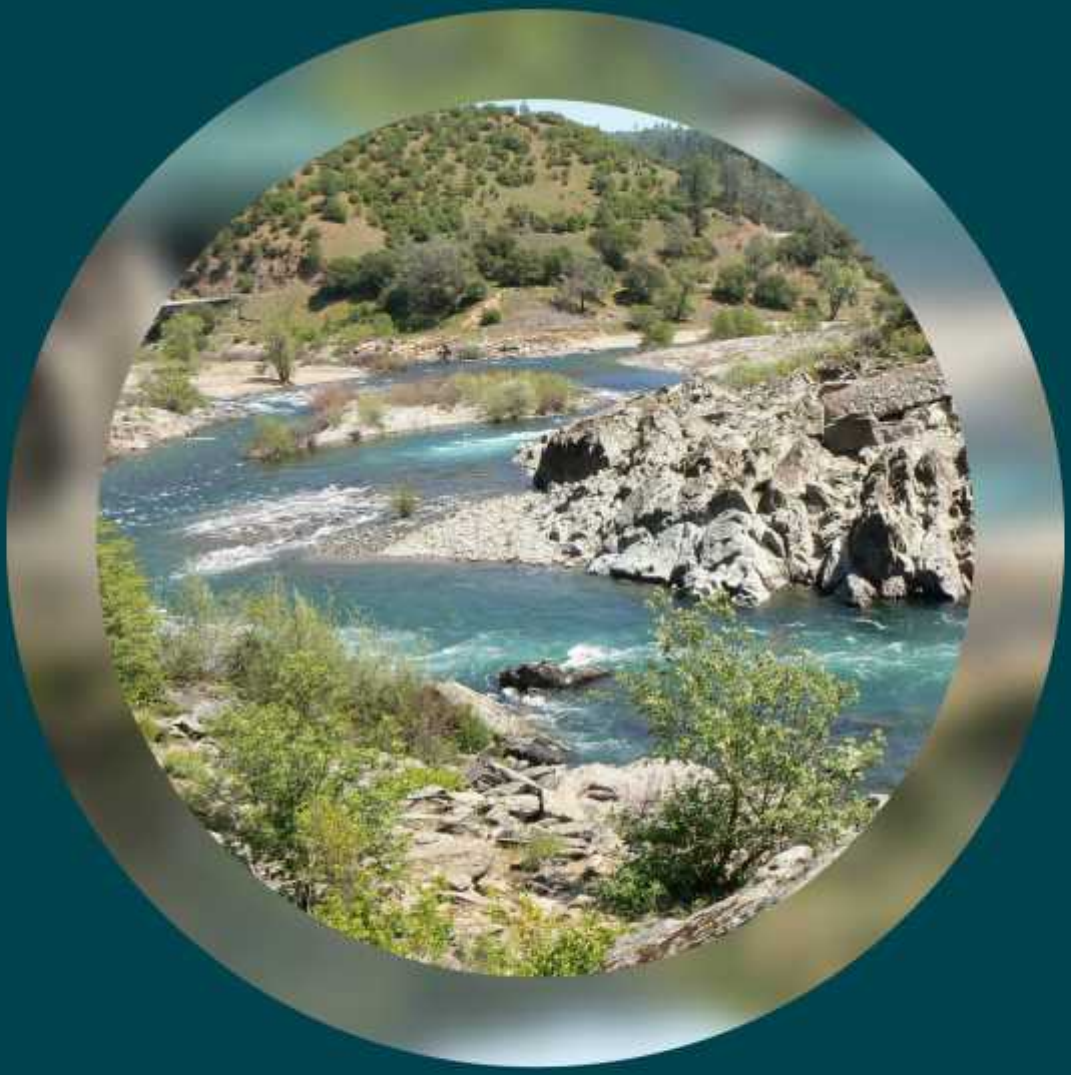
Sacramento Regional Water Utility Collaboration Study

