state or federal law.

2100.18 ~~Any~~ Board ~~member appointed or elected to a public office of another public entity, the duties of which may require action contradictory or inconsistent with the interests of the first entity (as determined under applicable law), will resign from the former office. (See, generally, 73 Cal.Op.Atty. Gen. 357 (1990). See also Government Code Section 53227, under which an employee of a special district may not be sworn into office as an elected or~~

~~appointed member of the Board of the same special district unless he or she resigns as an employee.)~~members shall avoid incompatible offices as provided by applicable law.

2100.19 A. The Board sets the policy for the District and sets the terms and conditions of the General Manager's employment.

B. The District's General Manager (a) has full charge and control of the construction, maintenance and operation of the water system and other facilities of the District, (b) has full power and authority to employ and discharge employees and assistants, consistent with District policy and other provisions of law, (c) prescribes the duties of employees and assistants, consistent with District policy, and (d) fixes and alters the compensation of employees and assistants, consistent with District policy.

C. The Board will appoint the District's Treasurer (see Policy No. 2200). The Treasurer will install and maintain a system of auditing and accounting that will completely and at all times show the financial condition of the District in accordance with generally accepted accounting principles and legal requirements.

D. The Board will retain and periodically review the work of an auditor as an independent contractor of the District (other than the Treasurer), who will report to the Board, to conduct an annual audit of the District's books, records and financial affairs (see Policy No. 6010).

E. The District's General Manager serves at the pleasure of the Board. The Board will provide policy direction and instructions to the General Manager on matters within the authority of the Board by majority vote of the Board during duly-convened Board meetings. Members of the Board will deal with matters within the authority of the General Manager through the General Manager, and not through other District employees, except as it pertains to the functions of the Treasurer. Members of the Board will refrain from making requests directly to District employees (rather than to the General Manager) to undertake analyses, perform other work assignments or change the priority of work assignments. Members of the Board may request non-confidential, factual information regarding District operations from District employees.

2100.20 A. The General Manager has primary responsibility for (1) ensuring compliance with the Districts Personnel Policies, and ensuring that District employees do not engage in improper activities, (2) investigating allegations of improper activities, and (3) taking appropriate corrective and disciplinary actions. The Board has a duty to ensure that the General Manager is operating the District according to law and the policies approved by the Board. Board members are encouraged to fulfill their obligation to the public and the District by disclosing to the General Manager to the

extent not expressly prohibited by law, improper activities within their knowledge. Board members will not interfere with the General Manager's responsibilities in identifying, investigating and correcting improper activities, unless the Board determines that the General Manager is not properly carrying out these responsibilities.

B. A Board member will not directly or indirectly use or attempt to use the authority or influence of his or her position for the purpose of intimidating, threatening, coercing, commanding or influencing any other person for the purpose of preventing such person from acting in good faith to report or otherwise bring to the attention of the General Manager or the Board any information that, if true, would constitute: a work-related violation by a Board member or District employee of any law or regulation, gross waste of District funds, gross abuse of authority, a specified and substantial danger to public health or safety due to an act or omission of a District official or employee, use of a District office or position or of District resources for personal gain, or a conflict of interest of a District Board member or District employee.

C. A Board member will not use or threaten to use any official authority or influence to effect any action as a reprisal against another District Board member or District employee who reports or otherwise brings to the attention of the General Manager any information regarding the subjects described in this section.~~ (Labor Code Section 1102.5 and following; Government Code Sections 53298 and 53298.5.)~~

2100.21 The members of the Board of Directors, and persons elected but who have not yet assumed office as members of the Board, will fully comply with the provisions of the State's open meeting law for public agencies (the Brown Act).~~(Government Code Sections 54950 and following, and 54952.1 and 54959.)~~

2100.22 The members of the Board of Directors will fully comply with provisions related to compensation and expense reimbursement as set forth elsewhere in the Manual of District Policies and Procedures (see Policy ~~No~~Nos. 2040 and 2060).

~~2100.23 Changes in the compensation of Board members will require the approval of the Board during a regular meeting of the Board held at least 60 days prior to the effective date of the change (Water Code Sections 20200 and following; also see Policy No. 2040).~~

~~2100.24 A Board member will not include false or misleading information in a candidate's statement for a general District election filed pursuant to Section 13307 of the Elections Code (Election Code Section 13313).~~

~~2100.25~~ ~~The needs of the District's constituents and employees shall be among the highest priorities of the Board of Directors.~~

~~2100.26~~2100.24 Differing viewpoints are welcome in the decision-making process. Individuals have the right to disagree with ideas and opinions, however, once the Board of Directors takes action, Director or Officers are encouraged to support the majority decision and commit to implementation of said action.

~~2100.27~~2100.25 Directors and Officers will observe basic courtesies in order to maximize the performance of the Board of Directors by respecting the dignity, style, values, and opinions of others; emphasizing the positive side of all interactions; encouraging responsiveness and attentive listening to all dialogue; and committing to focus on issues and not personalities.

~~2100.28~~2100.26 Directors and Officers are responsible for monitoring the District's progress in attaining its goals and objectives, while pursuing its mission.

~~2100.29~~ 2100.27 Directors should develop a working relationship with District Officers and the General Manager and District staff to ensure open and comfortable discussion of current issues and concerns.

~~2100.30~~2100.28 The work of the District is a team effort. All individuals are encouraged to work together in the collaborative process to assist one another in conducting the affairs of the District.

2100.50 PROCEDURES

Directors and Officers should practice the following procedures:

2100.51 When responding to constituent requests, concerns, and complaints, Directors should be courteous and positive in their response. Routing of questions to the General Manager for action is recommended.

2100.52 In addressing concerns for safety or hazard related items, direct all inquiries to the General Manager or to the District office. Emergency situations should be reported to the District office immediately.

2100.53 Issues are required to be brought to the attention of the Board of Directors as a whole, rather than to selected members individually.

2100.54 The General Manager should be consulted in seeking clarification for policy related items, especially those involving personnel, finances, and legal action.

2200.00 OFFICERS OF THE DISTRICT

The offices of Assessor, Collector, Treasurer, ~~(Water Code Section 21266)~~ and the position of Secretary are recognized as Officers of the District.

The office of Assessor and the office of Collector shall be consolidated into one office and titled Assessor / Collector ~~(21120)~~.

2200.10 Appointment of Officers

The following District offices shall be filled by appointment by the Board of Directors to serve at the pleasure of the Board ~~(21123)~~:

Assessor / Collector

Treasurer

Secretary

~~2200.11 Deputy of the Assessor / Collector (21186, 21187, 21188)~~

~~The Assessor / Collector may appoint one (1) Deputy Assessor / Collector to assist with the discharge of the duties of the Assessor / Collector. The Deputy Assessor / Collector shall hold office at the pleasure of the Assessor / Collector. Said appointment shall be subject to confirmation by the Board of Directors.~~

~~2200.12 Deputy of the Treasurer (21186, 21187)~~

~~The Treasurer may appoint one (1) Deputy Treasurer to assist with the discharge of the duties of the Treasurer. The Deputy Treasurer shall hold office at the pleasure of the Treasurer. Said appointment shall be subject to confirmation by the Board of Directors.~~

~~2200.13 Deputy of the Secretary~~

~~The Secretary may appoint one (1) Deputy Secretary to assist with the discharge of the duties of the Secretary. The Deputy Secretary shall hold office at the pleasure of the Secretary. Said appointment shall be subject to confirmation by the Board of Directors.~~

~~Each December or as otherwise necessary, the Board of Directors shall appoint or reconfirm the appointment of District Officers and Deputy Officers.~~

~~2200.15 Officer's Bonds~~

~~Appointments shall be conditional upon the ability to be bondable or insurable as required by the Water Code in the following amounts:~~

~~Assessor / Collector~~	~~$ 20,000~~
~~Treasurer~~	~~$100,000~~
~~Secretary~~	~~$5,000~~

~~Bonds or equivalent employee theft/dishonesty coverage shall be obtained and paid for by the District.~~

~~Bonds are not required for the Deputy Assessor / Collector, Deputy Treasurer and Deputy Secretary.~~

2200.20 Duties of ~~the Assessor / Collector~~Officers

The offices established by this policy shall perform all duties as prescribed by applicable law or District policy.

~~The District Assessor / Collector shall be responsible for the District's assessment roll and collections and shall prepare and certify the monthly Collector's Report. Other duties may be assigned by the Board of Directors including, but not limited to, the following:~~

1. ~~Is in responsible charge for the preparation, certification, and submittal to the Board of Directors of a monthly Collector's Report. Said Collector's Report shall include receipts for flat rate water and irrigation installments, redemptions, water charges, and miscellaneous income.~~

2. ~~Is in responsible charge for review of charges assessed and prepares Cancellation/Refund Letter documenting charges to be canceled or refunded by action of the Board of Directors pursuant to Cancellation of Current Year Water Charges Policy 7315 and Refunds of Prior Year Over Payments Policy 7320.~~

3. ~~Publishes notices of assessments and delinquencies as required by the Water Code.~~

4. ~~Executes Certificates of Sale and Certificates of Redemption as necessary.~~

~~2200.30 Duties of the Treasurer~~

~~The Treasurer will install and maintain a system of auditing and accounting that will completely and at all times show the financial condition of the District in accordance with generally accepted accounting principles and legal requirements. The District Treasurer shall be responsible for receipt, allocation, and investment of District funds in compliance with Investment of District Funds Policy 6300. Other duties may be assigned by the Board of Directors including, but not limited to, the following:~~

1. ~~Is in responsible charge for the preparation, certification, and submittal to the Board of Directors of a monthly Treasurer's Report. Said Treasurer's Report shall include reconciliation and analysis of District receipts, disbursements, depositories, investments, and funds including, but not limited to the following:~~

   ~~Checking Account(s)~~

   ~~Savings Account(s)~~

   ~~Local Agency Investment Fund (LAIF)~~

   ~~Investments~~

~~Funds and Reserve Accounts~~

2. ~~Acknowledges receipt from the Assessor / Collector of the sums set forth on the Collector's Report.~~

3. ~~As directed by the Board of Directors, is responsible for the allocation and placement of the financial resources.~~

4. ~~Routinely transfers funds to and between the checking, savings, and LAIF accounts to facilitate payment of payroll and monthly accounts payable.~~

5. ~~Prepares financial policies, plans, and recommendations for submittal to the Board of Directors for consideration and approval.~~

6. ~~Participates in a review of the annual audit and acts, as directed by the Board of Directors, upon the recommendations offered by the auditor.~~

7. ~~In the absence of the Secretary and Deputy Secretary, may attest to checks for payment totaling $8,000.00 and greater.~~

~~2200.40~~ ~~Duties of the Secretary~~

~~The District Secretary certifies and maintains custody of Ordinances, Resolutions, Meeting Minutes, and other official District actions and oaths taken or subscribed to by the Board of Directors and other Officers of the District. Other duties may be assigned by the Board of Directors including, but not limited to the following:~~

1. ~~Prepares and certifies meeting notices prior to posting.~~

2. ~~Notifies the media in accordance with the requirements of the Brown Act relating to open meeting law.~~

3. ~~Adjourns meetings in the absence of any Directors.~~

4. ~~Maintains custody of the District seal.~~

5. ~~Attests, certifies, and/or countersigns Ordinances, Resolutions, Collector's and Treasurer's Reports, Meeting Minutes, and checks for payment totaling $8,000.00 and greater.~~

6. ~~Administers and files Oaths, Affirmations, and Acknowledgments.~~

7. ~~Receives Petitions.~~

8. ~~Accepts correspondence on behalf of District.~~

9. ~~Receives and opens sealed bids.~~

~~10. In the event that the offices of President and Vice President are simultaneously vacant, the Secretary shall assume the Chair so that the Directors may elect a President.~~

2200.50 Officers' and Deputy Officers' Compensation

Notwithstanding compensation received as employees of the District, Officers and Employees appointed pursuant to this policy shall not receive any additional compensation for their duties as District Officers and/or Deputy Officers.

~~2210.00 POST OFFER OF APPOINTMENT BACKGROUND INVESTIGATION~~

~~In order to be eligible for appointment as a District Officer, potential candidates for the District Officer positions specified in this section must consent in writing to a Post Offer of Appointment Background Investigation. This investigation will be at the District's expense by an investigator designated by the District and may include one or more of the following investigations: criminal court records; department of motor vehicles records; social security verification report; civil court index check; individual consumer credit check; bankruptcies, tax liens and judgments; sex offender registry; education and credential verification; employment verification; professional references; and workers' compensation history. Final offers of appointment are contingent upon results of this investigation.~~

~~The following District Officer positions will be subject to Post Offer of Appointment Background Investigations:~~

~~Assessor / Collector~~

~~Deputy Assessor / Collector~~

~~Treasurer~~

~~Deputy Treasurer~~

~~Secretary~~

~~Deputy Secretary~~

~~Said investigations will apply to all appointments to any of the positions specified above including those District Officers moving from one specified District Officer position to another specified District Officer position or combination thereof.~~

~~Said investigations will not apply to annual re-appointments to the any of the positions specified above.~~

~~The Board of Directors may waive the requirement for a Post Offer of Appointment Background Investigation if such an investigation has been undertaken within the prior twelve (12) months.~~

~~2400.00 SELECTION AND EMPLOYMENT OF THE GENERAL MANAGER~~

~~The Board of Directors has the authority to select, employ, set terms and conditions, and fix compensation for employment of the General Manager. The General Manager shall serve at the pleasure of the Board of Directors.~~

INDEX

POLICY NUMBER	POLICY TITLE	DATE ADOPTED	DATE AMENDED	PREVIOUS AMENDMENTS
2000	Authority and responsibility of Board of Directors	MARCH 7, 1995	NOVEMBER 17, 2021	(1)JANUARY 7, 2003; (2) DECEMBER 14, 2010
2005	Members of the Board of Directors	MARCH 7, 1995	NOVEMBER 17, 2021	(1) JANUARY 7, 2003
2010	President and Vice President of The Board of Directors	MARCH 7, 1995	NOVEMBER 17, 2021	(1) JANUARY 5, 1999
2020	Attendance at Board of Directors Meetings	MARCH 7, 1995	NOVEMBER 17, 2021	(1) JANUARY 7, 2003
2040	Compensation and Reimbursement for Board of Directors	MARCH 7, 1995	NOVEMBER 17, 2021	(1) SEPTEMBER 14, 2004
2060	Educational and Training Functions	MARCH 7, 1995	NOVEMBER 17, 2021	(1) JANUARY 7, 2003; (2) DECEMBER 14, 2010; (3) DECEMBER 18, 2019; (4) FEBRUARY 19, 2020; (5) JUNE 17, 2020
2080	Benefits for Directors and Officers	MARCH 7, 1995	NOVEMBER 3, 1998	
2090	Bonds for Directors and Officers	MARCH 7, 1995	NOVEMBER 3, 1998	
2100	Standards of Conduct for	MARCH 7, 1995	NOVEMBER 17, 2021	(1) AUGUST 10, 2004

	Directors and Officers			
2200	**Officers of the District**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) AUGUST 10, 2004**

ATTACHMENT 2

Red-Lined Board Meeting Policies (3000 Series)

CITRUS HEIGHTS WATER DISTRICT
POLICIES AND PROCEDURES MANUAL

3000.00 BOARD MEETINGS

The Board of Directors shall conduct the business of the District via regular, special, or emergency~~, special or adjourned~~ meetings, which may be adjourned as provided by law. All meetings of the Board of Directors shall be open to the public except when the Board is convened in ~~Closed Session~~closed session as authorized under provisions of law.

3000.01 Regular Meetings

The Board of Directors shall hold one (1) regular meeting per month. The regular meeting shall be held on the ~~second Tuesday~~third Wednesday of each month beginning at 6:30 PM.

If at any time any regular meeting falls on a District holiday, such regular meeting shall be held on the next business day. The Board of Directors may, by motion entered into its minutes, change the meeting date when it is known that a quorum will not be present. Such a change shall be noticed and posted in the same manner as required for a special meeting.

3000.02 Special Meetings

Special meetings of the Board of Directors may be called by the President of the Board of Directors or by a majority of the Board of Directors whenever required for District business.

3000.03 Emergency ~~Special~~ Meetings

Emergency ~~special~~ meetings of the Board of Directors may be called by the President of the Board of Directors, by any Director in the absence of the President, or by the General Manager or any District officer in the absence of all Directors.

An emergency situation means a crippling disaster which severely impairs/disrupts or has the potential to severely impair or disrupt public facilities, public health, and/or public safety causing the need for prompt action.

3000.04 Adjourned Meetings

The Board of Directors may, by majority vote of those present, adjourn any Board of Directors meeting, whether regular, special, or emergency ~~special, or adjourned~~, at any place in the agenda to any time and place specified in the order of adjournment. The Secretary shall declare the meeting adjourned to a stated time and place and shall, within twenty-four

(24) hours, cause a written notice of adjournment to be posted at or near the place that the meeting was held.

3000.10 BOARD OF DIRECTORS MEETING NOTICE

All meetings of the Board of Directors shall be noticed and posted pursuant to appropriate Government Codes including the Ralph M. Brown Act.

3000.20 BOARD OF DIRECTORS MEETING LOCATION

Meetings of the Board of Directors shall be held in the room known as the Board Room located in the District's administrative office at 6230 Sylvan Road in Citrus Heights, CA. If for reason of fire, flood, earthquake, or other unusual condition, it shall be unsafe or impractical to meet at the aforementioned location, the meetings shall be held at a location designated by the President of the Board of Directors within the boundaries of the District. If there are no appropriate facilities within the boundaries of the District, the Board of Directors will meet at the closest adequate meeting facility.

Meetings may be held outside the District boundaries to participate in discussions of multi-agency significance. Such meetings must be held within the jurisdiction of one of the participating agencies and shall be appropriately noticed and posted.

The General Manager shall insure that physical facilities for said meetings are accessible, functional and appropriate.

~~3000.30 REVIEW OF BOARD OF DIRECTORS MEETING POLICIES AND PROCEDURES~~

~~Adopted Board of Directors Meeting Policies and Procedures shall be reviewed by the Board of Directors every four years or more frequently as necessary to assure compliance with applicable laws, ethical and appropriate practices, and relevance to current District operations. Such a review could cause a policy and procedure to be readopted/reaffirmed without change, amended or discontinued.~~

3010.00 BOARD OF DIRECTORS MEETING AGENDA

An agenda containing a brief general description of each item to be transacted or discussed shall be prepared for all meetings of the Board of Directors.

3010.10 Agenda Preparation -- General

The General Manager or his/her designee shall prepare the agendas for Board of Directors meetings. Agendas shall be based upon items requested by any member of the Board of Directors and/or as determined by the General Manager.

3010.11 Submission of Agenda Items

In order to meet agenda preparation, posting and distribution requirements, all proposed agenda items for regular Board of Directors meetings shall be submitted to the General Manager no later than seven (7) business days prior to the meeting day, unless otherwise authorized by the General Manager.

~~3010.12~~ ~~Submission of Agenda Items by the Public~~

~~Any member of the public may request that a matter directly related to District business be placed on the agenda of a regularly scheduled meeting of the Board of Directors, subject to the following conditions:~~

~~a. The request must be in writing and be submitted to the General Manager together with supporting documents and information, if any, at least seven (7) business days prior to the date of the Board of Directors meeting, unless otherwise authorized by the General Manager.~~

~~b. The General Manager shall be the sole judge of whether the public request is or is not a matter directly related to District business.~~

~~c. Matters that are legally a proper subject for consideration by the Board in closed session will not be accepted under this Policy.~~

~~d. The Board of Directors may place limitations on the total time to be devoted to a public request item at any Board of Directors meeting, and may limit the time allowed for any one person to speak on the item at the meeting.~~

~~3010.13~~ ~~Delivery of Agendas~~

~~Agendas for regular Board of Directors meetings, including staff reports and supporting documentation for items on the agenda, shall be delivered to all members of the Board of Directors as soon as practicable before the meeting date, typically at least four (4) calendar days prior to the date of the regular meeting. In circumstances where delivery of the agenda or selected items four days prior to the meeting is not possible, the agenda or selected items shall be delivered to all members of the Board of Directors at the earliest possible time prior to the meeting.~~

3010.14 Posting of Agendas

~~At least seventy-two (72) hours prior to the time of all regular meetings of the Board of Directors, an agenda shall be posted at the entrance to the District business office where it may be viewed by members of the public. A copy of the binder containing the agenda and all agenda reports will be maintained in the public lobby of the District business office where it may be viewed by the public during normal business hours. The agenda for a special meeting shall be similarly posted at least twenty-four (24) hours~~

~~before the meeting. Agendas shall also be posted to the District's website as soon as practicable prior to the meeting. The Board of Directors does not have to act upon or discuss all matters which are included on the agenda, but no action shall be taken on any item not appearing on the posted agenda, except as otherwise provided by law. The agenda shall also be posted at District building locations as determined by the General Manager for employee information purposes.~~

~~3010.15~~ ~~Distribution of Agendas~~

~~Copies of agendas will be distributed on a regular basis, free of charge, to the following: representatives of the news media, Fair Oaks Water District, Orange Vale Water Company; San Juan Water District, the City of Citrus Heights, the Citrus Heights Regional Chamber of Commerce and the Regional Water Authority. Upon request, former members of the Board of Directors of the Citrus Heights Water District may also receive copies of agendas on a regular basis, free of charge. Persons or organizations other than those specified herein who request to receive paper copies of agendas on a regular basis may be required to pay the yearly Agenda Charge as specified in the current schedule of District Rates, Charges and Fees. Any person or organization may elect to receive, free of charge, distribution of a digitized version of the agenda via electronic mail free of charge upon written request to the District. Copies of agendas with accompanying report materials shall be made available at the Board of Directors meeting for the use of visitors, and shall also be made available prior to the Board of Directors meeting at District building locations as determined by the General Manager for employee information purposes.~~

~~3010.16~~ ~~Agenda Preparation -- Meeting Procedures~~

~~The agenda shall include a statement giving information on the general meeting procedures and on the public's right to address the Board of Directors on an item before or during the consideration of any agenda item to be considered by the Board of Directors, or on any item within the jurisdiction of the Board of Directors.~~

~~3010.20~~ ~~Order of Business on Agenda~~

~~The order of business shall generally be as categorized below; however, the Presiding Officer may take any item of business out of order at his/her own volition or at the request of another member of the Board of Directors or staff member. The typical categories and order of business on the agenda are as follows:~~

~~a.~~ ~~Call to Order~~

~~b.~~ ~~Visitors~~

~~c. Public Comment~~

~~d. Consent Calendar~~

~~1. Minutes~~

~~2. Assessor / Collector's Report~~

~~3. Cancellation / Refund Letter~~

~~4. Treasurer's Report~~

~~5. Bills to be Paid~~

~~6. Other Items of a Routine, Non-Controversial Nature~~

~~e. Old Business~~

~~f. New Business~~

~~g. Project Manager's Report~~

~~h. Operations Manager's Report~~

~~i. Directors' Reports~~

~~j. Assistant General Manager's Report~~

~~k. General Manager's Report~~

~~l. Correspondence~~

~~m. Future Meeting Dates~~

~~n. Closed Session (as required)~~

~~o. Adjournment~~

~~p. Certification~~

~~3010.30 Nature of Business on the Agenda~~

~~The nature of business on the agenda to be conducted shall generally fall into one of three categories. The agenda shall state the intended nature of action for each item of business, using one of the following three categories:~~

~~a. Action Item. A voting action of the Board of Directors is contemplated as part of the business described. Action shall be taken as specified in Policy 3040 regarding Board of Directors Actions and Decisions.~~

~~b. Discussion Item. The item is placed on the agenda for review and discussion by the Board of Directors. A voting action of the Board of Directors is not contemplated as part of the business described.~~

~~c. Information Item. The item is placed on the agenda solely for the purpose of informing the Board of Directors. Discussion by the Board of~~

~~Directors may ensue, however a voting action of the Board of Directors is not contemplated as part of the business described.~~

~~3010.40~~ ~~Category Definitions and/or Procedures~~

~~The following is a general definition and/or procedure for each of the items included under the order of business on the agenda:~~

~~a. Call to Order. The Presiding Officer, at the time set for the meeting, shall call the Board of Directors meeting to order.~~

~~b. Visitors. The Presiding Officer may, at his/her discretion, recognize and greet members of the public and/or other visitors at the meeting.~~

~~c. Public Comment. Members of the public shall be invited to speak on any matter within the jurisdiction of the Board of Directors.~~

~~d. Consent Calendar. All items on the Consent Calendar may be approved without discussion upon motion duly made, seconded and approved by a majority of the Directors present. At the request of a Director, a member of the staff, or a member of the public, an item on the Consent Calendar may be removed from the Consent Calendar and placed on the agenda with other items for discussion and consideration by the Board of Directors. Items that may be included on the Consent Calendar are: Minutes of prior Board of Directors Meetings; Assessor / Collector's Report; Cancellation / Refund Letter; Treasurer's Report; Bills to be Paid; and other items of a routine and/or non-controversial nature.~~