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

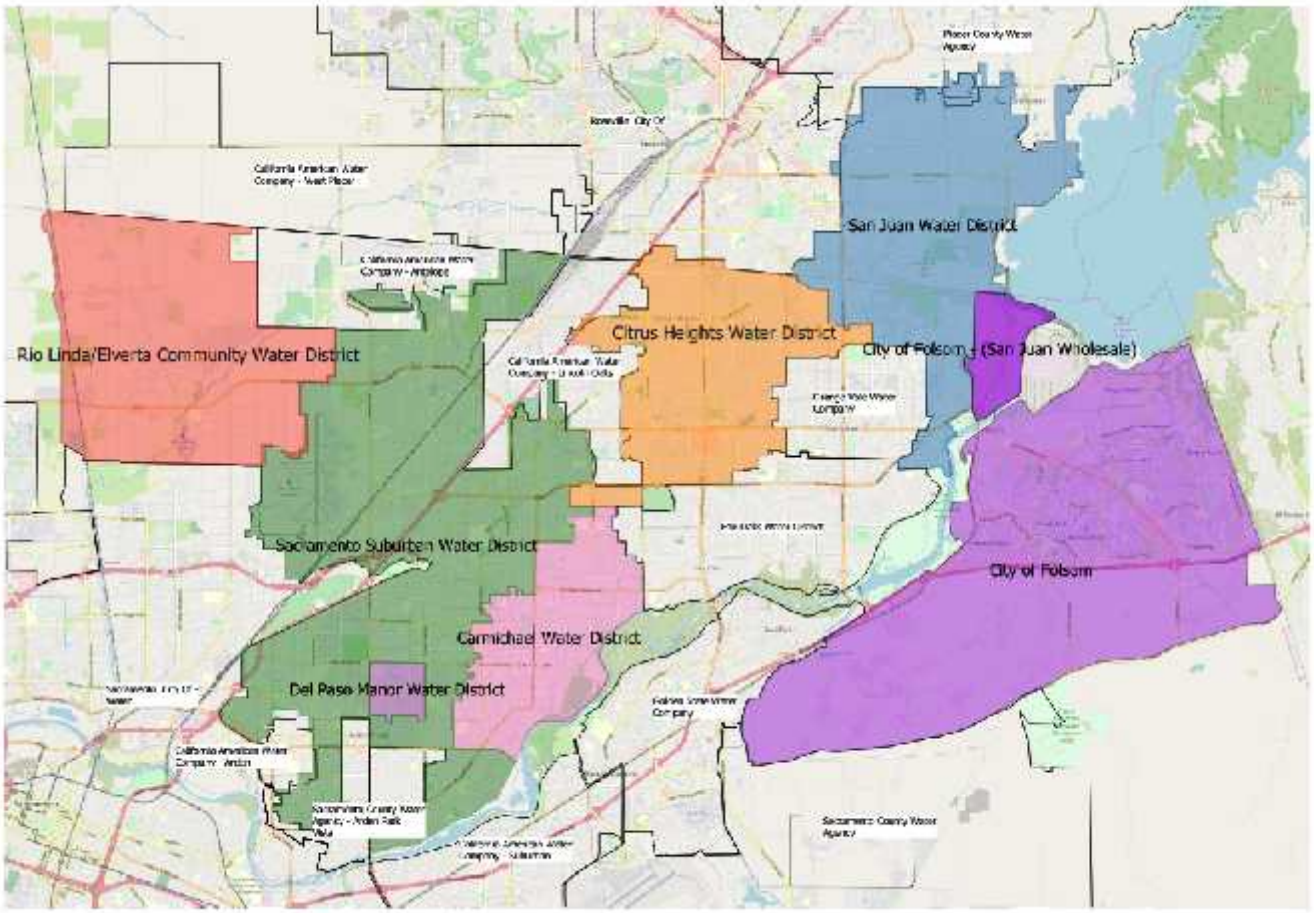
Raftelis gathered information from the participating agencies, generally following the guidelines in a provided Request for Information (RFI) – Appendix A. Following initial information gathering and in parallel with a review of the information, we conducted interviews with senior representatives of 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.

[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.

[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.

[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".