~~e. Old Business. Items of business under this section may be approved with or without discussion upon motion duly made, seconded and approved by a majority of the Directors present. Items presented in this section are items of business that have been considered or reviewed by the Board of Directors during at least one prior Board of Directors meeting. All items of business not included in other specified sections of the agenda may be considered under this section, including public hearings.~~

~~f. New Business. Items of business under this section may be approved with or without discussion upon motion duly made, seconded and approved by a majority of the Directors present. Items presented in this section are items of business that have not previously been considered or reviewed by the Board of Directors. All items of business not included in other specified sections of the agenda may be considered under this section, including public hearings.~~

~~g. Project Manager's Reports. Items under this section are presented by the Project Manager for the purpose of providing information on activities within his/her areas of responsibility.~~

~~h. Operations Manager's Reports. Items under this section are presented by the Operations Manager for the purpose of providing information on activities within his/her areas of responsibility.~~

~~i. Directors' Reports. Items under this section are presented by the individual members of the Board of Directors for the purpose of providing information on activities related to the business of the District. Typical items include reports on meetings and educational functions attended by the individual Directors.~~

~~j. Assistant General Manager's Report. Items under this section are presented by the Assistant General Manager for the purpose of providing information on activities within his/her areas of responsibility.~~

~~k. General Manager's Report. Items under this section are presented by the General Manager for the purpose of providing information on activities within his/her areas of responsibility.~~

~~l. Correspondence. Items under this section are presented for the purpose of providing information on significant correspondence received by the District related to the business of the District.~~

~~m. Future Meeting Dates. Future meetings of the Board of Directors are noted in this section of the agenda.~~

~~n. Closed Sessions. Closed sessions shall be held only as permitted by the Ralph M. Brown Act. Except as required by law, all proceedings in closed session shall remain confidential. The agenda shall identify the section of the Government Code under which the closed session is being conducted.~~

~~o. Adjournment. The Presiding Officer may declare the~~ The agenda or notice for each meeting ~~adjourned~~shall be posted as provided by law.

~~p. Certification. Certification by the District Secretary that the meeting agenda was duly and properly posted in accordance with the Government Code.~~

~~3010.70 Public Hearings~~

~~Public hearings may be conducted during the course of regular or special meetings of the Board of Directors. All public hearings conducted by the Board of Directors shall be noticed and posted pursuant to appropriate Government Codes including the Ralph M. Brown Act. The procedure for public hearings shall generally be as follows:~~

~~a. Opening of the hearing by the Presiding Officer.~~

~~b. Verification of notice of the hearing by the Secretary.~~

~~c. A description of the purpose of the hearing shall be given and staff/consultants shall present such information, exhibits and recommendations as may be appropriate.~~

~~d. The Secretary shall indicate or summarize all protests or correspondence that has been received on the issue to be heard.~~

~~e. Hearing of persons speaking in favor of the issue; followed by hearing of persons speaking in opposition to the issue. Time limits for persons speaking may be imposed at the discretion of the Presiding Officer as specified in Policy 3030 regarding Board of Directors Meeting Conduct.~~

~~f. Members of the Board of Directors and staff may attempt to answer such questions from members of the public as may be germane to the issues of the hearing.~~

~~g. Members of the Board of Directors and staff, after recognition by the Presiding Officer, may ask questions of members of the public who speak.~~

~~h. Members of the Board of Directors shall refrain from discussing the issues among themselves or expressing their personal views until all of the testimony has been heard and the hearing has been closed.~~

~~i. The Presiding Officer shall continue or close the hearing.~~

3020.00 PRESIDING OFFICER

3020.10 Presiding Officer -- Board of Directors Meetings

The President of the Board of Directors shall serve as Presiding Officer at Board of Directors meetings. The Presiding Officer conducts the meeting of the Board of Directors, preserving order and decorum. He/she states each motion under consideration by the Board of Directors and announces each decision of the Board of Directors. He/shedecides all questions of order, subject to appeal to the Board of Directors, in which eventthe majority of the Board of Directors shall govern and determine the question of order.

3020.20 Presiding Officer -- Rights

The Presiding Officer shall have the same rights as the other members of the Board of Directors in voting, introducing motions, resolutions and ordinances and any discussionof questions that follow these actions.

3020.30 Presiding Officer -- Absence, Order of Succession

In the absence of the President, the Vice-President shall preside. Upon the arrival of the

President, the duties of Presiding Officer shall be relinquished to the President at the first opportunity.

3020.40 Presiding Officer -- Approval of Official Documents

The Presiding Officer shall sign all documents approved or adopted at the Board of Directors meeting such as resolutions, ordinances, agreements, and contracts unless otherwise delegated.

3030.00 BOARD OF DIRECTORS MEETING CONDUCT

Meetings of the Board of Directors shall be conducted by the Presiding Officer in a manner consistent with the policies of the District. The most recent edition of ~~Robert's~~Rosenberg's Rules of Order~~, Revised~~ may also be used as a general guideline for meeting protocol. District policies shall prevail whenever they are in conflict with ~~Robert's~~Rosenberg's Rules of Order~~, Revised~~.

3030.10 Meeting Times

All meetings of the Board of Directors shall commence on or after the time stated on the posted agenda. At the sole discretion of the Presiding Officer, the beginning of the meeting may be delayed pending the anticipated arrival of absent members of the Board of Directors.

3030.20 Nature of Board of Directors Meeting Conduct

The conduct of Board of Directors meetings shall, to the greatest extent possible, enable Directors to consider issues to be addressed, weigh evidence related to the issues, and make sound decisions intended to address the issues. The conduct of meetings shall also enable Directors to receive, consider and take any needed action with respect to reports of the status of District operations.

~~3030.30 Public Participation~~

~~Provisions for permitting any individual or group to address the Board of Directors concerning any item on the agenda of a special meeting, or to address the Board of Directors at a regular meeting on any subject that lies within the jurisdiction of the Board of Directors, shall be as follows:~~

~~3030.31 At the discretion of the Presiding Officer, speakers may be limited to five (5) minutes each, and a maximum of thirty (30) minutes to each subject matter.~~

~~3030.32 No boisterous conduct shall be permitted at any Board of Directors meeting. Persistence in boisterous conduct is grounds for the Presiding Officer to terminate that person's privilege of address.~~

~~3030.33 No oral presentation shall include charges or complaints against any District employee, regardless of whether or not the employee is identified in the presentation by name or by another identifying reference. All charges or~~

~~complaints regarding District employees shall be submitted to the Board of Directors through the General Manager.~~

3030.40 Disruption of Board of Directors Meetings

Willful disruption of any meeting of the Board of Directors shall not be permitted. If the Presiding Officer finds that there is willful disruption of any meeting of the Board of Directors, he/she may order the room cleared and subsequently conduct the Board of Directors' business without the audience present.

3030.41 After clearing the meeting room, the Presiding Officer may permit those persons who, in his/her opinion, were not responsible for the willful disruption to re-enter the meeting room.

3030.42 Duly accredited representatives of the news media, whom the Presiding Officer finds not to have participated in the disruption, shall be admitted to the remainder of the Board of Directors' meeting.

~~3040.00 BOARD OF DIRECTORS ACTIONS AND DECISIONS~~

~~Actions by the Board of Directors include, but are not limited to, the following:~~

~~3040.01 Adoption or rejection of a motion.~~

~~3040.02 Adoption or rejection of a resolution.~~

~~3040.03 Adoption or rejection of an ordinance.~~

~~3040.04 Adoption or rejection of regulations or policies.~~

~~3040.05 Approval or rejection of any contract or expenditure.~~

~~3040.06 Approval or rejection of any proposal which commits District funds or facilities, including employment and dismissal of personnel.~~

~~3040.07 Approval or disapproval of matters that require or may require the District or its employees to take action and/or provide services.~~

~~3040.10 Board of Directors Majority Needed for Action~~

~~Action can only be taken by the vote of the majority of the Board of Directors. Two (2) Directors represent a quorum for the conduct of business. Actions taken at a meeting where only a quorum is present, therefore, require the votes of both Directors present to be effective.~~

~~3040.11 A member abstaining in a vote is considered as absent for that vote. Therefore, if only two (2) members of the Board of Directors are present at a meeting and one member abstains from a particular~~

~~action, no action can be taken since a quorum does not exist for that particular action under consideration.~~

~~3040.20 Board of Directors Directives to Staff~~

~~The Board of Directors may give directions which are not formal action. Such directions do not require a formal procedural process. Such directions include the Board of Directors directives and instructions to the General Manager.~~

~~3040.21 The Presiding Officer shall determine by a consensus a Board of Directors directive and shall state it for clarification. Should any Director challenge the statement of the Presiding Officer, a voice vote may be requested.~~

~~3040.22 A formal motion may be made to place a disputed directive on a future agenda for Board of Directors consideration, or to take some other action (such as refer the matter to the General Manager for review and recommendations, etc.).~~

~~3040.23 Informal action by the Board of Directors is still a Board of Directors action and shall only occur regarding matters that appear on the agenda for the Board of Directors meeting during which the informal action is taken.~~

3060.00 MINUTES OF BOARD OF DIRECTORS MEETINGS

The Secretary of the Board of Directors shall keep minutes of all regular meetings, special meetings, and emergency ~~special meetings and adjourned~~ meetings of the Board of Directors. The Secretary may delegate to keeping, transcribing and preparation of the minutes to a member of the staff.

3060.10 Procedure for Minutes of Board of Directors Meetings

3060.11 Draft copies of meeting minutes shall be made for distribution to Directors with the agenda for the next regular Board of Directors meeting or as soon as practicable.

3060.12 Approved meeting minutes shall be entered into the official District minute book and signed by the Presiding Officer and the Secretary for the meeting being approved.

3060.13 The official minutes of the regular, special, and emergency ~~special and adjourned~~ meetings of the Board of Directors shall be kept in a location secure from damage or destruction by fire, theft, water or other means. A digitized version of the official minutes that is used to print the approved meeting minutes for the minute book shall be maintained in a form suitable for reproduction or viewing via computer or similar devices.

~~3060.20 Motions, Resolutions and Ordinances~~

~~Motions, resolutions or ordinances shall be recorded as having passed or failed, and individual votes of Directors will be recorded unless the action was unanimous.~~

~~3060.21 All resolutions and ordinances adopted by the Board of Directors shall be numbered consecutively starting new at the beginning of each calendar year.~~

~~3060.30 Reference to Agenda Items~~

~~Minutes shall be referenced to the agenda by item for ease of tracking business conducted.~~

~~3060.40 Abstract of Written Statements~~

~~Any Director may request an abstract of his/her written statement, either in support or in opposition of any matter before the Board of Directors, entered in the minutes.~~

3060.50 Closed Sessions

Minutes shall not be kept of discussions held in closed session. However, the minutes shall reflect the section of the Government Code under which the closed session was conducted, and any actions taken during the closed session as reported in open session.

~~3060.60 Distribution of Minutes~~

~~Copies of minutes will be distributed on a regular basis, free of charge, to the following: representatives of the news media, Fair Oaks Water District, Orange Vale Water Company, San Juan Water District, the City of Citrus Heights, the Citrus Heights Regional Chamber of Commerce and the Regional Water Authority. Upon request, former members of the Board of Directors of the Citrus Heights Water District may also receive copies of minutes on a regular basis, free of charge. Any person or organization may elect to receive, free of charge, distribution of a digitized version of the minutes via electronic mail free of charge upon written request to the District. A digitized copy of the approved minutes shall also be posted to the District's website as soon as practicable following adoption. Copies of minutes shall be posted at District building locations as determined by the General Manager for employee information purposes.~~

~~3070.00 RECORDING OF BOARD OF DIRECTORS MEETINGS~~

~~An audio recording of any meeting of the Board of Directors may be made at the request of the General Manager/Secretary or any Director when the majority of the Directors present approve such request.~~

~~3070.10 Announcement of Recording~~

~~The Presiding Officer will announce the fact that an audio recording is being made at the beginning of the Board of Directors meeting. The recording device shall be placed in plain view of those present at the meeting, to the extent possible.~~

~~3070.20 Retention of Board of Directors Meeting Recordings~~

~~Audio recordings of Board of Directors meetings shall be retained until the minutes of that meeting are approved. Following Board of Directors approval of the minutes of the meeting, the recording shall be erased or deleted, and the recording media reused or discarded as appropriate. Until such time as the minutes of the meeting are approved and the recording media is erased, the recordings of Board of Directors meetings are public records and shall be made available for public inspection upon request.~~

~~3070.30 Recording of Closed Sessions~~

~~Closed sessions shall not be recorded unless a request to record a particular session is made by the General Manager/Secretary or any Director and is approved by a majority of the Board of Directors. Audio recordings of closed sessions are not for public information unless otherwise dictated by law.~~

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POLICY NUMBER	POLICY TITLE	DATE ADOPTED	DATE AMENDED	PREVIOUS AMENDMENTS
3000	BOARD OF DIRECTOR MEETINGS	APRIL 15, 1996	NOVEMBER 17, 2021	(1) APRIL 3, 2001; (2) DECEMBER 14, 2010;
3010	BOARD OF DIRECTORS MEETING AGENDA	MARCH 18, 1997	NOVEMBER 17, 2021	(1) JULY 20, 1999; (2) FEBRUARY 14, 2012
3020	PRESIDING OFFICER	MARCH 18, 1997	FEBRUARY 14, 2012	(1) FEBRUARY 2, 1999
3030	BOARD OF DIRECTORS MEETING CONDUCT	MARCH 18, 1997	NOVEMBER 17, 2021	(1) FEBRUARY 2, 1999; (2) FEBRUARY 14, 2012

3060	MINUTES OF BOARD OF DIRECTORS MEETINGS	MARCH 18, 1997	NOVEMBER 17, 2021	(1) FEBRUARY 2, 1999; (2) FEBRUARY 14, 2012

Summary report: **Litera® Change-Pro for Word 10.8.2.11 Document comparison done on 10/12/2021 6:01:20 PM**	
Style name: Default Style	
Intelligent Table Comparison: Active	
Original DMS: iw://imanage/iManage/34445313/1	
Modified DMS: iw://imanage/iManage/34442157/1	
Changes:	
Add	12
~~Delete~~	127
~~Move From~~	0
Move To	0
Table Insert	1
~~Table Delete~~	0
Table moves to	0
~~Table moves from~~	0
Embedded Graphics (Visio, ChemDraw, Images etc.)	0
Embedded Excel	0
Format changes	0
Total Changes:	140

ATTACHMENT 3

Memorandum on Parliamentary Procedure

BEST BEST & KRIEGER LLP
ATTORNEYS AT LAW

Memorandum

To: Board of Directors
From: Best Best & Krieger LLP
Date: August 11, 2021
Re: Procedure at Board Meetings

SHORT OVERVIEW

As part of the proposed updates to the 2000/3000 policies, we are recommending that the Board consider changing its default procedural rules from *Robert's Rules of Order* to *Rosenberg's Rules of Order*. This memorandum provides some context for this proposed change by briefly discussing parliamentary procedure, CHWD's current practice, some advantages to using *Rosenberg's Rules*, and a brief overview of *Rosenberg's Rules*.

ANALYSIS

I. Background on Parliamentary Rules

Parliamentary rules of procedure are used to handle CHWD business in a quick and orderly fashion.[1] A board of directors may adopt and change its own procedural rules, as long as those rules do not violate the federal or state constitutions or statutory provisions.[2] The board of directors may also abolish, suspend, modify, or waive its own procedural rules.[3] Failure to observe a procedural rule does not necessarily invalidate an action which otherwise conforms to applicable regulations.[4]

II. Existing Procedural Rules

The Board of Directors currently use the latest edition of *Robert's Rules* as its procedural guide. *Robert's Rules* is an excellent guidebook for parliamentary procedure—it has widespread use, broad coverage, and many excellent resources to help simplify the rules. However, *Robert's Rules* are very long (over 300 pages if converted to 8 1/2" x 11" paper), making them intimidating and very difficult to master. Not surprisingly, the content is dense and can be excessively complicated especially for small bodies, such as boards of directors. For these reasons, many agencies have considered alternatives to *Robert's Rules*.

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[1] *City of Pasadena v. Paine* (1954) 126 Cal.App.2d 93.
[2] *Nevens v. City of Chino* (1965) 233 Cal.App.2d 775; *City of Pasadena v. Paine* (1954) 126 Cal.App.2d 93.
[3] *City of Pasadena v. Paine* (1954) 126 Cal.App.2d 93.
[4] *City of Pasadena v. Paine* (1954) 126 Cal.App.3d 93, 96.

III. Rosenberg's Rules of Order

To help address concerns with the complexity of *Robert's Rules*, David Rosenberg, a Superior Court Judge in Yolo County, came up with his own set of procedural rules, aptly titled *Rosenberg's Rules of Order: Simplified Rules of Parliamentary Procedure for the 21st Century*.

Several city councils and boards are now using *Rosenberg's Rules* because they are short—only six type-written pages—and relatively simple. *Directors* can be expected to read *Rosenberg's Rules* and be familiar with them. A similar request to read *Robert's Rules* would be daunting and unrealistic. The League of California Cities has blessed *Rosenberg's Rules* and now publishes them on its website and encourages cities and other local agencies to use them as a resource. A full copy of *Rosenberg's Rules* is enclosed.

IV. Quick Overview of Rosenberg's Rules of Order

Please note that the following is a brief outline of Rosenberg's Rules for reference.

A. Three Basic Motions → Need simple majority to pass; open to debate.

Basic Motion: "I move that we…"

Motion to Amend: suggests changes to the basic motion.

Motion to Substitute: replaces the basic motion entirely.

B. Special Motions → Need simple majority to pass; goes directly to vote.

Motion to Adjourn: ends the meeting.

Motion to Fix a Time to Adjourn: ends the meeting at a set time.

Motion to Recess: break in the meeting; mayor sets length of the break.

Motion to Table: defers the motion under discussion to a future date.

C. Motions that Permanently Close Discussion → 2/3 majority to pass; no debate, goes directly to vote.

Motion to Limit Debate: stops debate. "I move the question."

Motion to Close Nominations: stops new nominations for a position.

Motion to Object to the Consideration of a Question: rare, stronger form of tabling; used before debate has begun.

Motion to Suspend the Rules: temporarily changes meeting rules; can be debated.

D. Motion to Reconsider → needs simple majority to pass; open to debate.

This type of motion may only be made by a director who previously voted in the majority for the item. It must be made during the same meeting (or at the very next meeting if it has been added to that agenda).

E. Meeting Interruptions → may be used at any time; mayor responds by asking councilperson to state his/her point.

Point of Privilege: points out uncomfortable surroundings; such as the room being too cold or a blowing fan interfering with a director's ability to hear.

Point of Order: points out failure to follow correct meeting procedures.

Call for Orders of the Day: points out that the discussion has strayed from the agenda.

Appeal: reverses the mayor's ruling when passed by simple majority; requires a second and can be debated.

Withdraw a Motion: used by the person making the motion; others may immediately reintroduce the motion if desired.

F. Other General Points

- All motions require a second before they can be voted on.
- Everyone must be recognized by the President before speaking.
- Abstentions do not count in a vote tally.
- A tie vote fails to pass.
- To recuse, a Director must publicly state reason for recusal and leave room during debate and vote.

JOSH NELSON

ATTACHMENT 4

Rosenberg's Rules of Order

Rosenberg's Rules of Order

REVISED 2011

Simple Rules of Parliamentary Procedure for the 21st Century

By Judge Dave Rosenberg

LEAGUE® OF CALIFORNIA CITIES

MISSION AND CORE BELIEFS

To expand and protect local control for cities through education and advocacy to enhance the quality of life for all Californians.

VISION

To be recognized and respected as the leading advocate for the common interests of California's cities.

About the League of California Cities

Established in 1898, the League of California Cities is a member organization that represents California's incorporated cities. The League strives to protect the local authority and automony of city government and help California's cities effectively serve their residents. In addition to advocating on cities' behalf at the state capitol, the League provides its members with professional development programs and information resources, conducts education conferences and research, and publishes Western City magazine.

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About the Author

Dave Rosenberg is a Superior Court Judge in Yolo County. He has served as presiding judge of his court, and as presiding judge of the Superior Court Appellate Division. He also has served as chair of the Trial Court Presiding Judges Advisory Committee (the committee composed of all 58 California presiding judges) and as an advisory member of the California Judicial Council. Prior to his appointment to the bench, Rosenberg was member of the Yolo County Board of Supervisors, where he served two terms as chair. Rosenberg also served on the Davis City Council, including two terms as mayor. He has served on the senior staff of two governors, and worked for 19 years in private law practice. Rosenberg has served as a member and chair of numerous state, regional and local boards. Rosenberg chaired the California State Lottery Commission, the California Victim Compensation and Government Claims Board, the Yolo-Solano Air Quality Management District, the Yolo County Economic Development Commission, and the Yolo County Criminal Justice Cabinet. For many years, he has taught classes on parliamentary procedure and has served as parliamentarian for large and small bodies.

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Introduction

The rules of procedure at meetings should be simple enough for most people to understand. Unfortunately, that has not always been the case. Virtually all clubs, associations, boards, councils and bodies follow a set of rules — *Robert's Rules of Order* — which are embodied in a small, but complex, book. Virtually no one I know has actually read this book cover to cover. Worse yet, the book was written for another time and for another purpose. If one is chairing or running a parliament, then *Robert's Rules of Order* is a dandy and quite useful handbook for procedure in that complex setting. On the other hand, if one is running a meeting of say, a five-member body with a few members of the public in attendance, a simplified version of the rules of parliamentary procedure is in order.

Hence, the birth of *Rosenberg's Rules of Order*.

What follows is my version of the rules of parliamentary procedure, based on my decades of experience chairing meetings in state and local government. These rules have been simplified for the smaller bodies we chair or in which we participate, slimmed down for the 21st Century, yet retaining the basic tenets of order to which we have grown accustomed. Interestingly enough, *Rosenberg's Rules* has found a welcoming audience. Hundreds of cities, counties, special districts, committees, boards, commissions, neighborhood associations and private corporations and companies have adopted *Rosenberg's Rules* in lieu of *Robert's Rules* because they have found them practical, logical, simple, easy to learn and user friendly.

This treatise on modern parliamentary procedure is built on a foundation supported by the following four pillars:

1. **Rules should establish order.** The first purpose of rules of parliamentary procedure is to establish a framework for the orderly conduct of meetings.
2. **Rules should be clear.** Simple rules lead to wider understanding and participation. Complex rules create two classes: those who understand and participate; and those who do not fully understand and do not fully participate.
3. **Rules should be user friendly.** That is, the rules must be simple enough that the public is invited into the body and feels that it has participated in the process.
4. **Rules should enforce the will of the majority while protecting the rights of the minority.** The ultimate purpose of rules of procedure is to encourage discussion and to facilitate decision making by the body. In a democracy, majority rules. The rules must enable the majority to express itself and fashion a result, while permitting the minority to also express itself, but not dominate, while fully participating in the process.

Establishing a Quorum

The starting point for a meeting is the establishment of a quorum. A quorum is defined as the minimum number of members of the body who must be present at a meeting for business to be legally transacted. The default rule is that a quorum is one more than half the body. For example, in a five-member body a quorum is three. When the body has three members present, it can legally transact business. If the body has less than a quorum of members present, it cannot legally transact business. And even if the body has a quorum to begin the meeting, the body can lose the quorum during the meeting when a member departs (or even when a member leaves the dais). When that occurs the body loses its ability to transact business until and unless a quorum is reestablished.

The default rule, identified above, however, gives way to a specific rule of the body that establishes a quorum. For example, the rules of a particular five-member body may indicate that a quorum is four members for that particular body. The body must follow the rules it has established for its quorum. In the absence of such a specific rule, the quorum is one more than half the members of the body.

The Role of the Chair

While all members of the body should know and understand the rules of parliamentary procedure, it is the chair of the body who is charged with applying the rules of conduct of the meeting. The chair should be well versed in those rules. For all intents and purposes, the chair makes the final ruling on the rules every time the chair states an action. In fact, all decisions by the chair are final unless overruled by the body itself.

Since the chair runs the conduct of the meeting, it is usual courtesy for the chair to play a less active role in the debate and discussion than other members of the body. This does not mean that the chair should not participate in the debate or discussion. To the contrary, as a member of the body, the chair has the full right to participate in the debate, discussion and decision-making of the body. What the chair should do, however, is strive to be the last to speak at the discussion and debate stage. The chair should not make or second a motion unless the chair is convinced that no other member of the body will do so at that point in time.

The Basic Format for an Agenda Item Discussion

Formal meetings normally have a written, often published agenda. Informal meetings may have only an oral or understood agenda. In either case, the meeting is governed by the agenda and the agenda constitutes the body's agreed-upon roadmap for the meeting. Each agenda item can be handled by the chair in the following basic format:

First, the chair should clearly announce the agenda item number and should clearly state what the agenda item subject is. The chair should then announce the format (which follows) that will be followed in considering the agenda item.

Second, following that agenda format, the chair should invite the appropriate person or persons to report on the item, including any recommendation that they might have. The appropriate person or persons may be the chair, a member of the body, a staff person, or a committee chair charged with providing input on the agenda item.

Third, the chair should ask members of the body if they have any technical questions of clarification. At this point, members of the body may ask clarifying questions to the person or persons who reported on the item, and that person or persons should be given time to respond.

Fourth, the chair should invite public comments, or if appropriate at a formal meeting, should open the public meeting for public input. If numerous members of the public indicate a desire to speak to the subject, the chair may limit the time of public speakers. At the conclusion of the public comments, the chair should announce that public input has concluded (or the public hearing, as the case may be, is closed).

Fifth, the chair should invite a motion. The chair should announce the name of the member of the body who makes the motion.

Sixth, the chair should determine if any member of the body wishes to second the motion. The chair should announce the name of the member of the body who seconds the motion. It is normally good practice for a motion to require a second before proceeding to ensure that it is not just one member of the body who is interested in a particular approach. However, a second is not an absolute requirement, and the chair can proceed with consideration and vote on a motion even when there is no second. This is a matter left to the discretion of the chair.

Seventh, if the motion is made and seconded, the chair should make sure everyone understands the motion.

This is done in one of three ways:

1. The chair can ask the maker of the motion to repeat it;
2. The chair can repeat the motion; or
3. The chair can ask the secretary or the clerk of the body to repeat the motion.

Eighth, the chair should now invite discussion of the motion by the body. If there is no desired discussion, or after the discussion has ended, the chair should announce that the body will vote on the motion. If there has been no discussion or very brief discussion, then the vote on the motion should proceed immediately and there is no need to repeat the motion. If there has been substantial discussion, then it is normally best to make sure everyone understands the motion by repeating it.

Ninth, the chair takes a vote. Simply asking for the "ayes" and then asking for the "nays" normally does this. If members of the body do not vote, then they "abstain." Unless the rules of the body provide otherwise (or unless a super majority is required as delineated later in these rules), then a simple majority (as defined in law or the rules of the body as delineated later in these rules) determines whether the motion passes or is defeated.

Tenth, the chair should announce the result of the vote and what action (if any) the body has taken. In announcing the result, the chair should indicate the names of the members of the body, if any, who voted in the minority on the motion. This announcement might take the following form: "The motion passes by a vote of 3-2, with Smith and Jones dissenting. We have passed the motion requiring a 10-day notice for all future meetings of this body."

Motions in General

Motions are the vehicles for decision making by a body. It is usually best to have a motion before the body prior to commencing discussion of an agenda item. This helps the body focus.

Motions are made in a simple two-step process. First, the chair should recognize the member of the body. Second, the member of the body makes a motion by preceding the member's desired approach with the words "I move … "

A typical motion might be: "I move that we give a 10-day notice in the future for all our meetings."

The chair usually initiates the motion in one of three ways:

1. **Inviting the members of the body to make a motion,** for example, "A motion at this time would be in order."
2. **Suggesting a motion to the members of the body,** "A motion would be in order that we give a 10-day notice in the future for all our meetings."
3. **Making the motion.** As noted, the chair has every right as a member of the body to make a motion, but should normally do so only if the chair wishes to make a motion on an item but is convinced that no other member of the body is willing to step forward to do so at a particular time.

The Three Basic Motions

There are three motions that are the most common and recur often at meetings:

The basic motion. The basic motion is the one that puts forward a decision for the body's consideration. A basic motion might be: "I move that we create a five-member committee to plan and put on our annual fundraiser."

The motion to amend. If a member wants to change a basic motion that is before the body, they would move to amend it. A motion to amend might be: "I move that we amend the motion to have a 10-member committee." A motion to amend takes the basic motion that is before the body and seeks to change it in some way.

The substitute motion. If a member wants to completely do away with the basic motion that is before the body, and put a new motion before the body, they would move a substitute motion. A substitute motion might be: "I move a substitute motion that we cancel the annual fundraiser this year."

"Motions to amend" and "substitute motions" are often confused, but they are quite different, and their effect (if passed) is quite different. A motion to amend seeks to retain the basic motion on the floor, but modify it in some way. A substitute motion seeks to throw out the basic motion on the floor, and substitute a new and different motion for it. The decision as to whether a motion is really a "motion to amend" or a "substitute motion" is left to the chair. So if a member makes what that member calls a "motion to amend," but the chair determines that it is really a "substitute motion," then the chair's designation governs.

A "friendly amendment" is a practical parliamentary tool that is simple, informal, saves time and avoids bogging a meeting down with numerous formal motions. It works in the following way: In the discussion on a pending motion, it may appear that a change to the motion is desirable or may win support for the motion from some members. When that happens, a member who has the floor may simply say, "I want to suggest a friendly amendment to the motion." The member suggests the friendly amendment, and if the maker and the person who seconded the motion pending on the floor accepts the friendly amendment, that now becomes the pending motion on the floor. If either the maker or the person who seconded rejects the proposed friendly amendment, then the proposer can formally move to amend.

Multiple Motions Before the Body

There can be up to three motions on the floor at the same time. The chair can reject a fourth motion until the chair has dealt with the three that are on the floor and has resolved them. This rule has practical value. More than three motions on the floor at any given time is confusing and unwieldy for almost everyone, including the chair.

When there are two or three motions on the floor (after motions and seconds) at the same time, the vote should proceed *first* on the *last* motion that is made. For example, assume the first motion is a basic "motion to have a five-member committee to plan and put on our annual fundraiser." During the discussion of this motion, a member might make a second motion to "amend the main motion to have a 10-member committee, not a five-member committee to plan and put on our annual fundraiser." And perhaps, during that discussion, a member makes yet a third motion as a "substitute motion that we not have an annual fundraiser this year." The proper procedure would be as follows:

First, the chair would deal with the *third* (the last) motion on the floor, the substitute motion. After discussion and debate, a vote would be taken first on the third motion. If the substitute motion *passed*, it would be a substitute for the basic motion and would eliminate it. The first motion would be moot, as would the second motion (which sought to amend the first motion), and the action on the agenda item would be completed on the passage by the body of the third motion (the substitute motion). No vote would be taken on the first or second motions.

Second, if the substitute motion *failed*, the chair would then deal with the second (now the last) motion on the floor, the motion to amend. The discussion and debate would focus strictly on the amendment (should the committee be five or 10 members). If the motion to amend *passed*, the chair would then move to consider the main motion (the first motion) as *amended*. If the motion to amend *failed,* the chair would then move to consider the main motion (the first motion) in its original format, not amended.

Third, the chair would now deal with the first motion that was placed on the floor. The original motion would either be in its original format (five-member committee), or if *amended*, would be in its amended format (10-member committee). The question on the floor for discussion and decision would be whether a committee should plan and put on the annual fundraiser.

To Debate or Not to Debate

The basic rule of motions is that they are subject to discussion and debate. Accordingly, basic motions, motions to amend, and substitute motions are all eligible, each in their turn, for full discussion before and by the body. The debate can continue as long as members of the body wish to discuss an item, subject to the decision of the chair that it is time to move on and take action.

There are exceptions to the general rule of free and open debate on motions. The exceptions all apply when there is a desire of the body to move on. The following motions are not debatable (that is, when the following motions are made and seconded, the chair must immediately call for a vote of the body without debate on the motion):

Motion to adjourn. This motion, if passed, requires the body to immediately adjourn to its next regularly scheduled meeting. It requires a simple majority vote.

Motion to recess. This motion, if passed, requires the body to immediately take a recess. Normally, the chair determines the length of the recess which may be a few minutes or an hour. It requires a simple majority vote.

Motion to fix the time to adjourn. This motion, if passed, requires the body to adjourn the meeting at the specific time set in the motion. For example, the motion might be: "I move we adjourn this meeting at midnight." It requires a simple majority vote.

Motion to table. This motion, if passed, requires discussion of the agenda item to be halted and the agenda item to be placed on "hold." The motion can contain a specific time in which the item can come back to the body. "I move we table this item until our regular meeting in October." Or the motion can contain no specific time for the return of the item, in which case a motion to take the item off the table and bring it back to the body will have to be taken at a future meeting. A motion to table an item (or to bring it back to the body) requires a simple majority vote.

Motion to limit debate. The most common form of this motion is to say, "I move the previous question" or "I move the question" or "I call the question" or sometimes someone simply shouts out "question." As a practical matter, when a member calls out one of these phrases, the chair can expedite matters by treating it as a "request" rather than as a formal motion. The chair can simply inquire of the body, "any further discussion?" If no one wishes to have further discussion, then the chair can go right to the pending motion that is on the floor. However, if even one person wishes to discuss the pending motion further, then at that point, the chair should treat the call for the "question" as a formal motion, and proceed to it.

When a member of the body makes such a motion ("I move the previous question"), the member is really saying: "I've had enough debate. Let's get on with the vote." When such a motion is made, the chair should ask for a second, stop debate, and vote on the motion to limit debate. The motion to limit debate requires a two-thirds vote of the body.

NOTE: A motion to limit debate could include a time limit. For example: "I move we limit debate on this agenda item to 15 minutes." Even in this format, the motion to limit debate requires a two-thirds vote of the body. A similar motion is a *motion to object to consideration of an item.* This motion is not debatable, and if passed, precludes the body from even considering an item on the agenda. It also requires a two-thirds vote.

Majority and Super Majority Votes

In a democracy, a simple majority vote determines a question. A tie vote means the motion fails. So in a seven-member body, a vote of 4-3 passes the motion. A vote of 3-3 with one abstention means the motion fails. If one member is absent and the vote is 3-3, the motion still fails.

All motions require a simple majority, but there are a few exceptions. The exceptions come up when the body is taking an action which effectively cuts off the ability of a minority of the body to take an action or discuss an item. These extraordinary motions require a two-thirds majority (a super majority) to pass:

Motion to limit debate. Whether a member says, "I move the previous question," or "I move the question," or "I call the question," or "I move to limit debate," it all amounts to an attempt to cut off the ability of the minority to discuss an item, and it requires a two-thirds vote to pass.

Motion to close nominations. When choosing officers of the body (such as the chair), nominations are in order either from a nominating committee or from the floor of the body. A motion to close nominations effectively cuts off the right of the minority to nominate officers and it requires a two-thirds vote to pass.

Motion to object to the consideration of a question. Normally, such a motion is unnecessary since the objectionable item can be tabled or defeated straight up. However, when members of a body do not even want an item on the agenda to be considered, then such a motion is in order. It is not debatable, and it requires a two-thirds vote to pass.

Motion to suspend the rules. This motion is debatable, but requires a two-thirds vote to pass. If the body has its own rules of order, conduct or procedure, this motion allows the body to suspend the rules for a particular purpose. For example, the body (a private club) might have a rule prohibiting the attendance at meetings by non-club members. A motion to suspend the rules would be in order to allow a non-club member to attend a meeting of the club on a particular date or on a particular agenda item.

Counting Votes

The matter of counting votes starts simple, but can become complicated.

Usually, it's pretty easy to determine whether a particular motion passed or whether it was defeated. If a simple majority vote is needed to pass a motion, then one vote more than 50 percent of the body is required. For example, in a five-member body, if the vote is three in favor and two opposed, the motion passes. If it is two in favor and three opposed, the motion is defeated.

If a two-thirds majority vote is needed to pass a motion, then how many affirmative votes are required? The simple rule of thumb is to count the "no" votes and double that count to determine how many "yes" votes are needed to pass a particular motion. For example, in a seven-member body, if two members vote "no" then the "yes" vote of at least four members is required to achieve a two-thirds majority vote to pass the motion.

What about tie votes? In the event of a tie, the motion always fails since an affirmative vote is required to pass any motion. For example, in a five-member body, if the vote is two in favor and two opposed, with one member absent, the motion is defeated.

Vote counting starts to become complicated when members vote "abstain" or in the case of a written ballot, cast a blank (or unreadable) ballot. Do these votes count, and if so, how does one count them? The starting point is always to check the statutes.

In California, for example, for an action of a board of supervisors to be valid and binding, the action must be approved by a majority of the board. (California Government Code Section 25005.) Typically, this means three of the five members of the board must vote affirmatively in favor of the action. A vote of 2-1 would not be sufficient. A vote of 3-0 with two abstentions would be sufficient. In general law cities in

California, as another example, resolutions or orders for the payment of money and all ordinances require a recorded vote of the total members of the city council. (California Government Code Section 36936.) Cities with charters may prescribe their own vote requirements. Local elected officials are always well-advised to consult with their local agency counsel on how state law may affect the vote count.

After consulting state statutes, step number two is to check the rules of the body. If the rules of the body say that you count votes of "those present" then you treat abstentions one way. However, if the rules of the body say that you count the votes of those "present and voting," then you treat abstentions a different way. And if the rules of the body are silent on the subject, then the general rule of thumb (and default rule) is that you count all votes that are "present and voting."

Accordingly, under the "present and voting" system, you would **NOT** count abstention votes on the motion. Members who abstain are counted for purposes of determining quorum (they are "present"), but you treat the abstention votes on the motion as if they did not exist (they are not "voting"). On the other hand, if the rules of the body specifically say that you count votes of those "present" then you **DO** count abstention votes both in establishing the quorum and on the motion. In this event, the abstention votes act just like "no" votes.

How does this work in practice?
Here are a few examples.

Assume that a five-member city council is voting on a motion that requires a simple majority vote to pass, and assume further that the body has no specific rule on counting votes. Accordingly, the default rule kicks in and we count all votes of members that are "present and voting." If the vote on the motion is 3-2, the motion passes. If the motion is 2-2 with one abstention, the motion fails.

Assume a five-member city council voting on a motion that requires a two-thirds majority vote to pass, and further assume that the body has no specific rule on counting votes. Again, the default rule applies. If the vote is 3-2, the motion fails for lack of a two-thirds majority. If the vote is 4-1, the motion passes with a clear two-thirds majority. A vote of three "yes," one "no" and one "abstain" also results in passage of the motion. Once again, the abstention is counted only for the purpose of determining quorum, but on the actual vote on the motion, it is as if the abstention vote never existed — so an effective 3-1 vote is clearly a two-thirds majority vote.

Now, change the scenario slightly. Assume the same five-member city council voting on a motion that requires a two-thirds majority vote to pass, but now assume that the body **DOES** have a specific rule requiring a two-thirds vote of members "present." Under this specific rule, we must count the members present not only for quorum but also for the motion. In this scenario, any abstention has the same force and effect as if it were a "no" vote. Accordingly, if the votes were three "yes," one "no" and one "abstain," then the motion fails. The abstention in this case is treated like a "no" vote and effective vote of 3-2 is not enough to pass two-thirds majority muster.

Now, exactly how does a member cast an "abstention" vote? Any time a member votes "abstain" or says, "I abstain," that is an abstention. However, if a member votes "present" that is also treated as an abstention (the member is essentially saying, "Count me for purposes of a quorum, but my vote on the issue is abstain.") In fact, any manifestation of intention not to vote either "yes" or "no" on the pending motion may be treated by the chair as an abstention. If written ballots are cast, a blank or unreadable ballot is counted as an abstention as well.

Can a member vote "absent" or "count me as absent?" Interesting question. The ruling on this is up to the chair. The better approach is for the chair to count this as if the member had left his/her chair and is actually "absent." That, of course, affects the quorum. However, the chair may also treat this as a vote to abstain, particularly if the person does not actually leave the dais.

The Motion to Reconsider

There is a special and unique motion that requires a bit of explanation all by itself; the motion to reconsider. A tenet of parliamentary procedure is finality. After vigorous discussion, debate and a vote, there must be some closure to the issue. And so, after a vote is taken, the matter is deemed closed, subject only to reopening if a proper motion to consider is made and passed.

A motion to reconsider requires a majority vote to pass like other garden-variety motions, but there are two special rules that apply only to the motion to reconsider.

First, is the matter of timing. A motion to reconsider must be made at the meeting where the item was first voted upon. A motion to reconsider made at a later time is untimely. (The body, however, can always vote to suspend the rules and, by a two-thirds majority, allow a motion to reconsider to be made at another time.)

Second, a motion to reconsider may be made only by certain members of the body. Accordingly, a motion to reconsider may be made only by a member who voted in the majority on the original motion. If such a member has a change of heart, he or she may make the motion to reconsider (any other member of the body — including a member who voted in the minority on the original motion — may second the motion). If a member who voted in the minority seeks to make the motion to reconsider, it must be ruled out of order. The purpose of this rule is finality. If a member of minority could make a motion to reconsider, then the item could be brought back to the body again and again, which would defeat the purpose of finality.

If the motion to reconsider passes, then the original matter is back before the body, and a new original motion is in order. The matter may be discussed and debated as if it were on the floor for the first time.

Courtesy and Decorum

The rules of order are meant to create an atmosphere where the members of the body and the members of the public can attend to business efficiently, fairly and with full participation. At the same time, it is up to the chair and the members of the body to maintain common courtesy and decorum. Unless the setting is very informal, it is always best for only one person at a time to have the floor, and it is always best for every speaker to be first recognized by the chair before proceeding to speak.

The chair should always ensure that debate and discussion of an agenda item focuses on the item and the policy in question, not the personalities of the members of the body. Debate on policy is healthy, debate on personalities is not. The chair has the right to cut off discussion that is too personal, is too loud, or is too crude.

Debate and discussion should be focused, but free and open. In the interest of time, the chair may, however, limit the time allotted to speakers, including members of the body.

Can a member of the body interrupt the speaker? The general rule is "no." There are, however, exceptions. A speaker may be interrupted for the following reasons:

Privilege. The proper interruption would be, "point of privilege." The chair would then ask the interrupter to "state your point." Appropriate points of privilege relate to anything that would interfere with the normal comfort of the meeting. For example, the room may be too hot or too cold, or a blowing fan might interfere with a person's ability to hear.

Order. The proper interruption would be, "point of order." Again, the chair would ask the interrupter to "state your point." Appropriate points of order relate to anything that would not be considered appropriate conduct of the meeting. For example, if the chair moved on to a vote on a motion that permits debate without allowing that discussion or debate.

Appeal. If the chair makes a ruling that a member of the body disagrees with, that member may appeal the ruling of the chair. If the motion is seconded, and after debate, if it passes by a simple majority vote, then the ruling of the chair is deemed reversed.

Call for orders of the day. This is simply another way of saying, "return to the agenda." If a member believes that the body has drifted from the agreed-upon agenda, such a call may be made. It does not require a vote, and when the chair discovers that the agenda has not been followed, the chair simply reminds the body to return to the agenda item properly before them. If the chair fails to do so, the chair's determination may be appealed.

Withdraw a motion. During debate and discussion of a motion, the maker of the motion on the floor, at any time, may interrupt a speaker to withdraw his or her motion from the floor. The motion is immediately deemed withdrawn, although the chair may ask the person who seconded the motion if he or she wishes to make the motion, and any other member may make the motion if properly recognized.

Special Notes About Public Input

The rules outlined above will help make meetings very public-friendly. But in addition, and particularly for the chair, it is wise to remember three special rules that apply to each agenda item:

Rule One: Tell the public what the body will be doing.

Rule Two: Keep the public informed while the body is doing it.

Rule Three: When the body has acted, tell the public what the body did.

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ATTACHMENT 5

Clean Copy Board and Officer Policies (2000 Series)

CITRUS HEIGHTS WATER DISTRICT
POLICIES AND PROCEDURES MANUAL

2000.00 AUTHORITY OF THE BOARD OF DIRECTORS

The Board of Directors, acting as a Board, is the governing body of Citrus Heights Water District. The Board shall act only at its regular, special, or emergency meetings, which may be adjourned as provided by applicable law. All powers of the District shall be exercised and performed by the Board as a body. Individual Board members, except as otherwise authorized by the Board, shall have no power to act for the District, or the Board, or to direct the Staff of the District, nor commit the District to any policy, act, or expenditure nor sign any document on behalf of the Board.

2000.10 RESPONSIBILITY OF THE BOARD OF DIRECTORS

The primary responsibility of the Board of Directors is the formulation and evaluation of District policy. Routine matters concerning the operational aspects of the District are to be delegated to professional staff members of the District.

2005.00 MEMBERS OF THE BOARD OF DIRECTORS

Members of the Board of Directors by Division but should make decisions in the interests of the District and its customers as a whole.

2005.10 Duties of Members of the Board of Directors

Members of the Board of Directors shall:

2005.11 Prepare themselves to discuss agenda items at Board of Directors meetings unless a personal or financial conflict of interest exists.

2005.12 Participate in the decision-making responsibilities of the Board of Directors unless a personal or financial conflict of interest exists.

2005.13 Perform other duties as may be required by law or as directed by the Board of Directors.

2010.00 PRESIDENT AND VICE PRESIDENT OF THE BOARD OF DIRECTORS

A President and a Vice President of the Board of Directors shall be chosen from members of the Board of Directors. The President and Vice President shall perform duties as established by the Board of Directors and as required by law.

2010.10 Selection and Term of Office of President and Vice President

Each December or as otherwise necessary, the Board of Directors shall elect a President and a Vice President from among its members. Nominations from members of the Board will be requested and a President and a Vice President shall be elected by a majority vote of the Board of Directors. The term of office of the President and the Vice President shall begin immediately upon their election unless otherwise specified by the Board of Directors.

2010.20 Duties of the President

The President of the Board of Directors shall:

2010.21 Preside at meetings and hearings of the Board of Directors and conduct said meetings to ensure proper order and decorum.

2010.22 Execute documents on behalf of the District that are approved at the meeting including, but not limited to, warrants, resolutions, agreements, and contracts.

2010.23 Rule on points of order and passage or failure of motions, resolutions, or ordinances brought before the Board.

2010.24 Invite public participation when appropriate during meetings of the Board of Directors.

2010.25 Set the time and place for any special or emergency meeting of the Board of Directors.

2010.26 Serve as public spokesperson of the Board and express adopted policy of the District when called upon to do so.

2010.27 Represent the Board of Directors at public meetings or ceremonies when called upon to do so.

2010.28 Perform other duties as may be required by law or as directed by the Board of Directors.

2010.29 Appoint a member(s) of the Board of Directors, Officers or staff to serve or represent the District at public meetings, ceremonies or on committees on behalf of the District.

2010.30 Duties of the Vice President

In the absence of the President, the Vice President shall assume the duties of the President until such a time as the President is in attendance. In the event that the office of President is vacant, the Vice President shall act in the place of the President until the Board of Directors elects a new President.

2010.40 Participation in Meetings of the Board of Directors

The President and Vice President shall have the same rights as other members of the Board of Directors in voting, introducing motions, resolutions, and ordinances, and any discussion of questions that follow said actions.

2020.00 ATTENDANCE AT BOARD OF DIRECTORS MEETINGS

Members of the Board of Directors are expected to attend all regular, adjourned, special, and emergency meetings of the Board of Directors. If unable to attend a meeting, Directors shall attempt to inform the President of the Board and/or the General Manager of the intended absence.

2020.10 Vacancy

A vacancy shall occur if any member of the Board of Directors ceases to discharge the duty of his/her office for the time period provided by law, including Government Code section 1770.

2040.00 DIRECTOR'S COMPENSATION

Each member of the Board of Directors shall be entitled to receive compensation, in a dollar amount as specified by Citrus Heights Water District Ordinance Fixing the Compensation of the Board of Directors, per day or partial day for attendance at meetings of the Board and District related functions.

2040.10 Officer's Compensation

The Board appointed District Secretary, District Treasurer, and District Assessor/Collector shall not be compensated for their duties as District Officers.

2040.20 Reimbursement

District Officers and each member of the Board of Directors shall be entitled to reimbursement for actual and necessary expenses incurred in performance of their duties required or authorized by the Board. Reimbursements shall be subject to written documentation and shall be limited to imposed maximums (i.e.: meal expenses, travel expenses, etc.).

2040.30 Approval

Reimbursement pursuant to Section 2040.20 for actual and necessary expenses to the Directors and Officers shall be reviewed and approved monthly by the Board of Directors as part of their review of the Treasurer's report and accounts payable.

2040.90 Reporting

An annual report shall be prepared by the Treasurer quantifying meeting attendance, compensation, and expenses for members of the Board of Directors and District Officers.

2060.00 EDUCATIONAL AND TRAINING FUNCTIONS

The Board of Directors supports participation by members of the Board of Directors and Officers at educational and training functions of national, state, or local significance that either directly relates to the purposes, goals and objectives of the District or that contribute to a better understanding of water and management issues relevant to District operations. There is no limit as to the number of Directors and Officers attending a particular educational or training function when it is apparent that their attendance is beneficial to the District.

Educational and training functions typically include meetings, seminars, facility tours, and conferences related to District purposes and operations.

2060.10 ATTENDANCE BY DIRECTORS

Members of the Board of Directors are authorized to attend educational and training functions of their choosing. Expenses per person in excess of $5,000.00 per function and aggregately $10, 000.00 per calendar year shall require formal approval from the Board of Directors.

A Director shall not attend a conference or training event for which there is an expense to the District if it occurs after they have announced their pending resignation or have not filed for re- election, or if it occurs after an election in which it has been determined that they will not retain theirseat on the Board of Directors except as formally authorized by action of the Board of Directors.

2060.30 COMPENSATED MEETING DAY

Directors shall be entitled to receive meeting day compensation in accordance with Compensationand Reimbursement Policy 2040 for each day's or partial day's attendance at an educational or training function plus one day for travel if necessary.

2060.50 EXPENSES

The District shall pay for actual and necessary expenses for attendance at education and trainingfunctions.

2060.51 Function Expenses

The District will generally pay fees for registration and attendance at educational and training functions in advance for its representative(s).

Expenses advanced by the District for educational and training functions that are not attended by the Director or Officer other than due to circumstances beyond their control andfor which a refund or credit cannot be obtained shall be promptly reimbursed to the Districtby the Director or Officer within thirty (30) days of the date of said function.

2060.52 Travel Expenses

Travel expenses shall be allowed based upon the actual mode of travel. Travel arrangementsmay be made by the individual or by the District.

Travel by personal vehicle is permitted within California and Nevada

And shall be reimbursed at the current expense rate authorized under Internal Revenue Service (IRS) regulations per actual mile driven, not to exceed the cost of an unrestricted round-trip coach air fare plus associated ground transportation and parking expenses.

Travel by air, train, or bus is permitted and shall not exceed or be reimbursed beyond the cost of an unrestricted round-trip coach air fare plus associated ground transportation and parking expenses.

2060.53 Lodging Expenses

Actual lodging expenses will be paid or reimbursed at an amount not to exceed the highestpublished conference rates for accommodations. Lodging arrangements may be made by theindividual or by the District.

2060.54 Meal Expenses

Per diem reimbursements for approved events, not to exceed the limits detailed below,can be obtained by submitting reconciliation request form.

Half Day event	$45.00
Full Day Event	$90.00

Directors or Officers shall generally not receive the above per diem if meals are providedas an accompaniment to registration. However, if a Director or Officer is unable to utilize the provided meal, he or she may receive a half-day or full day per diem as applicable. Any request for per diem shall indicate the District-related reason for not enjoying the provided meal. No compensation will be provided for the purchase of alcoholic beverages.

2060.55 Other Expenses

Other actual and necessary expenses, including but not limited to such items as car rental,taxi or bus fares, gratuities, parking, telephone calls, and facsimile transmissions will be reimbursed at no cost.

2060.56 Spouse/Companion Expenses

Spouse and/or companions may accompany District representatives to educational and training functions at the sole and total expense of the spouse/companion(s). It is incumbentupon the Director or Officer to document those additional expenses that may accrue due to aspouse and/or companion, and to deduct said expenses from any expenses being submitted to the District for reimbursement or reconciliation.

2060.58 Expense Reconciliation

Upon the conclusion of an educational or training event for which expenses have been incurred, all expenses shall be documented and reconciled on the District's "Conference/Meeting Expense Reconciliation" form.

2060.59 Reporting

An annual report shall be prepared by the Treasurer quantifying attendance and expenses at training and educational functions for members of the Board of Directors and District Officers.

2060.70 DIRECTORS' REPORTS

Upon returning from seminars, workshops, conferences, etc., where expenses are reimbursed by theDistrict, Directors and Officers will either prepare a written report for distribution to the Board ofDirectors, or make a verbal report during the next regular meeting of the Board. Said report shall detail what was learned at the session(s) that will be of benefit to the District. Materials from thesession(s) may be delivered to the District office to be included in the District library for future use and reference by Directors, Officers and staff.

2080 BENEFITS FOR DIRECTORS AND OFFICERS

2080.10 WORKERS' COMPENSATION INSURANCE BENEFITS

Directors and Officers shall be covered by the District's Workers' Compensation Insurancepolicy while acting as a Board of Directors or acting under its orders.

2080.20 OTHER BENEFITS

Directors and Officers may participate in District benefit plans at the sole and express expense ofthe Director or Officer subject to the terms, conditions, and acceptance of the District's employee benefit provider(s).

District Officers that are also employees of the District shall be entitled to benefits pursuant toPersonnel Policies and Procedures.

2090.00 BONDS FOR DIRECTORS AND OFFICERS

Directors and Officers shall be bonded as required by law. Premiums shall be paid fully by the District.

2100.00 STANDARDS OF CONDUCT FOR DIRECTORS AND OFFICERS

The policy of the Citrus Heights Water District is to maintain the highest ethical standards for its Directors and Officers. The proper operation of the District requires decisions and policy to be made within the proper channels of governmental structure, that public office not be used for personal gain, and that Directors and Officers remain objective and responsive to the needs of the public they serve. Accordingly, it is the policy of the Citrus Heights Water District that Directors and Officers will maintain the highest standard of personal honesty and fairness in carrying out their duties.

This policy sets forth the basic ethical standards to be followed by the Directors and Officers of the Citrus Heights Water District. The objectives of this policy are to: provide guidance for dealing with ethical issues; heighten awareness of ethics and values as critical elements in Directors' and Officers' conduct; and improve ethical decision-making and values-based management.

The Board of Directors of Citrus Heights Water District is committed to maintaining excellence inlegislative leadership that results in providing the highest quality of services to its constituents. Toassist in the governing of the behavior between and among Directors, Officers, employees and thepublic, the following policies and procedures shall be observed:

2100.10 POLICIES

2100.11 Directors and Officers are obligated to uphold the Constitution of the United States and the Constitution of the State of California. Directors and Officers will comply with applicable laws regulating their conduct, including conflict of interest, financial disclosure and open government laws. Directors and Officers will strive to work in cooperation with other public

officials unless prohibited from so doing by law or officially-recognized confidentiality of their work.

2100.12 Directors and Officers, in the performance of their official duties and responsibilities, will not discriminate against or harass any person on the basis of race, religion, color, creed, age, marital status, national origin, ancestry, gender, gender identity, sexual orientation, medical condition, disability, or any other protected class. A Director or Officer will not grant any special consideration, treatment or advantage to any person or group beyond that which is available to every other person or group in similar circumstances.

2100.13 Except as specifically authorized, a Director or Officer will not use or permit the use of District-owned vehicles, equipment, telephones, materials or property for personal benefit or profit. A Director or Officer will not ask or require a District employee to perform services for the personal benefit or profit of a Director, Officer, or employee. Each Director and Officer must protect and properly use any District asset within his or her control, including information recorded on paper or in electronic form. Directors and Officers will safeguard District property, equipment, moneys and assets against unauthorized use or removal, as well as from loss due to criminal act or breach of trust.

2100.14 A. A Director or Officer is not authorized, without approval of the Board of Directors or as otherwise permitted by law, to disclose information that qualifies as confidential information under applicable provisions of law to a person not authorized to receive it, that (1) has been received for, or during, a closed session meeting of the Board, (2) is protected from disclosure under the attorney/client or other evidentiary privilege, or (3) is not required to be disclosed under the California Public Records Act.

B. A Director or Officer who willfully and knowingly discloses for pecuniary gain confidential information received by him or her in the course of his or her official duties may be guilty of a misdemeanor under Government Code Section 1098.

2100.15 A. A Director will not have a financial interest in a contract with the District, or be a purchaser at a sale by the District or a vendor at a purchase made by the District, unless the Director or Officer's participation was authorized under applicable law. A Director or Officer will not participate in the discussion, deliberation or vote on a matter before the Board of Directors, or in any way attempt to use his or her official position to influence a decision of the Board, if he or she has a prohibited interest with respect to the matter as provided by law. Directors or Officer should review

Government Code section 1090, the Political Reform Act and other applicable law for more detail.

B. If a member of the Board believes that he or she may be disqualified from participation in the discussion, deliberations or vote on a particular matter due to a conflict of interest, the following procedure will be followed: (a) if the Director or Officer becomes aware of the potential conflict of interest before the Board meeting at which the matter will be discussed or acted on, the Director or Officer will notify the District's General Manager and the District's legal counsel of the potential conflict of interest, so that a determination can be made whether it is a disqualifying conflict of interest; (b) if it is not possible for the Director or Officer to discuss the potential conflict with the General Manager and the District's legal counsel before the meeting, or if the Director or Officer does not become aware of the potential conflict until during the meeting, the Director or Officer will immediately disclose the potential conflict during the Board meeting, so that there can be a determination whether it is a disqualifying conflict of interest; and (c) upon a determination that there is a disqualifying conflict of interest, the Director or Officer (1) will not participate in the discussion, deliberation or vote on the matter for which a conflict of interest exists, which will be so noted in the Board minutes, and (2) leave the room until after the discussion, vote and any other disposition of the matter is concluded, unless the matter has been placed on the portion of the agenda reserved for uncontested matters.

2100.17 Board members are prohibited from soliciting political funds or contributions at District facilities, or from District employees. A Board member will not accept, solicit or direct a political contribution from (a) District employees, officers, consultants or contractors, or (b) vendors or consultants who have a material financial interest in a contract or other matter while that contract or other matter is pending before the District. A Director will not use the District's seal, trademark, stationery or other indicia of the District's identity, or facsimile thereof, in any solicitation for political contributions contrary to state or federal law.

2100.18 Board members shall avoid incompatible offices as provided by applicable law.

2100.19 A. The Board sets the policy for the District and sets the terms and conditions of the General Manager's employment.

B. The District's General Manager (a) has full charge and control of the construction, maintenance and operation of the water system and other facilities of the District, (b) has full power and authority to employ and discharge employees and assistants, consistent with District policy and other provisions of law, (c) prescribes the duties of employees and

assistants, consistent with District policy, and (d) fixes and alters the compensation of employees and assistants, consistent with District policy.

C. The Board will appoint the District's Treasurer (see Policy No. 2200). The Treasurer will install and maintain a system of auditing and accounting that will completely and at all times show the financial condition of the District in accordance with generally accepted accounting principles and legal requirements.

D. The Board will retain and periodically review the work of an auditor as an independent contractor of the District (other than the Treasurer), who will report to the Board, to conduct an annual audit of the District's books, records and financial affairs (see Policy No. 6010).

E. The District's General Manager serves at the pleasure of the Board. The Board will provide policy direction and instructions to the General Manager on matters within the authority of the Board by majority vote of the Board during duly-convened Board meetings. Members of the Board will deal with matters within the authority of the General Manager through the General Manager, and not through other District employees, except as it pertains to the functions of the Treasurer. Members of the Board will refrain from making requests directly to District employees (rather than to the General Manager) to undertake analyses, perform other work assignments or change the priority of work assignments. Members of the Board may request non-confidential, factual information regarding District operations from District employees.

2100.20 A. The General Manager has primary responsibility for (1) ensuring compliance with the Districts Personnel Policies, and ensuring that District employees do not engage in improper activities, (2) investigating allegations of improper activities, and (3) taking appropriate corrective and disciplinary actions. The Board has a duty to ensure that the General Manager is operating the District according to law and the policies approved by the Board. Board members are encouraged to fulfill their obligation to the public and the District by disclosing to the General Manager to the extent not expressly prohibited by law, improper activities within their knowledge. Board members will not interfere with the General Manager's responsibilities in identifying, investigating and correcting improper activities, unless the Board determines that the General Manager is not properly carrying out these responsibilities.

B. A Board member will not directly or indirectly use or attempt to use the authority or influence of his or her position for the purpose of intimidating, threatening, coercing, commanding or influencing any other person for the purpose of preventing such person from acting in good faith to report or otherwise bring to the attention of the General Manager or the Board any information that, if true, would constitute: a work-related

violation by a Board member or District employee of any law or regulation, gross waste of District funds, gross abuse of authority, a specified and substantial danger to public health or safety due to an act or omission of a District official or employee, use of a District office or position or of District resources for personal gain, or a conflict of interest of a District Board member or District employee.

C. A Board member will not use or threaten to use any official authority or influence to effect any action as a reprisal against another District Board member or District employee who reports or otherwise brings to the attention of the General Manager any information regarding the subjects described in this section

2100.21 The members of the Board of Directors, and persons elected but who have not yet assumed office as members of the Board, will fully comply with the provisions of the State's open meeting law for public agencies (the Brown Act).

2100.22 The members of the Board of Directors will fully comply with provisions related to compensation and expense reimbursement as set forth elsewhere in the Manual of District Policies and Procedures (see Policy Nos. 2040 and 2060).

2100.24 Differing viewpoints are welcome in the decision-making process. Individuals have the right to disagree with ideas and opinions, however, once the Board of Directors takes action, Director or Officers are encouraged to support the majority decision and commit to implementation of said action.

2100.25 Directors and Officers will observe basic courtesies in order to maximize the performance of the Board of Directors by respecting the dignity, style, values, and opinions of others; emphasizing the positive side of all interactions; encouraging responsiveness and attentive listening to all dialogue; and committing to focus on issues and not personalities.

2100.26 Directors and Officers are responsible for monitoring the District's progress in attaining its goals and objectives, while pursuing its mission.

2100.27 Directors should develop a working relationship with District Officers and the General Manager and District staff to ensure open and comfortable discussion of current issues and concerns.

2100.28 The work of the District is a team effort. All individuals are encouraged to work together in the collaborative process to assist one another in conducting the affairs of the District.

2100.50 PROCEDURES

Directors and Officers should practice the following procedures:

2100.51 When responding to constituent requests, concerns, and complaints, Directors should be courteous and positive in their response. Routing of questions to the General Manager for action is recommended.

2100.52 In addressing concerns for safety or hazard related items, direct all inquiries to the General Manager or to the District office. Emergency situations should be reported to the District office immediately.

2100.53 Issues are required to be brought to the attention of the Board of Directors as a whole, rather than to selected members individually.

2100.54 The General Manager should be consulted in seeking clarification for policy related items, especially those involving personnel, finances, and legal action.

2200.00 OFFICERS OF THE DISTRICT

The offices of Assessor, Collector, Treasurer, and the position of Secretary are recognized as Officers of the District.

The office of Assessor and the office of Collector shall be consolidated into one office and titled Assessor / Collector.

2200.10 Appointment of Officers

The following District offices shall be filled by appointment by the Board of Directors to serve at the pleasure of the Board:

Assessor / Collector

Treasurer

Secretary

2200.20 Duties of Officers

The offices established by this policy shall perform all duties as prescribed by applicable law or District policy.

2200.50 Officers' and Deputy Officers' Compensation

Notwithstanding compensation received as employees of the District, Officers and Employees appointed pursuant to this policy shall not receive any additional compensation for their duties as District Officers and/or Deputy Officers.

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POLICY NUMBER	POLICY TITLE	DATE ADOPTED	DATE AMENDED	PREVIOUS AMENDMENTS
2000	**Authority and responsibility of Board of Directors**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1)JANUARY 7, 2003; (2) DECEMBER 14, 2010**
2005	**Members of the Board of Directors**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) JANUARY 7, 2003**
2010	**President and Vice President of The Board of Directors**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) JANUARY 5, 1999**
2020	**Attendance at Board of Directors Meetings**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) JANUARY 7, 2003**
2040	**Compensation and Reimbursement for Board of Directors**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) SEPTEMBER 14, 2004**
2060	**Educational and Training Functions**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) JANUARY 7, 2003; (2) DECEMBER 14, 2010; (3) DECEMBER 18, 2019; (4) FEBRUARY 19, 2020; (5) JUNE 17, 2020**
2080	**Benefits for Directors and Officers**	**MARCH 7, 1995**	**NOVEMBER 3, 1998**	
2090	**Bonds for Directors and Officers**	**MARCH 7, 1995**	**NOVEMBER 3, 1998**	
2100	**Standards of Conduct for Directors and Officers**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) AUGUST 10, 2004**
2200	**Officers of the District**	**MARCH 7, 1995**	**NOVEMBER 17, 2021**	**(1) AUGUST 10, 2004**

ATTACHMENT 6

Clean Copy Board Meeting Policies (3000 Series)

3000.00 BOARD MEETINGS

The Board of Directors shall conduct the business of the District via regular, special, or emergency meetings, which may be adjourned as provided by law. All meetings of the Board of Directors shall be open to the public except when the Board is convened in closed session as authorized under provisions of law.

3000.01 Regular Meetings

The Board of Directors shall hold one (1) regular meeting per month. The regular meeting shall be held on the third Wednesday of each month beginning at 6:30 PM.

If at any time any regular meeting falls on a District holiday, such regular meeting shall be held on the next business day. The Board of Directors may, by motion entered into its minutes, change the meeting date when it is known that a quorum will not be present. Such a change shall be noticed and posted in the same manner as required for a special meeting.

3000.02 Special Meetings

Special meetings of the Board of Directors may be called by the President of the Board of Directors or by a majority of the Board of Directors whenever required for District business.

3000.03 Emergency Meetings

Emergency meetings of the Board of Directors may be called by the President of the Board of Directors, by any Director in the absence of the President, or by the General Manager or any District officer in the absence of all Directors.

An emergency situation means a crippling disaster which severely impairs/disrupts or has the potential to severely impair or disrupt public facilities, public health, and/or public safety causing the need for prompt action.

3000.04 Adjourned Meetings

The Board of Directors may, by majority vote of those present, adjourn any Board of Directors meeting, whether regular, special, or emergency, at any place in the agenda to any time and place specified in the order of adjournment. The Secretary shall declare the meeting adjourned to a stated time and place and shall, within twenty-four (24) hours, cause a written

notice of adjournment to be posted at or near the place that the meeting was held.

3000.10 BOARD OF DIRECTORS MEETING NOTICE

All meetings of the Board of Directors shall be noticed and posted pursuant to appropriate Government Codes including the Ralph M. Brown Act.

3000.20 BOARD OF DIRECTORS MEETING LOCATION

Meetings of the Board of Directors shall be held in the room known as the Board Room located in the District's administrative office at 6230 Sylvan Road in Citrus Heights, CA. If for reason of fire, flood, earthquake, or other unusual condition, it shall be unsafe or impractical to meet at the aforementioned location, the meetings shall be held at a location designated by the President of the Board of Directors within the boundaries of the District. If there are no appropriate facilities within the boundaries of the District, the Board of Directors will meet at the closest adequate meeting facility.

Meetings may be held outside the District boundaries to participate in discussions of multi-agency significance. Such meetings must be held within the jurisdiction of one of the participating agencies and shall be appropriately noticed and posted.

The General Manager shall insure that physical facilities for said meetings are accessible, functional and appropriate.

3010.00 BOARD OF DIRECTORS MEETING AGENDA

An agenda containing a brief general description of each item to be transacted or discussed shall be prepared for all meetings of the Board of Directors.

3010.10 Agenda Preparation -- General

The General Manager or his/her designee shall prepare the agendas for Board of Directors meetings. Agendas shall be based upon items requested by any member of the Board of Directors and/or as determined by the General Manager.

3010.11 Submission of Agenda Items

In order to meet agenda preparation, posting and distribution requirements, all proposed agenda items for regular Board of Directors meetings shall be submitted to the General Manager no later than seven (7) business days prior to the meeting day, unless otherwise authorized by the General Manager.

3010.14 Posting of Agendas

The agenda or notice for each meeting shall be posted as provided by law.

3020.00 PRESIDING OFFICER

3020.10 Presiding Officer -- Board of Directors Meetings

The President of the Board of Directors shall serve as Presiding Officer at Board of Directors meetings. The Presiding Officer conducts the meeting of the Board of Directors, preserving order and decorum. He/she states each motion under consideration by the Board of Directors and announces each decision of the Board of Directors. He/shedecides all questions of order, subject to appeal to the Board of Directors, in which eventthe majority of the Board of Directors shall govern and determine the question of order.

3020.20 Presiding Officer -- Rights

The Presiding Officer shall have the same rights as the other members of the Board of Directors in voting, introducing motions, resolutions and ordinances and any discussionof questions that follow these actions.

3020.30 Presiding Officer -- Absence, Order of Succession

In the absence of the President, the Vice-President shall preside. Upon the arrival of the President, the duties of Presiding Officer shall be relinquished to the President at the first opportunity.

3020.40 Presiding Officer -- Approval of Official Documents

The Presiding Officer shall sign all documents approved or adopted at the Board of Directors meeting such as resolutions, ordinances, agreements, and contracts unless otherwise delegated.

3030.00 BOARD OF DIRECTORS MEETING CONDUCT

Meetings of the Board of Directors shall be conducted by the Presiding Officer in a manner consistent with the policies of the District. The most recent edition of Rosenberg's Rules of Order may also be used as a general guideline for meeting protocol. District policies shall prevail whenever they are in conflict with Rosenberg's Rules of Order.

3030.10 Meeting Times

All meetings of the Board of Directors shall commence on or after the time stated on the posted agenda. At the sole discretion of the Presiding Officer, the beginning of the meeting may be delayed pending the anticipated arrival of absent members of the Board of Directors.

3030.20 Nature of Board of Directors Meeting Conduct

The conduct of Board of Directors meetings shall, to the greatest extent possible, enable Directors to consider issues to be addressed, weigh evidence related to the issues, and make sound decisions intended to address the issues. The conduct of meetings shall also enable

Directors to receive, consider and take any needed action with respect to reports of the status of District operations.

3030.40 Disruption of Board of Directors Meetings

Willful disruption of any meeting of the Board of Directors shall not be permitted. If the Presiding Officer finds that there is willful disruption of any meeting of the Board of Directors, he/she may order the room cleared and subsequently conduct the Board of Directors' business without the audience present.

3030.41 After clearing the meeting room, the Presiding Officer may permit those persons who, in his/her opinion, were not responsible for the willful disruption to re-enter the meeting room.

3030.42 Duly accredited representatives of the news media, whom the Presiding Officer finds not to have participated in the disruption, shall be admitted to the remainder of the Board of Directors' meeting.

3060.00 MINUTES OF BOARD OF DIRECTORS MEETINGS

The Secretary of the Board of Directors shall keep minutes of all regular meetings, special meetings, and emergency meetings of the Board of Directors. The Secretary may delegate to keeping, transcribing and preparation of the minutes to a member of the staff.

3060.10 Procedure for Minutes of Board of Directors Meetings

3060.11 Draft copies of meeting minutes shall be made for distribution to Directors with the agenda for the next regular Board of Directors meeting or as soon as practicable.

3060.12 Approved meeting minutes shall be entered into the official District minute book and signed by the Presiding Officer and the Secretary for the meeting being approved.

3060.13 The official minutes of the regular, special, and emergency meetings of the Board of Directors shall be kept in a location secure from damage or destruction by fire, theft, water or other means. A digitized version of the official minutes that is used to print the approved meeting minutes for the minute book shall be maintained in a form suitable for reproduction or viewing via computer or similar devices.

3060.50 Closed Sessions

Minutes shall not be kept of discussions held in closed session. However, the minutes shall reflect the section of the Government Code under which the closed session was conducted, and any actions taken during the closed session as reported in open session.

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POLICY NUMBER	POLICY TITLE	DATE ADOPTED	DATE AMENDED	PREVIOUS AMENDMENTS
3000	BOARD OF DIRECTOR MEETINGS	APRIL 15, 1996	NOVEMBER 17, 2021	(1) APRIL 3, 2001; (2) DECEMBER 14, 2010;
3010	BOARD OF DIRECTORS MEETING AGENDA	MARCH 18, 1997	NOVEMBER 17, 2021	(1) JULY 20, 1999; (2) FEBRUARY 14, 2012
3020	PRESIDING OFFICER	MARCH 18, 1997	FEBRUARY 14, 2012	(1) FEBRUARY 2, 1999
3030	BOARD OF DIRECTORS MEETING CONDUCT	MARCH 18, 1997	NOVEMBER 17, 2021	(1) FEBRUARY 2, 1999; (2) FEBRUARY 14, 2012
3060	MINUTES OF BOARD OF DIRECTORS MEETINGS	MARCH 18, 1997	NOVEMBER 17, 2021	(1) FEBRUARY 2, 1999; (2) FEBRUARY 14, 2012

CITRUS HEIGHTS WATER DISTRICT

DISTRICT STAFF REPORT TO BOARD OF DIRECTORS
NOVEMBER 17, 2022 MEETING

SUBJECT : 2022 BOARD MEETING SCHEDULE
STATUS : Information Item
REPORT DATE : November 8, 2021
PREPARED BY : Brittney Moore, Senior Management Analyst/ Deputy Board Clerk

Senior Management Analyst/ Deputy Board Clerk, Brittney Moore will discuss and receive direction on the draft 2022 Board Meeting times and dates, proposed below, with the Board.

Day	Date	Notes
Wednesday	January 19	
Wednesday	February 16	
Wednesday	March 16	
Wednesday	April 20	
Wednesday	May 18	
Wednesday	June 15	
July- Cancelled		
Wednesday	August 17	
Wednesday	September 21	
Wednesday	October 19	
Wednesday	November 16	
Wednesday	December 21	

Regular Meetings of the Board of Directors are held beginning at 6:30 PM on the Third Wednesday of each month. Meeting agendas are posted in this space a minimum of 72 hours in advance of each meeting. Meeting dates subject to change with 72 hour advance notice.

***Special Meetings of the Board of Directors are held as may be necessary and require 24-hour advance posting of the meeting agenda.**